KENYA MEDICAL SUPPLIES AUTHORITY YOUR PARTNER IN HEALTHCARE

TENDER NO.: GF-KEMSA/CONST 02/ONT2/2021/2022

TENDER FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF GENERATORS, AUTOMATIC VOLTAGE STABILIZER (AVS) AND UNINTERUPTED POWER SUPPLY (UPS) AT KEMSA NEW WAREHOUSE

SPECIFICATIONS AND BILLS OF QUANTITIES

CLOSING DATE: 20th June, 2022

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SECTION I

INVITATION FOR TENDER (IFT)

Open National Tender (ONT)

FUNDING: THE GOVERNMENT OF KENYA, THE GLOBAL FUND AND THE KENYA MEDICAL SUPPLIES AUTHORITY

IFT NO.: GF-KEMSA/CONST 02/ONT2/2021/2022

TENDER FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF GENERATORS, AUTOMATIC VOLTAGE STABILIZER (AVS) AND UNINTERUPTED POWER SUPPLY (UPS) AT KEMSA NEW WAREHOUSE
Date: 17th May, 2022

1. The Government of The Republic of Kenya (GoK) and The Global Fund (GF) through The Kenya Medical Supplies Authority (KEMSA) has set aside funds for construction of a Modern Warehouse and Office Block on LR No. 9042/176 at Embakasi, Nairobi Kenya.
2. KEMSA, on behalf of GOK and GF now invite sealed tender (s) for the under listed categories of works.

Tender Reference	Tender Description	NCA Registration Category	Tender Security Amount
GF-KEMSA/CONST 02/ONT2/2021/2022	GENERATOR, AUTOMATIC VOLTAGE STABILIZER & UPSes	NCA 1 and above	Kshs.3,100,000.00

3. Bidding will be conducted through the **Open National Tender (ONT)** procedures specified in the Government of Kenya Public Procurement and Asset Disposals Act, 2015.
4. Interested eligible bidders may obtain further information from KEMSA offices and inspect the bidding documents at the Procurement office situated at:

   Kenya Medical Supplies Authority
   13, Commercial Street, Industrial Area
   P.O B Box 47715-00100
   Telephone No.: +254 20 3922000/+254 719033000/+254 733606600
   Fax No.: +254203922400
   Email: procure@kemsa.co.ke

   On normal working days on Monday to Friday **09.00hrs and 16.00hrs except on Public Holidays or download at the IFMIS Supplier's Portal: http://supplier.treasury.go.ke/** KEMSA's website https://www.kemsa.co.ke Documents downloaded are free of charge and bidders are advised to register at the Procurement Office or via email at procure@kemsa.co.ke (***Refer to registration form in the tender document***).

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

   The Chief Executive Officer
   Kenya Medical Supplies Authority
   13, Commercial Street, Industrial Area
   P.O B Box 47715-00100
   Nairobi, Kenya.

   And must be deposited in Tender Box 2 Marked **Global Fund Tenders** at the reception on the Ground floor of KEMSA's Commercial Street Office in Nairobi on or before **20th June, 2022 at 10.00 a.m**. Bids will be opened immediately thereafter in the presence of Bidders' and or representatives who choose to attend.

6. Bulky tenders can be handed over to KEMSA **Procurement Director's** office for registration and safe keeping till the tender opening date.

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

8. There will be a mandatory Site visit for all prospective bidders on **26th May, 2022 from 9.00am** at KEMSA warehouse in Embakasi, Nairobi. Thereafter there will be a pre-bid meeting for those who wish to attend.

Yours sincerely,

CHIEF EXECUTIVE OFFICER,
KENYA MEDICAL SUPPLIES AUTHORITY

REGISTRATION FORM FOR ONLINE TENDERERS/BIDDERS/SUPPLIERS

Tender No.: GF-KEMSA/CONST 02/ONT2/2021/2022 – TENDER FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF GENERATORS, AUTOMATIC VOLTAGE STABILIZER (AVS) AND UNINTERUPTED POWER SUPPLY (UPS)

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

Name of the firm:……..

Postal Address:……..

Telephone Contacts:……...……

Company email address:……..

Contact Person:……

Once completed please submit this form to the email below;

procure@kemsa.co.ke

SPECIAL NOTES

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

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

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

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

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

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

7. Only Tenderers who score 70 points and above in the Technical Evaluation Stage shall qualify for further evaluation.

PRE-BID SITE VISIT CERTIFICATE

KENYA MEDICAL SUPPLIES AUTHORITY

TENDER REFERENCE NO. GF-KEMSA/CONST 02/ONT2/2021/2022

TENDER FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF GENERATORS, AUTOMATIC VOLTAGE STABILIZER (AVS) AND UNINTERUPTED POWER SUPPLY (UPS) AT KEMSA NEW WAREHOUSE

We confirm that M/s. ……..... was duly represented by ……. during the **Site Visit/ Pre-bid Briefing** on **26th May, 2022** from **9.00A.M to 2.00 P.M** at KEMSA Warehouse Embakasi Nairobi.

Signed: ……

CHIEF EXECUTIVE OFFICER
KENYA MEDICAL SUPPLIES AUTHORITY

SECTION II
INSTRUCTIONS TO TENDERERS

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

1.1 This Invitation for Tenders is open to all eligible tenderers for Works Contract as described in the tender documents. The successful tenderer will be expected to complete the Works by the Intended Completion Date specified in the tender documents.

1.2 All tenderers shall provide the Qualification Information, a statement that the tenderer (including all members of a joint venture and subcontractors) is not associated, or has not been associated in the past, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for the project or being proposed as Project Manager for the Contract. A firm that has been engaged by Kenya Medical Supplies Authority Ltd. 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.

Tender documents shall be accompanied by the following **Mandatory requirements** for preliminary evaluation:-

Mandatory Requirements

a) Certificate of Registration/Incorporation (*Applicable to all Bidders)*

b) Valid & Current Registration with **National Construction Authority (NCA 1) -** *Electrical Works*

c) Valid & Current Registration with **Energy Regulatory Commission** (ERC Class A-1) - *(Applicable to Generator, AVS & UPSes Bidders)*

d) Manuals and Materials Certificates as described in the Tables attached and Bills of Quantities - *(Applicable to all Bidders)*

e) Valid Tax Compliance Certificate **-** *(Applicable to all Bidders)*

f) Valid Tender Security of 150 days **-** *(Applicable to all Bidders)*

g) Duly Signed Anti-Corruption declaration form **-** *(Applicable to all Bidders)*

h) Duly signed non-Debarment declaration form. **-** *(Applicable to all Bidders)*

i) Pagination / Serialization of Tender Document**-** *(Applicable to all Bidders)*

j) Duly signed form of Tender **-** *(Applicable to all Bidders)*

k) Certificate of Site visit duly Signed and stamped by the procuring entity - *(Applicable to all Bidders)*

l) Compliance with Technical Specifications - ***Note: Tender Evaluation Committee to carry out analysis showing how decision on this requirement has been arrived at and attach analysis on this as an Appendix. (Applicable to all Bidders)***

To supply equipment's/items which comply with the technical specifications set out in the bid document. In this regard, the bidders shall be required to submit relevant technical brochures/catalogues with the tender document, highlighting the Catalogue Numbers of the proposed items. Such brochures/catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:

(i) Standards of manufacture;

(ii) Performance ratings/characteristics;

(iii) Material of manufacture;

(iv) Electrical power ratings; and

(v) Any other necessary requirements (Specify).

A tenderer who fails to meet the mandatory requirements shall be disqualified from further evaluation.

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

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

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

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

(d) Major items of construction equipment proposed to carry out the Contract and an undertaking that they will be available for the Contract.

(e) Qualifications and experience of key site management and technical personnel proposed for the Contract and an undertaking that they shall be available for the Contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

(b) experience as Fire Fighting contractor in the construction of at least five works of a nature and complexity equivalent to the Works over the last 10 years (to comply with this requirement, works cited should be at least 70 percent complete);

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

(d) a Contract Manager with at least ten years' experience in works of an equivalent nature and volume, including no less than three years as Manager; and

(e) Liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than 2 months of the estimated payment flow under this Contract.

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

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

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

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

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

1.13 The Kenya Medical Supplies Authority shall allow the tenderer to review the tender document free of charge before purchase.

2 Tender Documents

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

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

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

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

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

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

3 Preparation of Tenders

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

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

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

(b) Tender Security;

(c) Priced Bill of Quantities;

(d) Qualification Information Form and Documents;

(e) Alternative offers where invited; and

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

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

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

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

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

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

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

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

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

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

3.12 The Tender Security may be forfeited

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

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

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

(i) sign the Agreement, or

(ii) furnish the required Performance Security.

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

3.14 The tenderer shall prepare one original of the documents comprising the tender documents as described in Clause 3.2 of these Instructions to Tenderers, bound with

the volume containing the Form of Tender, and clearly marked **"ORIGINAL".** In addition, the tenderer shall submit copies of the tender, in the number specified in the invitation to tender, and clearly marked as **"COPIES".** In the event of discrepancy between them, the original shall prevail.

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

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

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

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

4 Submission of Tenders

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

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

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

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

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

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

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

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

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

5 Tender Opening and Evaluation

5.1 The tenders will be opened by Kenya Medical Supplies Authority, including modifications made pursuant to Clause 4.4, in the presence of the tenderers' representatives who choose to attend at the time and in the place specified in the invitation to tender. Envelopes marked "**WITHDRAWAL**" shall be opened and read out first. Tenderers and Employer's representatives who are present during the opening shall sign a register evidencing their attendance.

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

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

5.4 To assist in the examination, evaluation, and comparison of tenders, the Kenya Medical Supplies Authority at his discretion, may ask any tenderer for clarification of the tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, telex or facsimile but no change in the price or substance of the tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered in the evaluation of the tenders in accordance with Clause 5.7.

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

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

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

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

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted

will prevail, unless in the opinion of the Employer, there is an obvious typographical error, in which case the adjustment will be made to the entry containing that error.

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

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

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

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

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

5.9 In evaluating the tenders, Kenya Medical Supplies Authority 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 Day works where priced competitively.

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

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

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

5.11 The tenderer shall not influence the Kenya Medical Supplies Authority 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 non-indigenous sub-contractor.

6 Award of Contract

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

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

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

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

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

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

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

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

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

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

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

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

6.12 Where contract price variation is allowed, the variation shall not exceed 20% of the original contract price.

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

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

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

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

7 Corrupt and Fraudulent practices

7.1 Kenya Medical Supplies Authority requires that tenderers observe the highest standards of ethics during procurement process and execution of contracts. A tenderer shall sign a declaration that he has not and will not be involved in corrupt and fraudulent practices.

APPENDIX TO INSTRUCTIONS TO TENDERERS

APPENDIX TO INSTRUCTIONS TO TENDERERS

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

SECTION III

TENDER EVALUATION CRITERIA

(a) Tender Evaluation Criteria

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

1.1 Stage I – Mandatory Requirements

This stage of evaluation shall involve examination of the mandatory requirements as set out in the Tender Advertisement Notice or Letter of Invitation to Tender and any other conditions stated in the bid document.

a) Certificate of Registration/Incorporation *(Applicable to all Bidders)*

b) Valid & Current Registration with **National Construction Authority (NCA 1) -** *Electrical Works*

c) Valid & Current Registration with **Energy Regulatory Commission** (ERC Class A-1) - *(Applicable to Generator, AVS & UPSes Bidders)*

d) Manuals and Materials Certificates as described in the Tables attached and Bills of Quantities - *(Applicable to all Bidders)*

e) Valid Tax Compliance Certificate - *(Applicable to all Bidders)*

f) Valid Tender Security of 150 days - *(Applicable to all Bidders)*

g) Duly Signed Anti-Corruption declaration form - *(Applicable to all Bidders)*

h) Duly signed non-Debarment declaration form - *(Applicable to all Bidders)*

i) Pagination / Serialization of Tender Document - *(Applicable to all Bidders)*

j) Duly signed form of Tender - *(Applicable to all Bidders)*

k) Certificate of Site visit duly Signed and stamped by the procuring entity - *(Applicable to all Bidders)*

l) Compliance with Technical Specifications - ***Note: Tender Evaluation Committee to carry out analysis showing how decision on this requirement has been arrived at and attach analysis on this as an Appendix.*** *(Applicable to all Bidders)*

To supply equipment's/items which comply with the technical specifications set out in the bid document. In this regard, the bidders shall be required to submit relevant technical brochures/catalogues with the tender document, highlighting the Catalogue Numbers of the proposed items. Such brochures/catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:

(vi) Standards of manufacture;

(vii) Performance ratings/characteristics;

(viii) Material of manufacture;

(ix) Electrical power ratings; and

(x) Any other necessary requirements (Specify).

A tenderer who fails to meet the mandatory requirements shall be disqualified from further evaluation.

STAGE 2: TECHNICAL EVALUATION

The tender document shall be examined based on clause 2.2 of the Instruction to Tenderers which states as follows:

In accordance with clause 2.2 of Instruction to Tenderers, the tenderers will be required to provide evidence for eligibility of the award of the tender by satisfying the employer of their eligibility under sub clause 2.1 of Instructions to Tenderers and their capability and adequacy of resources to effectively carry out the subject contract.
In order to comply with provisions of clause 2.2 of Instruction to tenderers, the tenderers shall be required;

a) *To fill the Standard Forms* provided in the bid document for the purposes of providing the required information. The tenderers may also attach the required information if they so desire;
b) *To supply equipment's/items which comply with the technical specifications set out in the bid document.* In this regard, the bidders shall be required to submit relevant technical brochures/catalogues with the tender document, highlighting the Catalogue Numbers of the proposed items. Such brochures/catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:
   (xi) Standards of manufacture;
   (xii) Performance ratings/characteristics;
   (xiii) Material of manufacture;
   (xiv) Electrical power ratings; and
   (xv) Any other necessary requirements (Specify).

   The bid will then be analyzed, using the information in the technical brochures, to determine compliance with General and Particular technical specifications for the works as indicated in the tender document. The tenderer shall also fill in the Technical Schedule as specified in the tender

document for Equipment and Items indicating the Country of Origin, Model/Make/Manufacturer and catalogue numbers of the Items/Equipment's they propose to supply.

1.2 Stage II -Technical Evaluation

The award of points considered in this section shall be as shown below:

	PARAMETER	MAXIMUM POINTS
(i)	Presentation of Bid document	2
(ii)	Key personnel	27
(iii)	Contract Completed in the last Five (5) years	12
(iv)	Schedules of contractor's equipment	23
(v)	Audited Financial Report for the last 3 years	15
(vi)	Evidence of Financial Resources	15
(vii)	Litigation History	1
(viii)	Work Program	5
	TOTAL	100

A bidder scoring less than 75% shall not be considered Technically responsive and therefore shall not be considered for financial evaluation.

The detailed scoring plan shall be as shown in table 1.

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

stage II : Technical Evaluation

Item	**Description**	**Raw Points Scored**	**Max. Point**
1	Presentation and response (This include binding the documents, neat presentation, separation and arrangement of requested information and general response to all requirements)		**2**
2	**Key Personnel (Attach evidence)**		
	Director of the firm ***(one Director Only)*** • Holder of degree in relevant field ----------***4 Mks*** • Holder of diploma in relevant field ----------***3Mks*** • Holder of certificate in relevant Engineering field---- ***2Mks*** • Others)---------- ----------***1Mks***		**4**
	2No. degree/diploma holders of key personnel in relevant field • With over 10 years relevant experience ----***3Mks each*** • With over 5 years relevant experience------***2Mks each*** • With under 5 years relevant experience ----***1Mks each***		**6**

	3 No certificate holder of key personnel in relevant field • With over 10 years relevant experience---***3 Mks each*** • With over 5 years relevant experience ----***2 Mks each*** • With under 5 years relevant experience ---***1 Mks each***		**9**	**27**
	4 No artisan (trade test certificate in relevant field) • Artisan with over 10 years relevant experience -- ***2Mks each*** • Artisan with under 10 years relevant experience --***1Mks each***		**8**	
3	**Contract completed in the last Five (5) years <u>Provide Evidence</u>** 2 projects of similar nature / complexity and magnitude (a) Above Kshs.100. Million ---------- ***6 Mks for each project*** (b) Kshs 75 million – 99 million---------- ***4 Mks for each project*** (c) Kshs 50 million – 74 million –---------- ***2 Mks for each project***		**12**	
4	**Schedule of contractor's equipment and transport (proof or evidence of ownership/Lease)** **a) Relevant Transport** • 2No. Trucks ----------***2Mks for each*** • 2No. Pickups ----------***2Mks for each*** **b) Equipment's/tools** • PPE Equipment's----------***2mks*** • 2No. Sets of Drilling tools ----------***2mks each*** • 2No. Sets of Cutting tools ----------***2mks each*** c) **Vertical transport** • 1No. Crane / Hoist 10T min ----------***5mk for each***		**23**	
5	**Financial report**			
	a) Audited financial report (last three (3) years) • Provide Audited Accounts for 2019, 2020, 2021 ----------***3Mks*** • Average Annual Turn-over equal to or greater than the annual Expected Turnover of the project ---------- ***12mks*** • Average Annual Turn-over above 50% but below 100% of the cost of the project ----------***6Mks*** • Average Annual Turn-over below 50% of the cost of the project --- ---------- ***3Mks***	15	**30**	
	b) Evidence of Financial Resources (cash in hand, lines of credit, over draft facility, etc.) • Has financial resources to finance the projected **monthly cash flow*** for three months ----------***15Mks*** • Has financial resources equal to the projected **monthly cash flow***-- ----------***10Mks*** • Has financial resources less the projected **monthly cash flow***--------- ----------***5Mks*** Has not indicated sources of financial resources ----------***0Mks***	15		
vii	**Litigation History** • Duly Filled ---------- ***1Mks*** • Not filled ----------***0Mks***		**1**	

xi	**Work Program** d) Provide Detailed Work program from site possession to completion of works---------- ***5Mks*** ***The Program must be accompanied with supporting document such as manufacturing timeline from the manufacturer, Work methodology etc. otherwise it will be left at the discretion of the tender evaluators***		**5**
	TOTAL		**100**

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

A bidder must score at least 75% total marks to qualify for further evaluation. (Score 75/100). The Technical Score will be weighted to 70.

A) Assessment of deviations

Pursuant to section 64 of the act, a tender is deemed responsive if it conforms to all the mandatory requirements and it **does not contain major** deviations. Section 23.2 of the instruction to tenderers, defines major deviations as

a) One that affects in a substantial way the scope, quality, completion timing, administration of works to be undertaken by the tenderer under the contract, inconsistent with the tender document; or
b) Which limits in any substantial way the rights of the employer or the tenderers obligations; or
c) Whose rectification would affect unfairly the competitive position of other tenderers presenting substantially responsive tenders.

Where the deviations are minor in the view of the tender committee, with the concurrence of the procuring entity representative, the evaluation committee shall quantify such deviations pursuant to section 64 (3) of the act which requires that a minor deviation shall:

a) Be quantified to the extent possible; and
b) Be taken into account in the evaluation and comparison of tenders.

Where the deviation in the view of the tender committee with the concurrence of the procuring entity representative is major, the tender shall be deemed **non-responsive and will not be evaluated further**

STAGE 3 - FINANCIAL EVALUATION

Upon completion of the technical evaluation, a detailed financial evaluation shall follow.

The evaluation shall be in **three stages**

a) Determination of Arithmetic errors
b) Comparison of Rates; and
c) Consistency of the Rates.

A) Determination of Arithmetic Errors

Arithmetic Errors will be corrected by the Procuring Entity as follows:

i) 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 Bills of Quantities, the amount as stated in the Form of Tender shall prevail. Pursuant to Section 82 of the Public Procurement and Asset Disposal Act 2015, the tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in any way by any person or entity;

ii) Error correction factor shall be computed by expressing the difference between the amount and the corrected tender sum as a percentage of the corrected contract works (i.e. corrected tender sum less P.C; and Provisional Sums);

iii) The Error correction factor shall be applied to all contract works (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuation of variations.

B) Comparison of rates

Items that are underpriced or overpriced may indicate potential for non-delivery and front loading respectively. The committee shall promptly write to the tenderer asking for detailed breakdown of costs for any of the quoted items, relationship between those prices, proposed construction/installation methods and schedules.

The evaluation committee shall evaluate the responses and make an appropriate recommendation to the procuring entity giving necessary evidence. Such recommendations may include but not limited to:

a) Recommend no adverse action to the tenderer after a convincing response;
b) Employer requiring that the amount of the performance bond be raised at the expense of the successful tenderer to a level sufficient to protect the employer against potential financial losses;

c) Recommend non-award based on the response provided and the available demonstrable evidence that the scope, quality, completion timing, administration of works to be undertaken by the tenderer, would adversely be affected or the rights of the employer or the tenderers obligations would be limited in a substantial way.

C) **Consistency of the Rates**

The evaluation committee will compare the consistency of rates for similar items and note all

inconsistencies of the rates for similar items.

FINANCIAL EVALUATION

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

SECTION IV

CONDITIONS OF MAIN CONTRACT

GENERAL CONDITIONS OF CONTRACT

1 Definitions

1.1 In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated;

"Bill of Quantities" means the priced and completed Bill of Quantities forming part of the tender.

"Compensation Events" are those defined in Clause 24 hereunder.

The Completion Date" means the date of completion of the Works as certified by the Project Manager, in accordance with Clause 31.

"The Contract" means the agreement entered into between the Kenya Medical Supplies Authority and the Contractor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works,

"The Contractor" refers to the person or corporate body whose tender to carry out the Works has been accepted by Kenya Medical Supplies Authority

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

"The Contract Price" is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

"Days" are calendar days; **"Months"** are calendar months.

"A Defect" is any part of the Works not completed in accordance with the Contract.

"The Defects Liability Certificate" is the certificate issued by Project Manager upon correction of defects by the Contractor.

"The Defects Liability Period" is the period named in the Contract Data and calculated from the Completion Date.

"Drawings" include calculations and other information provided or approved by the Project Manager for the execution of the Contract.

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

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

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

"The Intended Completion Date" is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.

"Materials" are all supplies, including consumables, used by the Contractor for incorporation in the Works.

"Plant" is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.

"Project Manager" is the person named in the Appendix to Conditions of Contract (or any other competent person appointed by the Kenya Medical Supplies Authority and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract and shall be an "Architect" or a "Quantity Surveyor" registered under the Architects and Quantity Surveyors Act Cap 525 or an "Engineer" registered under Engineers Registration Act Cap 530.

"Site" is the area defined as such in the Appendix to Condition of Contract.

"Site Investigation Reports" are those reports that may be included in the tendering documents which are factual and interpretative about the surface and subsurface conditions at the Site.

"Specifications" means the Specifications of the Works included in the Contract and any modification or addition made or approved by the Project Manager.

"Start Date" is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with the Site possession date(s).

"A Subcontractor" is a person or corporate body who has a Contract with the Contractor to carry out a part of the Work in the Contract, which includes Work on the Site.

"Temporary works" are works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

"A Variation" is an instruction given by the Project Manager which varies the Works.

"The Works" are what the Contract requires the Contractor to construct, install, and turnover to Kenya Medical Supplies Authority, as defined in the Appendix to Conditions of Contract.

2 Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning in English Language unless

specifically defined. The Project Manager will provide instructions clarifying queries about these Conditions of Contract.

2.2 If sectional completion is specified in the Appendix to Conditions of Contract, reference in the Conditions of Contract to the Works, the Completion Date and the Intended Completion Date apply to any section of the Works (other than references to the Intended Completion Date for the whole of the Works).

2.3 The following documents shall constitute the Contract documents and shall be interpreted in the following order of priority;

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

i) Any other documents listed in the Appendix to Conditions of Contract as forming part of the Contract.

Immediately after the execution of the Contract, the Project Manager shall furnish both Kenya Medical Supplies Authority and the Contractor with two copies each of all the Contract documents. Further, as and when necessary the Project Manager shall furnish the Contractor [always with a copy to the Kenya Medical Supplies Authority] with three [3] copies of such further drawings or details or descriptive schedules as are reasonably necessary either to explain or amplify the Contract drawings or to enable the Contractor to carry out and complete the Works in accordance with these Conditions.

3 Language and Law

3.1 Language of the Contract and the law governing the Contract shall be English language and the Laws of Kenya respectively unless otherwise stated.

4 Project Manager's Decisions

4.1 Except where otherwise specifically stated, the Project Manager will decide contractual matters between Kenya Medical Supplies Authority and the Contractor in the role representing the Kenya Medical Supplies Authority.

5 Delegation

5.1 The Project Manager may delegate any of his duties and responsibilities to others after notifying the Contractor.

6 Communications

6.1 Communication between parties shall be effective only when in writing. A notice shall be effective only when it is delivered.

7 Subcontracting

7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of Kenya Medical Supplies Authority in writing. Subcontracting shall not alter the Contractor's obligations.

8 Other Contractors

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities etc. as listed in the Appendix to Conditions of Contract and also with the Kenya Medical Supplies Authority, as per the directions of the Project Manager. The Contractor shall also provide facilities and services for them. Kenya Medical Supplies Authority may modify the said List of Other Contractors etc., and shall notify the Contractor of any such modification.

9 Personnel

9.1 The Contractor shall employ the key personnel named in the Qualification Information, to carry out the functions stated in the said Information or other personnel approved by the Project Manager. The Project Manager will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Qualification Information. If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the Work in the Contract.

10 Works

10.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings. The Works may commence on the Start Date and shall be carried out in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.

11 Safety and Temporary Works

11.1 The Contractor shall be responsible for the design of temporary works. However before erecting the same, he shall submit his designs including specifications and drawings to the Project Manager and to any other relevant third parties for their approval. No erection of temporary works shall be done until such approvals are obtained.

11.2 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary works and all drawings prepared by the Contractor for the execution of the temporary or permanent Works, shall be subject to prior approval by the Project Manager before they can be used.

11.3 The Contractor shall be responsible for the safety of all activities on the Site.

12 Discoveries

12.1 Anything of historical or other interest or of significant value unexpectedly discovered on Site shall be the property of Kenya Medical Supplies Authority The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.

13 Work Program

13.1 Within the time stated in the Appendix to Conditions of Contract, the Contractor shall submit to the Project Manager for approval a program showing the general methods, arrangements, order, and timing for all the activities in the Works. An update of the program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Work, including any changes to the sequence of the activities.

The Contractor shall submit to the Project Manager for approval an updated program at intervals no longer than the period stated in the Appendix to Conditions of Contract. If the Contractor does not submit an updated program within this period, the Project Manager may withhold the amount stated in the said Appendix from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted. The Project Manager's approval of the program shall not alter the Contractor's obligations. The Contractor may revise the program and submit it to the Project Manager again at any time. A revised program shall show the effect of Variations and Compensation Events.

14 Possession of Site

14.1 Kenya Medical Supplies Authority shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Appendix to Conditions of Contract, Kenya Medical Supplies Authority will be deemed to have delayed the start of the relevant activities, and this will be a Compensation Event.

15 Access to Site

15.1 The Contractor shall allow the Project Manager and any other person authorised by the Project Manager, access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

16. Instructions

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

16.2 If within seven days after receipt of a written notice from the Project Manager requiring compliance with Project Manager's instructions the Contractor does not comply therewith, the Kenya Medical Supplies Authority may employ and pay other persons to execute any work whatsoever which may be necessary to give effect to such instructions and all costs incurred in connection therewith shall be recoverable from the Contractor by the Employer as a debt or may be deducted by the Project Manager from any moneys due or to become due to the Contractor

under this Contract

17 Extension or Acceleration of Completion Date

17.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a variation is issued which makes it impossible for completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining Work, which would cause the Contractor to incur additional cost. The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager in writing for a decision upon the effect of a Compensation Event or variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay caused by such failure shall not be considered in assessing the new (extended) Completion Date.

17.2 No bonus for early completion of the Works shall be paid to the Contractor by the Employer.

18 Management Meetings

18.1 A Contract management meeting shall be held monthly and attended by the Project Manager and the Contractor. Its business shall be to review the plans for the remaining Work and to deal with matters raised in accordance with the early warning procedure. The Project Manager shall record the minutes of management meetings and provide copies of the same to those attending the meeting and the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

19 Early Warning

19.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the Work, increase the Contract Price or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.

19.2 The Contractor shall cooperate with the Project Manager in making and considering proposals on how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the Work and in carrying out any resulting instructions of the Project Manager.

20 Defects

20.1 The Project Manager shall inspect the Contractor's work and notify the Contractor of any defects that are found. Such inspection shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a defect and to uncover and test any Work that the Project Manager considers may have a defect. Should the defect be found, the cost of uncovering and making good shall be borne by the Contractor, However, if there is no defect found, the cost of uncovering and making good shall be treated as a variation and added to the Contract Price.

20.2 The Project Manager shall give notice to the Contractor of any defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Appendix to Conditions of Contract. The Defects Liability Period shall be extended for as long as defects remain to be corrected.

20.3 Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Project Manager's notice. If the Contractor has not corrected a defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the defect corrected by other parties and such cost shall be treated as a variation and be deducted from the Contract Price.

21 Bills of Quantities

21.1 The Bills of Quantities shall contain items for the construction, installation, testing and commissioning of the Work to be done by the Contractor. The Contractor will be paid for the quantity of the Work done at the rate in the Bills of Quantities for each item.

21.2 If the final quantity of the Work done differs from the quantity in the Bills of Quantities for the particular item by more than 25 percent and provided the change exceeds 1 percent of the Initial Contract price, the Project Manager shall adjust the rate to allow for the change.

21.3 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bills of Quantities.

22 Variations

22.1 All variations shall be included in updated programs produced by the Contractor.

22.2 The Contractor shall provide the Project Manager with a quotation for carrying out the variations when requested to do so. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period as may be stated by the Project Manager and before the Variation is ordered.

22.3 If the work in the variation corresponds with an item description in the Bills of Quantities and if in the opinion of the Project Manager, the quantity of work is not above the limit stated in Clause 21.2 or the timing of its execution does not cause the cost per unit of quantity to change, the rate in the Bills of Quantities shall be used to calculate the value of the variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the variation does not correspond with items in the Bills of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of Work.

22.4 If the Contractor's quotation is unreasonable, the Project Manager may order the variation and make a change to the Contract price, which shall be based on the Project Manager's own forecast of the effects of the variation on the Contractor's costs.

22.5 If the Project Manager decides that the urgency of varying the Work would prevent a quotation being given and considered without delaying the Work, no quotation shall be given and the variation shall be treated as a Compensation Event.

22.6 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

22.7 When the Program is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.

23 Payment Certificates, Currency of Payments and Advance Payments

23.1 The Contractor shall submit to the Project Manager monthly applications for payment giving sufficient details of the Work done and materials on Site and the amounts which the Contractor considers himself to be entitled to. The Project Manager shall check the monthly application and certify the amount to be paid to the Contractor within 14 days. The value of Work executed and payable shall be determined by the Project Manager.

23.2 The value of Work executed shall comprise the value of the quantities of the items in the Bills of Quantities completed, materials delivered on Site, variations and compensation events. Such materials shall become the property of Kenya Medical Supplies Authority once Kenya Medical Supplies Authority has paid the Contractor for their value .Thereafter, they shall not be removed from Site without the Project Manager's instructions except for use upon the Works.

23.3 Payments shall be adjusted for deductions for retention. Kenya Medical Supplies Authority shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of issue of each certificate. If Kenya Medical Supplies Authority makes a late payment, the Contractor shall be paid simple interest on the late payment in the next payment**.** Interest shall be calculated on the basis of number of days delayed at a rate three percentage points above the Central Bank of Kenya's average rate for base lending prevailing as of the first day the payment becomes overdue.

23.4 If an amount certified is increased in a later certificate or as a result of an award by an Arbitrator, the Contractor shall be paid interest upon the delayed payment

as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.

23.5 Items of the Works for which no rate or price has been entered in will not be paid for by Kenya Medical Supplies Authority and shall be deemed covered by other rates and prices in the Contract.

23.6 The Contract Price shall be stated in Kenya Shillings. All payments to the Contractor shall be made in Kenya Shillings and foreign currency in the proportion indicated in the tender, or agreed prior to the execution of the Contract Agreement and indicated therein. The rate of exchange for the calculation of the amount of foreign currency payment shall be the rate of exchange indicated in the Appendix to Conditions of Contract. If the Contractor indicated foreign currencies for payment other than the currencies of the countries of origin of related goods and services Kenya Medical Supplies Authority reserves the right to pay the equivalent at the time of payment in the currencies of the countries of such goods and services. Kenya Medical Supplies Authority and the Project Manager shall be notified promptly by the Contractor of an changes in the expected foreign currency requirements of the Contractor during the execution of the Works as indicated in the Schedule of Foreign Currency Requirements and the foreign and local currency portions of the balance of the Contract Price shall then be amended by agreement between Kenya Medical Supplies Authority and the Contractor in order to reflect appropriately such changes.

23.7 In the event that an advance payment is granted, the following shall apply:-

a) On signature of the Contract, the Contractor shall at his request, and without furnishing proof of expenditure, be entitled to an advance of 10% (ten percent) of the original amount of the Contract. The advance shall not be subject to retention money.

b) No advance payment may be made before the Contractor has submitted proof of the establishment of deposit or a directly liable guarantee satisfactory to Kenya Medical Supplies Authority in the amount of the advance payment. The guarantee shall be in the same currency as the advance.

c) Reimbursement of the lump sum advance shall be made by deductions from the Interim payments and where applicable from the balance owing to the Contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original amount of the Contract. It shall have been completed by the time 80% of this amount is reached.

The amount to be repaid by way of successive deductions shall be calculated by means of the formula:

$$R = \frac{A(x^1 - x^{11})}{80 - 20}$$

Where:

R =the amount to be reimbursed

A =the amount of the advance which has been granted

X^1 = the amount of proposed cumulative payments as a percentage of the original amount of the Contract. This figure will exceed 20% but not exceed 80%.

X^{I1} = the amount of the previous cumulative payments as a percentage of the original amount of the Contract. This figure will be below 80%but not less than 20%.

d) with each reimbursement the counterpart of the directly liable guarantee may be reduced accordingly.

24 Compensation Events

24.1 The following issues shall constitute Compensation Events:

(a) Kenya Medical Supplies Authority does not give access to a part of the Site by the Site Possession Date stated in the Appendix to Conditions of Contract.

(b) Kenya Medical Supplies Authority modifies the List of Other Contractors, etc., in a way that affects the Work of the Contractor under the Contract.

(c) The Project Manager orders a delay or does not issue drawings, specifications or instructions required for execution of the Works on time.

(d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon the Work, which is then found to have no defects.

(e) The Project Manager unreasonably does not approve a subcontract to be let.

(f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to tenderers (including the Site investigation reports), from information available publicly and from a visual inspection of the Site.

(g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by Kenya Medical Supplies Authority or additional work required for safety or other reasons.

(h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.

(i) The effects on the Contractor of any of Kenya Medical Supplies Authority risks.

(j) The Project Manager unreasonably delays issuing a Certificate of Completion.

(k) Other compensation events described in the Contract or determined by the Project Manager shall apply.

24.2 If a compensation event would cause additional cost or would prevent the Work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

24.3 As soon as information demonstrating the effect of each compensation event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.

24.4 The Contractor shall not be entitled to compensation to the extent that Kenya Medical Supplies Authority's interests are adversely affected by the Contractor not having given early warning or not having co-operated with the Project Manager.

24.5 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Appendix to Conditions of Contract.

24.6 The Contractor shall give written notice to the Project Manager of his intention to make a claim within thirty days after the event giving rise to the claim has first arisen. The claim shall be submitted within thirty days thereafter.

Provided always that should the event giving rise to the claim of continuing effect, the Contractor shall submit an interim claim within the said thirty days and a final claim within thirty days of the end of the event giving rise to the claim.

25 Price Adjustment

25.1 The Project Manager shall adjust the Contract Price if taxes, duties and other levies are changed between the date 30 days before the submission of tenders for the Contract and the date of Completion. The adjustment shall be the change in the amount of tax payable by the Contractor.

25.2 The Contract Price shall be deemed to be based on exchange rates current at the date of tender submission in calculating the cost to the Contractor of materials to be specifically imported (by express provisions in the Contract Bills of Quantities or Specifications) for permanent incorporation in the Works. Unless otherwise stated in the Contract, if at any time during the period of the Contract exchange rates shall be varied and this shall affect the cost to the Contractor of such materials, then the Project Manager shall assess the net difference in the cost of such materials. Any amount from time to time so assessed shall be added to or deducted from the Contract Price, as the case may be.

25.3 Unless otherwise stated in the Contract, the Contract Price shall be deemed to have been calculated in the manner set out below and in sub-clauses 25.4 and

25.5 and shall be subject to adjustment in the events specified thereunder;

(i) The prices contained in the Contract Bills of Quantities shall be deemed to be based upon the rates of wages and other emoluments and expenses as determined by the Joint Building Council of Kenya (J.B.C.) and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.

(ii) Upon J.B.C. determining that any of the said rates of wages or other emoluments and expenses are increased or decreased, then the Contract Price shall be increased or decreased by the amount assessed by the Project Manager based upon the difference, expressed as a percentage, between the rate set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the J.B.C. and applied to the quantum of labour incorporated within the amount of Work remaining to be executed at the date of publication of such increase or decrease.

(iii) No adjustment shall be made in respect of changes in the rates of wages and other emoluments and expenses which occur after the date of Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.

25.4 The prices contained in the Contract Bills of Quantities shall be deemed to be based upon the basic prices of materials to be permanently incorporated in the Works as determined by the J.B.C. and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.

25.5 Upon the J.B.C. determining that any of the said basic prices are increased or decreased then the Contract Price shall be increased or decreased by the amount to be assessed by the Project Manager based upon the difference between the price set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the J.B.C. and applied to the quantum of the relevant materials which have not been taken into account in arriving at the amount of any interim certificate under clause 23 of these Conditions issued before the date of publication of such increase or decrease.

25.6 No adjustment shall be made in respect of changes in basic prices of materials which occur after the date for Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.

25.7 The provisions of sub-clause 25.1 to 25.2 herein shall not apply in respect of any materials included in the schedule of basic rates.

26 Retention

26.1 Kenya Medical Supplies Authority shall retain from each payment due to the Contractor the proportion stated in the Appendix to Conditions of Contract until Completion of the whole of the Works. On Completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and the remaining half when the Defects Liability Period has passed and the Project Manager has certified that all defects notified to the Contractor before the end of this period have been corrected.

27 Liquidated Damages

27.1 The Contractor shall pay liquidated damages to Kenya Medical Supplies Authority at the rate stated in the Appendix to Conditions of Contract for each day that the actual Completion Date is later than the Intended Completion Date. Kenya Medical Supplies Authority may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not alter the Contractor's liabilities.

27.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rate specified in Clause 23.30.

28 Securities

28.1 The Performance Security shall be provided to Kenya Medical Supplies Authority no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a reputable bank acceptable to Kenya Medical Supplies Authority, and denominated in Kenya Shillings. The Performance Security shall be valid until a date 30 days beyond the date of issue of the Certificate of Completion.

29 Dayworks

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

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

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

30 Liability and Insurance

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

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

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

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

(b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault Kenya Medical Supplies Authority or in Kenya Medical Supplies Authority's design, or due to war or radioactive contamination directly affecting the place where the Works are being executed.

30.2 From the Completion Date until the Defects Correction Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is the Employer's risk except loss or damage due to;

(a) a defect which existed on or before the Completion Date.

(b) an event occurring before the Completion Date, which was not itself the Kenya Medical Supplies Authority's risk

(c) the activities of the Contractor on the Site after the Completion Date.

30.3 From the Start Date until the Defects Correction Certificate has been issued, the risks of personal injury, death and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Kenya Medical Supplies Authority's risk are Contractor's risks.

The Contractor shall provide, in the joint names of Kenya Medical Supplies Authority and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts stated in the Appendix to Conditions of Contract for the following events;

(a) loss of or damage to the Works, Plant, and Materials;

(b) loss of or damage to Equipment;

(c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract, and

(d) personal injury or death.

30.4 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation required to rectify the loss or damage incurred.

30.5 If the Contractor does not provide any of the policies and certificates required, Kenya Medical Supplies Authority may effect the insurance which the Contractor should have provided and recover the premiums from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

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

31 Completion and Taking Over

31.1 Upon deciding that the Works are complete, the Contractor shall issue a written request to the Project Manager to issue a Certificate of Completion of the Works. Kenya Medical Supplies Authority shall take over the Site and the Works within seven [7] days of the Project Manager's issuing a Certificate of Completion.

32 Final Account

32.1 The Contractor shall issue the Project Manager with a detailed account of the total amount that the Contractor considers payable to him by Kenya Medical Supplies Authority under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 30 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 30 days a schedule that states the scope of the corrections or additions that are necessary. If the final account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a Payment Certificate. Kenya Medical Supplies Authority shall pay the Contractor the amount due in the Final Certificate within 60 days.

33 Termination

33.1 Kenya Medical Supplies Authority or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. These fundamental breaches of Contract shall include, but shall not be limited to, the following;

(a) the Contractor stops work for 30 days when no stoppage of work is shown on the current program and the stoppage has not been authorized by the Project Manager;

(b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 30 days;

(c) the Contractor is declared bankrupt or goes into liquidation other than for a

reconstruction or amalgamation;

(d) a payment certified by the Project Manager is not paid by Kenya Medical Supplies Authority to the Contractor within 30 days (for Interim Certificate) or 60 days (for Final Certificate)of issue.

(e) the Project Manager gives notice that failure to correct a particular defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;

(f) the Contractor does not maintain a security, which is required.

33.2 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under Clause 33.1 above, the Project Manager shall decide whether the breach is fundamental or not.

33.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.

33.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible. The Project Manager shall immediately thereafter arrange for a meeting for the purpose of taking record of the Works executed and materials, goods, equipment and temporary buildings on Site.

34 Payment Upon Termination

34.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the Work done and materials ordered and delivered to Site up to the date of the issue of the certificate. Additional liquidated damages shall not apply. If the total amount due to fundamental breaches of Contract shall include, but shall not be limited to, the following; exceeds any payment due to the Contractor, the difference shall be a debt payable by the Contractor.

34.2 If the Contract is terminated for the Kenya Medical Supplies Authority convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the Work done, materials ordered, the reasonable cost of removal of equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works.

34.3 Kenya Medical Supplies Authority may employ and pay other persons to carry out and complete the Works and to rectify any defects and may enter upon the Works and use all materials on the Site, plant, equipment and temporary works.

34.4 The Contractor shall, during the execution or after the completion of the Works under this clause remove from the Site as and when required, within such reasonable time as the Project Manager may in writing specify, any temporary buildings, plant, machinery, appliances, goods or materials belonging to or hired by him, and in default Kenya Medical Supplies Authority may (without being responsible for any loss or damage) remove and sell any such property of the Contractor, holding the proceeds less all costs incurred to the credit of the

Contractor.

Until after completion of the Works under this clause Kenya Medical Supplies Authority shall not be bound by any other provision of this Contract to make any payment to the Contractor, but upon such completion as aforesaid and the verification within a reasonable time of the accounts therefore the Project Manager shall certify the amount of expenses properly incurred by Kenya Medical Supplies Authority and, if such amount added to the money paid to the Contractor before such determination exceeds the total amount which would have been payable on due completion in accordance with this Contract the difference shall be a debt payable to the Employer by the Contractor; and if the said amount added to the said money be less than the said total amount, the difference shall be a debt payable by Kenya Medical Supplies Authority to the Contractor.

35 Release from Performance

35.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either Kenya Medical Supplies Authority or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop Work as quickly as possible after receiving this certificate and shall be paid for all Work carried out before receiving it.

36 Corrupt Gifts and Payments of Commission

36.1 The Contractor shall not;

(a) Offer or give or agree to give to any person in the service of Kenya Medical Supplies Authority any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other Contract for Kenya Medical Supplies Authority or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract for Kenya Medical Supplies Authority.

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

Any breach of this Condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement Regulations issued under The Exchequer and Audit Act Cap 412 of the Laws of Kenya.

37 Settlement Of Disputes

37.1 In case any dispute or difference shall arise between Kenya Medical Supplies Authority or the Project Manager on his behalf and the Contractor, either during the progress or after the completion or termination of the Works, such dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed by the Chairman or Vice Chairman of any of the following professional institutions;

(i) Architectural Association of Kenya

(ii) Institute of Quantity Surveyors of Kenya

(iii) Association of Consulting Engineers of Kenya

(iv) Chartered Institute of Arbitrators (Kenya Branch)

(v) Institution of Engineers of Kenya

On the request of the applying party. The institution written to first by the aggrieved party shall take precedence over all other institutions.

37.2 The arbitration may be on the construction of this Contract or on any matter or thing of whatsoever nature arising thereunder or in connection therewith, including any matter or thing left by this Contract to the discretion of the Project Manager, or the withholding by the Project Manager of any certificate to which the Contractor may claim to be entitled to or the measurement and valuation referred to in clause 23.0 of these conditions, or the rights and liabilities of the parties subsequent to the termination of Contract.

37.3 Provided that no arbitration proceedings shall be commenced on any dispute or difference where notice of a dispute or difference has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.

37.4 Notwithstanding the issue of a notice as stated above, the arbitration of such a dispute or difference shall not commence unless an attempt has in the first instance been made by the parties to settle such dispute or difference amicably with or without the assistance of third parties. Proof of such attempt shall be required.

37.5 Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the Works or abandonment of the Works or termination of the Contract by either party:

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

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

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

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

37.6 All other matters shall only be referred to arbitration after the completion or alleged completion of the Works or termination or alleged termination of the Contract, unless Kenya Medical Supplies Authority and the Contractor agree otherwise in writing.

37.7 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.

37.8 The Arbitrator shall, without prejudice to the generality of his powers, have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision requirement or notice had been given.

37.9 The award of such Arbitrator shall be final and binding upon the parties.

SPECIAL CONDITIONS OF CONTRACT

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

Special conditions of contracts with reference to the general conditions of contract.

SECTION V

APPENDIX TO CONDITIONS OF CONTRACT (SUBCONTRACT WORKS)

1.00 **APPENDIX TO CONDITIONS OF CONTRACT**

THE EMPLOYER IS:-

Name: KENYA MEDICAL SUPPLIES AUTHORITY.

Address: P. O. BOX 47715 - 00100, NAIROBI

Name of Authorized Representative: THE CHIEF EXECUTIVE OFFICER, KENYA MEDICAL SUPPLIES AUTHORITY

Telephone: ……

Facsimile: ……

THE PROJECT MANAGER IS:

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

Address: P. O. BOX 30743 – 00100, NAIROBI

Telephone: +254 20272 3101

Facsimile: +254 202724504

Email: info@publicworks.go.ke

The name (and identification number) of the Contract is PROPOSED CONSTRUCTION OF KEMSA MODERN WAREHOUSE AND OFFICE BLOCK AT EMBAKASI, NAIROBI - **Tender Ref. No GF-KEMSA-CONST -5/OIT6/2017-2018**

The works in this contract comprise the construction of :
Modern warehouse - 14,680 M^2
Office block with 1No. basement and 6No. floors – 15,758 M^2
Flammable goods store – 307 M^2
Associated Civil and External Works
Associated Mechanical and Electrical Services Installations.

The Start Date shall be As agreed with the Employers.

The Intended Completion Period is **130 Weeks** for the whole works from the start date.

The Contractor shall submit a revised program for the Works within Seven days of delivery of the Letter of Acceptance.
The Site Possession Date shall be 14 days from the date of acceptance letter

The Site is located in Embakasi, KEMSA Land LR No. 9042/176 Embakasi.

The Defects Liability Period is 180 days AFTER DATE OF PRACTICAL COMPLETION.

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

1. None
2. "
3. "
4. "

The minimum insurance covers shall be;

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

The following events shall also be Compensation Events: AS STATED IN THE CONDITIONS OF CONTRACT
The period between Program updates is 30 days.

The amount to be withheld for late submission of an updated Program is Full Certificate

The proportion of payments retained is TEN PER CENT (10%) OF CERTIFIED AMOUNT

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

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

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

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

The Performance Security shall be for the following minimum amounts equivalent as a percentage of the Contract Price **FIVE PERCENT (5%).**

The Completion Period for the Works is **130 Weeks**

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

The schedule of basic rates used in pricing by the Contractor is as attached *[Contractor to attach]*.
Clause 25.3 (KABCEC clauses) shall not apply. The bidder shall instead quote for prices from material from reputed manufacturers or suppliers for material listed.
Advance Payment **SHALL NOT** be granted. Clause 23.7 is not applicable
Special preference shall be given to the construction of the warehouse, flammable goods store, External Works and Civil works. The office block will commence upon satisfactory progression and / or on completion of the warehouse, flammable goods store, External Works and Civil works on Instruction from the Project Manager in consultation with the client. However, the Contractor will not be entitled to claims for loss of profit and other related costs / expenses in relation to delay of commencement office block

SECTION VI

STANDARD FORMS

NOTES ON THE SAMPLE FORMS

1 *Form of Invitation to Tender* - form to be completed by the Kenya Medical Supplies Authority

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

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

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

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

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

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

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

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

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

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

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

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

14. *Declaration of Undertaking* (Integrity Statement)

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

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

FORM OF INVITATION FOR TENDERS

_____*[date]*

To: TENDERER'S NAME_____

P. O. BOX _____

_____

_____

Dear Sirs:

RE: _____

You have been prequalified to tender for the above project.

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

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

Upon payment of a non-refundable fee of _____

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

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

Yours faithfully,

_____ Authorized Signature

_____ Name and Title

QUALIFICATION INFORMATION

1. **Individual Tenderers or Individual Members of Joint Ventures**

1.1 Constitution or legal status of tenderer (attach copy or Incorporation Certificate);

Place of registration: _____

Principal place of business _____

Power of attorney of signatory of tender _____

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

Year	**Volume**	
	Currency	**Value**

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

Project Name	**Name of Client and Contact Person**	**Type of Work Performed and Year of Completion**	**Value of Contract**

1.4 Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below. Refer also to Clause 1.7(c) of the Instructions to Tenderers

Item of Equipment	**Description, Make and age (years)**	**Condition (new, good, poor) and number available**	**Owned, leased (from whom?), or to be purchased (from whom?)**

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

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

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

_____
_____
_____
_____

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

_____
_____
_____

1.8 Name, address and telephone, telex and facsimile numbers of banks that may provide reference if contacted by Kenya Medical Supplies Authority

_____
_____
_____

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

_____
_____

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

3.0 **Joint Ventures**

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

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

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

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

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

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

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

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

TENDER QUESTIONNAIRE

Please fill in block letters.

1. Full names of tenderer

   _____

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

   _____

3. Telephone number (s) of tenderer

   _____

4. Facsimile number of tenderer

   _____

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

   _____

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

   _____

   _____

   _____

_____

Signature of Tenderer

CONFIDENTIAL BUSINESS QUESTIONNAIRE FORM

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

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

Part 1 – General

1.1 Business Name
……

1.2 Location of Business Premises. ……

1.3 Plot No…… Street/Road ……

Postal Address ……..……..……..

Tel No. ……..…. Fax ……. E mail ……...…….

1.4 Nature of Business ,……..……

1.5 Registration Certificate No.……

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

1.7 Name of your Bankers ……Branch ……..

Part 2 (a) – Sole Proprietor

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

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

- Citizenship Details …….

Part 2 (b) Partnership

2b.1 Given details of Partners as follows:

2b.2

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

Part 2 (c) – Registered Company

2c.1 Private or Public ……

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

Nominal Kshs. ……

Issued Kshs. ……

2c.3 Given details of all Directors as follows

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

Part 3 – Eligibility Status

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

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

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

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

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

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

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

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

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

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

……

……

……

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

Date …….. Signature of Candidate

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

DECLARATION OF UNDERTAKING (INTEGRITY STATEMENT)

Anti – Corruption Policy in the Procurement Process

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

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

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

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

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

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

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

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

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

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

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

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

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

a) Cancellation of the contract;

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

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

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

1. MEMORANDUM (FORMAT)

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

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

Authorized Signature:_____

Name and Title of Signatory: _____

NON - DEBARMENT DECLARATION

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

Name ……Signature……..Date ……

Company Seal / Business Stamp

SITE VISIT DECLARATION FORM

PROPOSED CONSTRUCTION OF KEMSA WAREHOUSE AND OFFICE BLOCK

I/We……of…….. do hereby declare that I/We have visited the site in the company of the below mentioned consultant and fully understand the scope and sequence of works.

COMPANY REPRESENTATIVE

NAME: …….

DESIGNATION: …….

Date ……

OFFICIAL STAMP

KEMSA REPRESENTATIVE

NAME:…….

SIGNATURE:……..

DATE:……..

OFFICIAL STAMP

Signed …….

Date ……

TENDER SECURITY FORM

(Amend accordingly if provided by Insurance Company)

Whereas ……..[name of the tenderer]

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

[name and/or description of the services]

(hereinafter called "the Tenderer")……

KNOW ALL PEOPLE by these presents that WE……

of……having registered office at

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

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

for which payment well and truly to be made to the said Procuring Entity, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this_____ day of 20_____.

THE CONDITIONS of this obligation are:
1. If the tenderer withdraws its Tender during the period of tender validity specified by the tenderer on the Tender Form; or
2. If the tenderer, having been notified of the acceptance of its Tender by the PROCURING ENTITY during the period of tender validity:

(a) fails or refuses to execute the Contract Form, if required; or
(b) fails or refuses to furnish the performance security, in accordance with the instructions to tenderers;

we undertake to pay to the Procuring Entity up to the above amount upon receipt of its first written demand, without the Procuring Entity having to substantiate its demand, provided that in its demand the Procuring Entity will note that the arnount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.
This guarantee will remain in force up to and including thirty (30) days after the period of tender validity, and any demand in respect thereof should reach the Bank not later than the above date.

[signature of the bank]

DETAILS OF SUB-CONTRACTORS

If the Tenderer wishes to sublet any portions of the Works under any heading, he must give below details of the sub-contractors he intends to employ for each portion.

Failure to comply with this requirement may invalidate the tender.

(1) Portion of Works to be sublet: ……..…

(i) Full name of Sub-contractor
and address of head office: ……

……

……

(ii) Sub-contractor's experience
of similar works carried out
in the last 3 years with
Contract value:……..…

……

……

(2) Portion of Works to sublet:
……

(i) Full name of Sub-contractor
and address of head office: ……

……

……

(ii) Sub-contractor's experience
of similar works carried out
in the last 3 years with
contract value: …….

…….……

…….

_____ _____
[Signature of Tenderer] Date

BANK GUARANTEE FOR ADVANCE PAYMENT FORM

To **……..**

Gentlemen and/or Ladies:

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

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

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

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

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

Yours truly,

Signature and seal of the Guarantors _____

[name of bank or financial institution]

_____

[address]

_____

[date]

PERFORMANCE SECURITY FORM

To: ……

WHEREAS……
…….[name of tenderer]

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

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

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

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

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

This guarantee is valid until the _____ day of 20_____

_____

Signature and seal of the Guarantors

_____

[name of bank or financial institution]

_____

[address]

_____ [date]

METHOD STATEMENT

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

STATEMENT OF FOREIGN CURRENCY REQUIREMENTS

(See Clause 23] of the Conditions of Contract)

In the event of our Tender for the execution of_____

_____(*name of Contract*) being accepted, we would require in accordance with Clause 21 of the Conditions of Contract, which is attached hereto, the following percentage:

(Figures)…… (Words)……

of the Contract Sum, (Less Fluctuations) to be paid in foreign currency.

Currency in which foreign exchange element is required:

……

Date: The …… Day of …….. 20…….

Enter 0% (zero percent) if no payment will be made in foreign currency.

Maximum foreign currency requirement shall be _____(percent) of the Contract Sum, less Fluctuations.

_____

(Signature of Tenderer)

LETTER OF NOTIFICATION OF AWARD

To:_____

_____

_____

RE: Tender No._____

Tender Name_____

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

_____

_____

1. Please acknowledge receipt of this Letter of Notification signifying your Acceptance.

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

3. You may contact the officer whose particulars appear below on the subject matter of this Letter of Notification of Award.

…….
The Chief Executive Officer
Kenya Medical Supplies Authority
P. O. Box 47715 – 00100
NAIROBI.

FOR: **…….**

LETTER OF ACCEPTANCE

[letterhead paper of the Employer]

_____*[date]*

TO: _____(Contractor)

P. O. BOX: _____

_____

Dear Sir,

This is to notify you that your Tender dated _____

for the execution of _____

[Name of the Contract and identification number, as given in the Tender documents] for the Contract Price of Kshs._____ *[amount in figures]* [Kenya Shillings _____

_____*(amount in words)*

in accordance with the Instructions to Tenderers is hereby accepted.

You are hereby instructed to proceed with the execution of the said Works in accordance with the Contract documents.

Authorized Signature: ……

Name and Title of Signatory: ……

FORM OF AGREEMENT

THIS AGREEMENT, made the _____ day of _____ 20 _____ between

KENYA MEDICAL SUPPLIES AUTHORITY of [or whose registered

office is situated at] **……..** (hereinafter called "the Procurement Entity") of the one part AND

_____of[or whose registered

office is situated at]_____

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

WHEREAS THE Procurement Entity is desirous that the Contractor executes

_____

(name and identification number of Contract) (hereinafter called "the Works") located

at_____*[Place/location of the Works*]and the Procurement Entity has

accepted the tender submitted by the Contractor for the execution and completion of such Works

and the remedying of any defects therein for the Contract Price of

Kenya Shillings_____*Amount in figures*],

Kenya Shillings_____ [*Amount in words]*.

NOW THIS AGREEMENT WITNESSETH as follows:

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

2. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.
   (i) Letter of Acceptance
   (ii) Form of Tender
   (iii) Conditions of Contract Part I
   (iv) Conditions of Contract Part II and Appendix to Conditions of Contract
   (v) Specifications
   (vi) Drawings

(vii) Priced Bills of Quantities

3. In consideration of the payments to be made by the Procurement Entity to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Procurement Entity to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
4. The Procurement Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

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

The common Seal of _____

Was hereunto affixed in the presence of _____

Signed Sealed, and Delivered by the said _____

Binding Signature of the Procurement Entity

_____

Binding Signature of Contractor _____

In the presence of (i) Name_____

Address_____

Signature_____

(ii) Name _____

Address_____

Signature_____

CONTRACT FORM

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

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

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

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

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

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

   (b) the Schedule of Requirements;

   (c) the Technical Specifications;

   (d) the General Conditions of Contract;

   (e) the Special Conditions of Contract; and

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

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

4. The Procuring entity hereby covenants to pay the tenderer in consideration of the provision of the materials and spares and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

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

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

in the presence of_____

FORM RB 1

REPUBLIC OF KENYA

PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO…….OF……..….20……...

BETWEEN

…….APPLICANT

AND

……RESPONDENT *(Procuring Entity*)

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

REQUEST FOR REVIEW

I/We……,the above named Applicant(s), of address: Physical address…….Fax No……Tel. No……..Email ……, hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds , namely:-

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

1.

2.

etc

SIGNED …….(Applicant)

Dated on…….day of ……/…20…..

FOR OFFICIAL USE ONLY

Lodged with the Secretary Public Procurement Administrative Review Board on …… day of ……....20…..……

SIGNED
Board Secretary

SECTION B

CONDITIONS OF

SUB-CONTRACT AGREEMENT

CONDITIONS OF CONTRACT

SUB-CONTRACT AGREEMENT (KABCEC)

AGREEMENT AND CONDITIONS OF SUB-CONTRACT FOR BUILDING WORKS

Published by:
The Kenya Association of Building and Civil Engineering Contractors
with the sanction of:
The Joint Building Council, Kenya
and
The Architectural Association of Kenya

June 2002 Edition

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ORIGINAL
embossed stamp

COUNTERPART
embossed stamp

1.0 AGREEMENT

1.1 This agreement is made on ……

between …….

of (or whose registered office is situated at) ……

……

(hereinafter called "the Contractor") of the one part ……

and …….

of (or whole registered office is situated at) ……

……...
(hereinafter called "the Sub-Contractor") of the other part:

1.2 SUPPLEMENTAL to an agreement(hereinafter referred to as the "the main contract")

made on …….

Between ……

……
(hereinafter called "the Employer") of the one part and the Contractor of the other part based on the Agreement and Conditions of Contract for Building Works, published by the Joint Building Council, Kenya ……..
…….. edition.

1.3 WHEREAS the contractor is desirous of sub-letting to the Sub-Contractor

……..

…….

……

hereinafter called "the sub-contractor works" at……...

on Land Reference No……...being part of the main contract works.

1.4 And whereas the Sub-contractor has supplied the Contractor with a priced copy of the bills of quantities (hereinafter referred to as "the sub-contractor bills"), where applicable, which together with the drawings numbered……

……...
(hereinafter referred to as "the sub-contract drawings), the specifications and the conditions of sub-contract have been signed by or on behalf of the parties thereto.

And whereas the Sub-Contractor has had reasonable opportunity of inspecting the main contract or a copy thereof except the detailed prices of the Contractor included in the bills of quantities or schedule of rates.

1.5 And whereas the Architect, with the approval of the Employer, has nominated the Sub-Contractor to carry out the works described at clause 1.3 herein:

NOW IT IS HEREBY AGREED AS FOLLOWS:

1.6 For the consideration herein stated, the Sub-Contractor shall upon and subject to the conditions annexed hereto carry out and complete the sub-contract works shown upon the sub-contract drawings and described by or referred to in the sub-contract bills, specifications and in the said conditions.

1.7 The Contractor shall pay the Sub-Contractor the sum of the Kshs (in words)……

……

……Kshs……..……)
(hereinafter referred to as "the sub-contractor price") or such sum as shall become payable hereinafter at the times and in manner specified in the said conditions.

1.8 The term 'Architect', 'Quantity Surveyor' and 'Engineer', where applicable, shall refer to the persons appointed by the Employer to administer the sub-contract in accordance with the main contract agreement. Where applicable reference to the Project Manager shall be deemed to include reference to the Engineer.

1.9 In the event of the need to appoint a replacement Architect, Quantity Surveyor, Engineer or other specialist (whether named in this agreement or not) the Employer shall make such appointment as soon as practicable after the need for such appointment arises and shall communicate the appointment to the Sub-Contract through the Contractor.

1.10 Where the sub-contract does not incorporate bills of quantities, the term "sub-contract bills" and "bills of quantities" wherever appearing shall be deemed deleted and replaced with the term "schedule of rates" as applicable.

1.11 The terms defined in the main contract shall have the same meaning in this sub-contract as that assigned to them therein.

1.12 AS WITNESS the hands of the said parties;

Signed by the said

……..(Contractor)

In the presence of

Name ……..

Address ……..

Signed by the said

…….(Sub-Contractor)

In the presence of

Name ……

Address ……

CONDITIONS OF SUB-CONTRACT

2.0 GENERAL OBLIGATIONS OF THE CONTRACTOR

The Contractor shall:

2.1 Timeously obtain from the Project Manager on behalf of the Sub-Contractor all drawings, necessary details, instructions and other information required by the Sub-Contractor for the proper carrying out of the sub-contract works.

2.2 Provide all such facilities and attend upon the Sub-Contractor as required and as provided in the specifications, bills of quantities and these conditions to the extent compatible with the provisions of the main contract

2.3 Observe, perform and comply with all the provisions of the main contract and of this sub-contract on the part of the Contractor to be observed, performed and complied with to ensure satisfactory completion of the sub-contract works.

3.0 GENERAL OBLIGATIONS OF THE SUB-CONTRACTOR

3.1 The Sub-Contractor shall be deemed to have notice of all the provisions of the main contract except the detailed prices of the Contractor included in the bills of quantities or in the schedule of rates.

3.2 The Sub-Contractor shall carry out and complete the sub-contract works in accordance with this sub-contract and in all respects to the reasonable satisfaction of the Contractor and of the Project Manager and in conformity with all reasonable directions and requirements of the Contractor regulating the due carrying out of the contract works.

3.3 The Sub-Contractor shall observe, perform and comply with all the provisions of the main contract on the part of the Sub-Contractor to be observed, performed and complied with so far as they relate and apply to the sub-contract works or any portion thereof and are not inconsistent with the expressions of this sub-contract as if all the same were set out herein.

3.4 Without prejudice to the generality of the foregoing requirements, the Sub-Contractor shall especially observe perform and comply with the provisions in the main contract as they apply to the sub-contract works

4.0 SUB-CONTRACT DOCUMENTS

4.1 The sub-contract documents for use in the carrying out of the sub-contract works shall be:-

4.1.1 The agreement and these conditions

4.1.2 The sub-contract drawings as listed in the agreement

4.1.3 The sub-contract bill of quantities or schedule of rates as applicable

4.1.4 The specifications as separately supplied or as contained in the sub-contract bills.

4.2 Upon the execution of the sub-contract, the Contractor shall register the agreement with the relevant statutory authority and pay all fees, charges, taxes, duties and all costs arising therefrom.

4.3 The manner of supplying contract documents, their custody, display on site and their interpretation in the event of discrepancies shall be as provided in the main contract in respect of the main contract documents with the necessary amendments made to refer to the sub-contract.

5.0 GENERAL LIABILITY OF THE SUB-CONTRACTOR

5.1 The Sub-Contractor shall be liable for and shall indemnify the Contractor against and from:

5.1.1 Any breach, non-observance or non-performance by the Sub-Contractor, his servants or agents of any of the said provisions of the main contract and of this sub-contract.

5.1.2 Any act or omission of the Sub-Contractor, his servants or agents which involve the Contractor in any liability to the Employer under the main contract

5.1.3 Any claim, damage, loss or expense due to or resulting from any negligence or breach of duty on the part of the Sub-Contractor, his servants or agents.

5.1.4 Any loss or damage resulting from any claim under any statute or common law by an employee of the Sub-Contractor in respect of personal injury or death arising out of or in the course of his employment.

5.2 Provided that nothing contained in this sub-contract shall impose any liability on the Sub-Contractor in respect of any negligence or breach of duty on the part of the Employer, the Contractor, other sub-contractors or their respective servants or agents nor create any privity of contract between the Sub-Contractor and the Employer or any other sub-contractor.

6.0 INSURANCE AGAINST INJURY TO PERSONS AND PROPERTY

6.1 Without prejudice to his liability to indemnify the Contractor under clause 5.0 above, the Sub-Contractor shall maintain:-

6.1.1 Such insurances as are necessary to cover the liability of the Sub-Contractor in respect of injury or damage to property including damage to the works arising out of or in the course of or by reason of the carrying out of the sub-contract works except for liability against the contingencies specified at clause 6.3 herein.

6.1.2 The insurances required under sub clause 6.1.1 above shall be placed with insurers approved by the Contractor and the Architect.

6.2 Notwithstanding the provisions of clause 23.0 of these conditions, the Contractor shall not be obliged to make payments to the Sub-Contractor before the said policies have been provided.

6.3 Where clause 30 of the main contract applies, the sub-contract works, including materials and goods of the sub-Contractor delivered to the works, shall as regards loss or damage by the contingencies stated at clause 30 therein, namely, fire, earthquake, fire following earthquake, lightning, explosion, storm, tempest, flood, bursting or overflowing of water tanks, apparatus or pipes, aircraft and other aerial devices or articles dropped therefrom, riot and civil commotion, be at the sole risk of the contractor. The Contractor shall cover his liability for the works by procuring insurances as required in the said clause.

6.4 Where clause 30 or the main contract applies, the sub-contract works, including materials and goods of the Sub-Contractor delivered to the works shall, as regards loss or damage by the contingencies stated therein be at the sole risk of the Employer. The Employer shall cover his liability for the works by procuring insurances as required in the said clause.

6.5 The Sub-Contractor shall observe and comply with the conditions contained in the policy or policies of insurance of the Contractor or of the Employer, as the case may be, as

regards loss or damage which may be caused by the stated contingencies. For this purpose, the Contractor or the Employer as the case may be, shall avail the said policies to the Sub-Contractor for his perusal.

6.6 If any loss or damage affecting the sub-contract works or any part thereof or any unfixed goods or materials is occasioned by any one or more of the said contingencies, then,

6.6.1 The occurrence of such loss or damage shall be disregarded in computing any amounts payable to the Sub-Contractor under the sub-contract, and

6.6.2 The Sub-Contractor shall, with due diligence, restore the work damaged, replace or repair any unfixed materials or goods which have been destroyed or damaged, remove and dispose of any debris and proceed with the carrying out and completion of the sub-contract works.

6.6.3 The restoration of work damaged the replacement and repair of unfixed materials and goods and the removal of debris shall be deemed to be a variation required by the Architect. Such work shall be paid for in accordance with clause 30.0 of the main contract.

7.0 PERFORMANCE BOND

Before commencing the works, the Sub-Contractor shall provide one surety who must be an established bank or insurance company to the approval of the Contractor and who will be bound to the Contractor in the sum equivalent to five per cent (5%) of the sub-contract price for the due performance of the sub-contract until the certified date of practical completion. Notwithstanding the provisions of clause 23.0 of these conditions, no payments shall made to the Sub-Contractor before the said bond is provided.

8.0 POSSESSION OF SITE AND COMMENCEMENT OF WORKS

8.1 Within the period stated in the appendix to these conditions, the Contractor shall give possession of the site works to the Sub-Contractor and such access as may be necessary to enable the Sub-Contractor to commence and proceed with the sub-contract works in accordance with the sub-contract.

8.2 On or before the date for commencement of works stated in the appendix to these conditions, the Sub-Contractor shall commence the carrying out of the sub-contract works and shall proceed regularly and diligently with the same in accordance with the sub-contract program, the main contract program and or with the progress of the main contract works and complete on or before the date stated in the appendix to these conditions as the date for practical completion or within any extended time granted under clause 25.0 of these conditions.

9.0 PROJECT MANAGERS INSTRUCTIONS

9.1 The Sub-Contractor shall forthwith comply with all the instructions issued to him by the Project manager, either directly or through the Contractor, in regard to any matter in respect of which the Project Manager is expressly empowered by the main contract conditions to issue instructions.

9.2 The manner of complying with or querying the validity of Project manager's instruction shall be as provided in clause 16.0 of the main contract. The Project manager shall not be obliged to carry our instructions not issued in the manner provided therein.

10.0 VARIATIONS

10.1 The term "variation" shall have the meaning assigned to it at clause 22.0 of the main contract.

10.2 The valuation of variations shall be made by the Quantity Surveyor in accordance with sub-clause 22.0 of the main contract.

10.3 Effect shall be given to the measurement and valuation of variations in interim certificates and by the adjustment of the sub-contract price.

11.0 LIABILITY FOR OWN EQUIPMENT

The construction equipment and other property belonging to or provided by the Sub-Contractor and brought onto the site for carrying out the works shall be at the sole risk of the Sub-Contractor. Any loss or damage to the same or caused by the same shall, except for any loss or damage due to any negligence, omission or default of the Contractor, be at the sole risk of the Sub-Contractor who shall indemnify the Contractor against loss, damage or claims in respect thereof. Insurance against any such loss, damage or claims shall be the sole responsibility of the Sub-Contractor.

12.0 PROVISION OF FACILITIES BY THE CONTRACTOR

12.1 Where provided in the main contract, the Contractor shall supply at his own cost all necessary water, lighting, electric power, telephones and security required for the sub-contract works. Where not so provided, the Sub-Contractor shall provide the said services at his own cost.

12.2 Except as otherwise provided in the main contract, the Sub-Contractor shall construct at his own expense all necessary workshops, stores, offices, workers' accommodation and other temporary buildings required for the carrying out of the works at such places on site as the Contractor shall identify. The Contractor undertakes to give the sub-Contractor the required space and all reasonable facilities for such construction. Upon practical completion of the works, the Sub-contractor shall remove the said facilities and reinstate disturbed surface to the satisfaction of the Contractor.

12.3 The Contractor shall provide, without charge, general attendance to the Sub-Contractor to facilitate the carrying out of the works which attendance shall include facilities for access to and movement within the site and sections or parts of the building or buildings where the sub-contract works are being carried out, the use of temporary roads, paths and access ways, sanitary and welfare facilities.

12.4 The Contractor shall permit the Sub-Contractor to use, without charge, at all reasonable times, any scaffolding and hoisting equipment belonging to or provided by the Contractor while it remains so erected upon the site. The use by the Sub-Contractor of any other equipment, facilities or services provided by the Contractor for the works shall be subject to private arrangements between the parties hereto and shall not be regulated by these conditions.

12.5 Provided that such use of the scaffolding and hoisting equipment shall be on the express condition that no warranty or other liability on the part of the Contractor shall be created or

implied in regard to fitness, condition or suitability for the intended purpose except that the Sub-Contractor shall be liable for any damage caused thereto or thereby.

12.6 Where required, the Contractor shall provide the facilities, equipment and the like and carry out any necessary builder' works within a reasonable time of the request by the Sub-Contractor to enable timely performance of the sub-contract.

13.0 LIABILITY FOR OWN WORK

13.1 The Contractor and the Sub-Contractor shall be liable for the due carrying out of their respective works in accordance with their respective contracts without causing damage or injury to the works of the other sub-contractors, and in particular:

13.2 Should the carrying out of the sub-contract works cause injury or damage to the main contract works, or to the work of the other sub-contractors, the Sub-contractor shall rectify the damage so caused at his own cost.

13.3 Should the carrying out of the main contract works cause damage or injury to the sub-contract works, the Contractor shall rectify the damage at his own cost.

13.4 If in the course of carrying out the sub-contract works, the Sub-Contractor is required to carry out work not included in his sub-contract by reason of any materials of workmanship not being in accordance with the main contract or with other sub-contracts, the Contractor shall reimburse the Sub-Contractor the expenses incurred therein.

14.0 CO-OPERATION IN USE OF FACILITIES

14.1 The Contractor and the Sub-Contractor undertake to co-operate with each other and co-ordinate work arrangements and procedures required in carrying preventing interference, disruption or disturbance to the progress of the works or to the activities of other sub-contractors.

14.2 The Contractor and the Sub-Contractor undertake not to wrongfully use or interfere with equipment, scaffolding, appliances, ways, temporary works, temporary buildings and other property belonging to or provided by the other part or by other sub-contractors.

14.3 Provided that nothing contained in this clause shall prejudice or limit the rights of the Contractor or of the sub-Contractor in carrying out their respective statutory and or contractual duties under this sub-contract or under the main contract.

15.0 ASSIGNMENT AND SUBLETTING

15.1 Neither the Contractor nor the Sub-Contractor shall, without the written consent of the other and the Employer, assign this sub-contract.

15.2 The Sub-Contractor shall not sub-let the whole of the works without the written consent of the Contractor and the Project manager.

15.3 Provided that any assignment and any sub-contracts as well as this sub-contract shall terminate immediately upon (for whatever reason) of the main contract.

16.0 WORK PRIOR TO APPOINTMENT OF CONTRACTOR

16.1 Where the Sub-Contractor is appointed before the Contractor is appointed, any work done by the Sub-Contractor prior to the said appointment shall be treated as a separate contract between the Employer and the Sub-Contractor and shall be valued by the Quantity Surveyor and paid for directly by the Employer without the involvement of the Contractor.

16.2 Where the Sub-Contractor is appointed before the Contractor is appointed, the Sub-Contractor shall be permitted, when the identity of the Contractor is known and within 30 days thereof, to raise objections (on reasonable grounds) against entering into a sub-contract with the Contractor

16.3 Where work which is outside the sub-contract is ordered directly by Employer or the Architect, that work shall be treated as a separate contract between the Sub-Contractor and the Employer and shall be valued and paid for directly to the Sub-Contractor in accordance with sub-clause 16.1 herein without the involvement of the Contractor. The cost of equipment, facilities and the like provided by the Contractor to the Sub-contractor and any builder's work carried out by the Contractor with regard to such work shall be paid directly by the Sub-Contractor to the Contractor.

17.0 SUB-CONTRACTOR DESIGN

Where the sub-contract includes a design component by the Sub-Contractor, the design shall be to the approval of the Project Manager and the Employer. Notwithstanding and approvals, the Sub-Contractor shall be liable directly to the Employer for any consequences of failure of the design to comply with the requirements of the Employer or to be fit or suitable for the purposes for which the sub-contract works or the relevant part thereof were intended.

18.0 SPECIFICATION OF GOODS, MATERIALS AND WORKMANSHIP

18.1 All materials, goods and workmanship shall so far as procurable, be of the respective kinds and standards described in the sub-contract bills, specifications and drawings.

18.2 The provisions in the main contract regulating the procurement, specification and quality assurance of materials, processes and workmanship and the requirements of clause dealing with the provision of samples and the carrying out of specified tests shall apply to the sub-contract in the same manner as they apply to the main contract.

19.0 COMPLIANCE WITH STATUTORY AND OTHER REGULATIONS

The Sub-Contract shall comply with all statutory and other regulations of competent authorities regulating the carrying out of the works in accordance with the provisions in the main contract, as applicable.

20.0 ROYALTIES AND PATENT RIGHTS

20.1 All royalties or other sums payable in respect of the supply and use of any patented articles, processes or inventions in carrying out the works as described by or referred to in the sub-contract bills, specifications or drawings shall be deemed to have been included in the sub-contract price.

20.2 The provision of clause in of the main contract dealing with the same shall apply to the sub-contract in the same manner as they apply to the main contract.

21.0 ANTIQUITIES AND OTHER OBJECTS OF VALUE

All fossils, antiquities and other objects of interest or value which may be found on the site or in excavating the same during the progress of the sub-contract shall be dealt with in accordance with the provisions of the main contract.

22.0 SUSPENSION OF WORKS

22.1 An instruction by the Project Manager to postpone or suspend the works under clause 28.0 of the main contract shall have the same effect on the sub-contract works as it has on the main contract works.

22.2 If the suspension arises due to default by the contractor and the sub-contract works are adversely effected by the suspension, the sub-contractor shall be entitled to reimbursement by the contractor of all expenses arising therefrom.

22.3 If the suspension arises due to default by the sub-contractor, the sub-contractor shall be liable to the contractor for all expenses arising therefrom.

22.4 A notice by the contractor to suspend the works under clause 29.0 of the main contract shall have the same effect on the sub-contract works as it has on the main contract works.

22.5 Should the sub-contract works be adversely affected by suspension under clause in the main contract, the sub-contractor shall be entitled to the remedies provided for at clauses 25.0 and 26.0 of this sub-contract.

23.0 PAYMENTS

23.1 Procedures for originating and processing applications for payments and payment certificates as regards the sub-contract works shall be the same as those prescribed for the Contractor in the main contract at clause 34.0. references therein to the contractor shall be deemed to include references to the Sub-contractor.

23.2 Before submitting an application for payment to the Quantity Surveyor in accordance with clause 34.1 of the main contract, the Contractor shall give the Sub-Contractor a notice of not less than 7 days to submit the details of the amounts, which the Sub-Contractor considers himself entitled to for the relevant period. Such details, when received, shall be annexed to the said Contractor's application.

23.3 Where it is necessary to measure the sub-contract works for purpose of interim valuation or for the preparation of the final account, the Quantity Surveyor shall give the Sub-Contractor a reasonable opportunity to be present at the time of the measurements and to take notes and measurements as he may require.

23.4 Neither the Quantity Surveyor nor the Project Manager shall be bound to issue a valuation or a payment certificate in respect of the sub-contract works, as the case may be, whose value is less than the amount stated in the appendix to these conditions as the minimum amount of a payment certificate before the issue of the certificate of practical completion of the main contract or of the sub-contract, as applicable.

23.5 Provided that where the minimum amount of a certificate inserted in the appendix to these conditions has been achieved but the corresponding minimum inserted in the appendix to the main contract in respect of the Contractor's work has not been achieved, or the Contractor has not applied for payment within the stated period, the Project Manager may

with the consent of the Contractor, issue a payment certificate directly to the Sub-Contractor for payment by the Employer.

23.6 Within 7 days of receipt by the Contractor of payment by the Employer, the Contractor shall notify and pay to the Sub-Contractor the total value certified therein in respect of the sub-contract works less the portion of the retention money attributable to the sub-contract works and less amounts previously paid to the Sub-Contractor.

23.7 Where certificates are not paid by the Employer within the prescribed period, the Sub-Contractor shall be entitled to be paid by the Contractor, upon receipt of payment from the Employer, the interest certified for the delay in accordance with sub-clause 34.6 of the main contract in respect of the portion of the sub-contract works included in the certificate.

23.8 a) Payment will be made through certificates direct to the subcontractor. All the subcontractors valuations claim must done through the main contractor and subsequently forwarded to the consultants . All payments will be less retention as specified in the Main Contract. No payment will become due until materials are delivered to site.

b) In case, the Contractor has received payment from the Employer but has not released the appropriate amount to the Sub-Contractor within the stated period, the Contractor shall pay to the Sub-Contractor in addition to the amount not paid, simple interest on the unpaid amount for the period it remains unpaid at the commercial bank lending rate in force during the period of default.

23.9 If, upon application by the Sub-Contractor and Project Manager agree, or if the Contractor fails to make payment to the Sub-Contractor in accordance with sub-clause 23.6 herein and continues such default for 14 days thereafter, the Project Manager may issue a payment certificate directly to the Sub-Contractor for payment by the Employer, where applicable, and deduct the amount from subsequent payment to the Contractor.

23.10 Upon the issue of the certificate of practical completion and the release of one half of the total amount of the retention of money to the Contractor, the Contractor shall pay the portion attributable to the sub-contract to the Sub-Contractor within 7 days of receipt of the payment.

23.11 Upon the issue of the certificate of rectification of defects and receipt of the balance of the retention money by the Contractor, the Contractor shall pay the balance of the portion of the retention money attributable to the sub-contract to the Sub-Contractor within 7 days of receipt of the payment.

23.12 The sub-contract final account shall be agreed between the Sub-Contractor, the Contractor, the Quantity Surveyor and the Project Manager and shall be annexed to the Contractor's final accounts which shall be agreed as provided for in the main contract. For purpose of finalizing the accounts, the Quantity Surveyor may request the Sub-Contractor to submit further documents as he may deem necessary.

23.13 The final certificate issued under sub-clause 34.21 of the main contract shall be final and binding on the Sub-Contractor in the same manner it is binding on the Contractor.

23.14 If the Project Manager desires to secure final payment to the Sub-Contractor before final payment is due to the Contractor, the provisions of sub-clause 32.1 of the main contract shall apply.

23.15 The Contractor shall be entitled to deduct from or set off against any money due from him to the Sub-Contractor in interim certificates any sum or sums which the Sub-Contractor is liable to pay to the Contractor arising under or in connection with the sub-contract.

24.0 PRACTICAL COMPLETION AND DEFECTS LIABILITY

24.1 The Sub-Contractor shall proceed with the works regularly and diligently and complete the same within the period stated in the appendix to this sub-contract or within such extended period as may be granted under clause 25.0 of this sub-contract.

24.2 Where the sub-contract works are to be completed in sections or where the sub-contract works are to be completed in advance of the main contract works, the provisions of clauses in the main contract shall apply, as appropriate, to the sub-contractor in the same manner as they apply to the main contract.

24.3 The procedures for certifying practical completion and for dealing with defects in the sub-contract works as well as the main contract works are as prescribed in the main contract. Upon the issue of the certificate of practical completion of the whole of the works or of the sub-contract works, as applicable, the Sub-contractor shall be entitled to release of one half of the retention money attributable to the sub-contract works within 7 days after the Contractor has received payment.

24.4 The balance of the retention money shall be released to the Sub-Contractor after the defects appearing in the works have been rectified in accordance with the main contract condition of contract and after the Contractor has received the said payment as provided for in the main contract.

25.0 EXTENSION OF TIME

25.1 Upon it becoming reasonably apparent that the progress of the sub-contract works is or will be delayed, the Sub-Contractor shall forthwith give written notice of the cause of the delay to the Contractor and to the Project Manager with supporting details showing the extent of delay caused or likely to be caused. Thereafter, the Project Manager shall evaluate the information supplied by the Sub-Contractor and if in his opinion, the completion of the works is likely to be or has been delayed beyond the date for practical

completion stated in the appendix to these conditions or beyond any extended time previously fixed under this clause, by any of the reasons entitling the Contractor to extension of time under sub-clause 36.1 of the main contract, then the Project Manager shall, so soon as he is able estimate the length of the delay beyond the date or time aforesaid, recommend to the Contractor a fair and reasonable extension of time to be granted for the completion of the sub-contract works.

25.2 Thereupon, the Contractor shall grant in writing to the Sub-Contractor the recommended time. Provided that the Contractor shall not grant any extension of time to the Sub-Contractor without the written recommendation of the Project Manager. And provided that the Sub-Contractor shall constantly use his best endeavors to prevent delay and shall do all that may be reasonably required to proceed with the works.

25.3 The procedures for dealing with requests for extension of time and the observance of time limits prescribed in the main contract shall apply to the sub-contract in the same manner as they apply to the main contract.

26.0 LOSS AND EXPENSE CAUSED BY DISTURBANCE OF REGULAR PROGRESS

26.1 If upon written application being made by the Sub-Contractor to the Contractor and to the Project Manager, the project manager is of the opinion that the Sub-Contractor has been involved in direct loss and or expense, for which he would not be reimbursed by a payment made under any other provision in this sub-contract, by reasons of the regular progress of the sub-contract works or any part thereof having been materially affected by any of the

reasons which would entitle the Contractor to reimbursement under the main contract, the Quantity Surveyor shall assess the amount of such loss and or expense.

26.2 Any amount so assessed shall be added to the sub-contract price and if an interim certificate is issued after the date of assessment, any such amount shall be added to the amount, which would otherwise be stated as due in such certificate as regards the Sub-Contractor's entitlement.

26.3 The procedures for dealing with loss and or expense claims prescribed in the main contract shall apply to the sub-contract in the same manner as they apply to the main contract, as appropriate.

27.0 DAMAGES FOR DELAY IN COMPLETION

27.1 If the Sub-Contractor fails to complete the sub-contract works by the date for practical completion stated in the appendix to these conditions or within any extended time fixed under clause 25.0 herein, and the Engineer certifies in writing that in his opinion the same ought reasonably so to have been completed, then the Sub-Contractor shall pay or allow to the Contractor a sum calculated at the rate stated in the said appendix as liquidated damages for the period during which the works shall so remain or have remained incomplete.

27.2 The Contractor may deduct such sum from any money due or to become due to the Sub-Contractor under the sub-contract or recover the same from the Sub-Contractor as a debt. Provided that the Contractor shall not be entitled to recover any liquidated damages from the Sub-Contractor without first obtaining the Architect's certificate of delay prescribed herein.

28.0 FLUCTATIONS

28.1 Unless otherwise stated in the sub-contract bills or specifications, the sub-contract price shall be deemed to have been calculated to include all duties and taxes imposed by statutory and other competent authorities in the country where the works are being carried out, and

28.2 The sub-contract price shall be deemed to be based on currency exchange rates current at the date of tender as regards materials or goods to be specifically imported for permanent incorporation in the works.

28.3 Should duties, taxes and exchange rates vary during the period of the contract, compensation thereof shall be calculated in accordance with sub-clause 24.5 of the main contract.

28.4 Compensation for change in prices of goods and materials incorporated in the works and in the rates of wages provided for in the main contract shall not apply to the sub-contract unless specifically provided for in the bill of quantities or specifications.

29.0 TERMINATION OF MAIN CONTRACT

29.1 If, for any reason, the contractor's employment is terminated either under clause 33.0 of the main contract, this sub-contract shall thereupon also terminate.

29.2 Upon termination, the sub-contractor shall ceases all work and vacate the site. He shall not remove any equipment or any materials brought onto the site for the carrying out of the works without the written approval of the contractor and the project manager

29.3 Where the termination of the main contract occurs without the default of the sub-contractor, the sub-contractor shall be paid by the contractor for work done in the like manner as the Contractor is paid at clause 33.0 of the main contract.

29.4 Where the termination of main contract arises from the default by the sub-contractor, the adjustment of the sub-contract accounts shall be performed in the like manner as is provided at sub-clause 33.0 of the main contract regarding the main contract accounts.

30.0 **TRMINATION OF SUB-CONTRACT.**

30.1 Without prejudice to any other rights and remedies which the contractor may possess, if the sub-contractor shall make default in any one or more of the respects which would entitle the employer to terminate the main contract under clause 38.0 therein, the contractor shall give the sub-contractor a notice, with a copy to the Project Manager and to the employer by registered post of recorded delivery specifying the default. Should the sub-contractor continue the default for 14 days after receipt of such notice or at any time thereafter repeat such default and should the Project Manager certify that the sub-contractor is in default, the contractor may terminate the Sub-contract forthwith after the expiry of the notice provided that the notice is not given unreasonably or vexatiously. The termination letter shall be copied to the Project Manager and to the Employer.

30.2 Where the sub-contract is terminated due to the default of the sub-contractor as in sub-clause 30.1 herein, the adjustment of sub-contract accounts shall be performed in the like manner as is provided at sub-clause 33.0 of the main contract regarding the main contract accounts.

30.3 Without prejudice to any other rights and remedies which the Sub-Contractor may possess, if the Contractor shall make default in one or more of the respects which, if committed by the Employer, would entitle the contractor to terminate the main contract under clause 39.0 therein, the Sub-Contractor shall give the Contractor a notice, with a copy to the Project Manager and to the Employer, by registered post or recorded delivery specifying the default. Should the contractor continue the default for 14 days after receipt of such notice or at any time thereafter repeat such default, and should the Project Manager certify that the contractor is in default, the Sub-Contractor may terminate the sub-contract forthwith after expiry of the notice, provided that the notice is not given unreasonably or vexatiously. The termination letter shall be copied to the Project Manager and to the Employer.

30.4 If the Sub-Contract is terminated due to the default of the Contractor as in sub- clause 30.3 herein, the Contractor shall pay the sub-contractor for work done in the like manner as the Contractor would be paid at sub-clause 33 of the main contract where the termination is done by the Contractor.

30.5 Where the sub-contract is terminated due to the default of the Contractor, all expenses arising from the termination shall be done wholly by the Contractor and the termination shall not create any liability on the Employer.

30.6 Where the sub-contract is terminated due to the default of the Sub-Contractor, the sub-contractor shall be liable to the contractor for all expenses arising therefrom.

31.0 SETTLEMENT OF DISPUTES

31.1 In case any dispute or difference shall arise between the Contractor and Sub-Contractor, either during the progress or after the completion or abandonment of the sub-contract works, such dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within 30 days of the notice.

31.2 The dispute shall be referred to the arbitration and final decision of a person to be agreed by the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointment by the Chairman or Vice Chairman of the Architectural Association of Kenya or the Chairman or Vice Chairman of The Chartered Institute of Arbitrators, Kenya Branch, at the request of the applying party.

31.3 The arbitration may be on the construction of this sub-contract or on any matter or thing of whatsoever nature arising thereunder or in connection therewith including the rights and liabilities of the parties during the currency of the sub-contract and subsequent to the termination of the sub-contract.

31.4 Where the sub-contractor is aggrieved by the manner in which the Project Manager has exercised or failed to exercise his powers stipulated in the main contract, or in the sub-contact or by any action or inaction of the Employer, and in particular, if he is aggrieved by:

31.4.1 The failure or refusal of the Project Manager to recommend to the contractor an extension of sub-contract time, or

31.4.2 The extend of the recommended time,
or
31.4.3. The amount certified to the sub-contractor either in an interim in a final Certificate,
or
31.4.4 The issue of an instruction which the sub-contractor contends is not authorized by the main contract or the sub-contract,
or
31.4.5. Any other matter left to the discretion of the Project Manager in the main contract or in the sub-contract, then.

31.5 Subject to the Sub-Contractor giving the Contractor such indemnity and security as the Contractor may reasonably require, the Contractor shall allow the Sub-Contractor to use the contractor's name and, if necessary, shall join the Sub-Contractor in arbitration proceeding against the employer to decide the matters in dispute or in difference.

31.6 Provided that no arbitration proceedings shall be commenced on any dispute or difference where notice of a dispute or difference where notice of a dispute or difference has not been given by the applying party within 90 days of the occurrence or discovery of the matter or issue giving rise to the dispute or difference.

31.7 Notwithstanding the issue of a notice as stated above, the arbitration of such a dispute or difference shall not commence unless an attempt has in the first instance been made by the parties to settle such dispute or difference amicably with or without the assistance of third parties.

31.8 In any event, no arbitration shall commence earlier than 90 days after the service of the notice of a dispute or difference, except as provided for at sub-clause 31.9 herein.

31.9 Notwithstanding anything stated herein, the following matters may be referred to arbitration before the practical completion of the works or abandonment of the works or termination of the sub-contract without having to comply with sub clause 31.8 herein.

31.9.1 Whether or not the issue of an instruction by the Project Manager is authorized by the main contract or these conditions, and

31.9.2 Whether or not a payment certificate has been improperly withheld or is not in accordance with the main contract or these conditions or though issued, it has not been honoured.

31.10 All other matters in dispute shall only be referred to arbitration after the practical completion or alleged practical completion of the works or abandonment of the works or termination or alleged termination of the sub-contract, unless the project manager the contractor and the sub-contractor agree otherwise in writing.

31.11 The Arbitrator shall, without prejudice to the generality of his powers, have power to direct such measurements, computations, tests, or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject or included in any payment certificate.

31.12 The Arbitrator shall, without prejudice to the generality of his powers, have power to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion decision, requirement or notice had been given.

31.13 Provided that any decision of the Project Manager which is final and binding on the contractor under the main contract shall be final and binding between the contractor and the sub-contractor.

31.14 The award of such Arbitrator shall be final and binding upon the parties.

SUB CONTRACTOR'S PERFORMANCE BOND

BY THIS AGREEMENT we .....(SURETY)

of .....

are bound to .....(CONTRACTOR)

in the sum of Kenya shillings .....

.....(Kshs. .....)

to be paid by us to the said .....(CONTRACTOR)

WHEREAS by an agreement in writing dated .....

.....(SUB-CONTRACTOR)

entered into a sub-contract with .....(CONTRACTOR)

to carry out and complete the works therein stated in the manner and by the time therein specified all in accordance with the provisions of the said sub-contract, namely:
(description of works)
.....

NOW the condition of the above written bond is such that if the said sub-contractor, his executors, administrator, successors or assigns shall duly perform his obligations under the sub-contract, of if on default by the sub-contractor the surety shall satisfy and discharge the damages sustained by the contractor thereby up to the amount of the above written bond, then this obligation shall be void, otherwise it shall remain in full force and effect. Upon default, and without prejudice to his other rights under the sub-contract, the contractor shall be entitled to demand forfeiture of the bond and we undertake to honour the demand in the amount stated above.

PROVIDED always and it is hereby agreed and declared that no alteration in the terms of the said sub-contract or in the extend or nature of the works to be carried out and no extension of time by the contractor under the sub-contract shall in any way release the surety from any liability under the above written bond.

IN WITNESS whereof we have set out hand this..... day of .....

....

Surety Witness

Authrorised by Power of Attorney No.....

APPENDIX	**Clause**
Name of sub-contractor's insurers	6.0.....
Name of sub-contractor's surety	7.0.....
Amount of surety	7.0.....
Period of possession of site	8.1.....
Date of commencement of works	8.2.....
Date for practical completion	8.2.....
Interval for application of payment certificates	23.1.....
Minimum amount of payment certificate	23.4.....
Percentage of certified value retained	23.6.....
Limit of retention fund, if any	23.6.....
Name of the sub-contractor's bank for Purposes of interest calculation.	23.7, 23.8.....
Defects liability period	23.11.....
Period of final measurement and valuation	23.12.....
Damages of delay in completion	27.1 at the rate of Kshs. 100,000 /wk ..

Signed by the said:

....

CONTRACTOR **SUB-CONTRACTOR**

APPENDIX TO AGREEMENT AND CONDITIONS OF SUB-CONTRACT FOR BUILDING WORKS

Modify Clause 28.4

This is a fixed price contract.

SECTION C

SUB-CONTRACT PRELIMINARIES

AND

GENERAL CONDITIONS

CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

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SECTION C

SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1.01 Examination of Tender Documents

The tenderer is required to check the number of pages of this document and should he find any missing or indistinct, he must inform the Engineer at once and have the same rectified.

All tenderers shall be deemed to have carefully examined the following:

a) Work detailed in the Specification and in the Contract Drawings.
b) The Republic of Kenya Document "General Conditions of Contract for Electrical and Mechanical Works".
c) Other documents to which reference is made.

He shall also be deemed to have included for any expenditure which may be incurred in conforming to the above items (a), (b), (c) and observe this expense as being attached to the contract placed for the whole or any part of the work.

The tenderer shall ensure that all ambiguities, doubts or obscure points of detail, are clarified with the Engineer before submission of his tender, as no claims for alleged deficiencies in the information given shall be considered after this date.

1.02 Discrepancies

The Sub-contractor shall include all work either shown on the Contract Drawings or detailed in the specification. No claim or extra cost shall be considered for works which has been shown on the drawings or in the specification alone.

Should the drawing and the specification appear to conflict, the Sub-contractor shall query the points at the time of tendering and satisfy himself that he has included for the work intended, as no claim for extra payment on this account shall be considered after the contract is awarded.

1.03 Conditions of Sub-Contract Agreement

The Sub-contractor shall be required to enter into a Sub-contract with the Main Contractor.

The Conditions of the Contract between the Main Contractor and the Sub-contractor as hereinafter defined shall be the latest edition of the Agreement and Schedule of Conditions of Kenya Association of Building and Civil Engineering Contractors as particularly modified and amended hereinafter.

For the purpose of this contract the Agreement and Schedule of Conditions and any such modifications and amendments shall read and construed together. In any event of discrepancy the modifications and amendments shall prevail.

1.04 Payment

Payment will be made through certificates direct to the subcontractor. All the subcontractors valuations claim must done through the main contractor and subsequently forwarded to the consultants . All payments will be less retention as specified in the Main Contract. No payment will become due until materials are delivered to site.

1.05 **Definition of Terms**

Throughout these contract documents units of measurements, terms and expressions are abbreviated and wherever used hereinafter and in all other documents they shall be interpreted as follows:

i. The term **"Employer"** shall mean **Kenya Medical Supplies Authority**

ii. The Term **"Project Manager "** Shall Mean **Works secretary, State Department of Public Works,**
Ministry of Transport, Infrastructure, Housing and Urban Development

iii. The term **"Architect: "** shall mean **Maestro Architects Ltd**

iv. The term **"Quantity Surveyor"** shall mean **M & M Construction Consultants.**

v. The term **"Civil/Structural Engineers "** shall mean **Kiri Consult Ltd**

vi. **Engineer:** The term **"Engineer"** shall mean **Norkun Intakes Ltd**

vii. **Main Contractor:** The term **"Main Contractor"** shall mean the firm or company appointed to carry out the Building Works and shall include his or their heir, executors, assigns, administrators, successors, and duly appointed representatives.

vii) **Sub-contractor:** The term **"Sub-contractor"** shall mean the persons or person, firm or Company whose tender for this work has been accepted, and who has entered into a contract agreement with the Contractor for the execution of the Sub-contract Works, and shall include his or their heirs, executors, administrators, assigns, successors and duly appointed representatives.

viii) **Sub-contract Works:** The term **"Sub-contract Works"** shall mean all or any portion of the work, materials and articles, whether the same are being manufactured or prepared, which are to be used in the execution of this Sub-contract and whether the same may be on site or not.

ix) **Contract Drawings:** The term **"Contract Drawings"** shall mean those drawings required or referred to herein and forming part of the Bills of Quantities.

x) **Working Drawings:** The term **"Working Drawings"** shall mean those drawings required to be prepared by the Sub-contractor as hereinafter described.

xi) **Record Drawings:** The term **"Record Drawings"** shall mean those drawings required to be prepared by the Sub-contractor showing "as installed" and other records for the Sub-contract Works.

xii) **Abbreviations:**

CM shall mean **Cubic Metre**

SM shall mean **Square Metre**

LM shall mean **Linear Metre**

M shall mean **Metre**

LS shall mean **Lump Sum**

mm shall mean **Millimetres**

No. shall mean **Number**

Kg. shall mean **Kilogramme**

KEBS shall mean **Kenya Bureau of Standards**

BS shall mean. **Current standard British Standard Specification published by the British Standard Institution, 2 Park Street, London W1, England**

"Ditto" shall mean the whole of the preceding description in which it occurs.

Where it occurs in description of succeeding item it shall mean the same as in the first description of the series in which it occurs except as qualified in the description concerned.

Where it occurs in brackets it shall mean the whole of the preceding description which is contained within the appropriate brackets.

1.06 **Site Location**

The site of the Sub-contract Works is situated **at Embakasi Nairobi**

The tenderer is recommended to visit the site and shall be deemed to have satisfied himself with regard to access, possible conditions, the risk of injury or damage to property on/or adjacent to the site, and the conditions under which the sub-contract Works shall have to be carried out and no claims for extras will be considered on account of lack of knowledge in this respect.

1.07 **Duration of Sub-Contract**

The Sub-Contractor shall be required to phase his work in accordance with the Main contractor's program (or its revision). The program is to be agreed with the Main contractor.

1.08 **Scope of Sub-Contract Works**

The sub-contractor shall supply, deliver, unload, hoist, fix, test, commission and hand-over in satisfactory working order the complete installations specified hereinafter and/or as shown on the Contract Drawings attached hereto, including the provision of labour, transport and plant for unloading material and storage, and handling into position and fixing, also the supply of ladders, scaffolding the other mechanical devices to plant, installation, painting, testing, setting to work, the removal from site from time to time of all superfluous material and rubbish caused by the works.

The sub-contractor shall supply all accessories, whether of items or equipment supplied by the Main Contractor but to be fixed and commissioned under this Sub-contract.

1.09 **Extent of the Sub-contractor's Duties**

At the commencement of the works, the Sub-contractor shall investigate and report to the Engineer if all materials and equipment to be used in the work and not specified as supplied by the others are available locally. If these materials and equipment are not available locally, the Sub-contractor shall at this stage place orders for the materials in question and copy the orders to the Engineer. Failure to do so shall in no way relieve the Sub-contractor from supplying the specified materials and equipment in time.

Materials supplied by others for installation and/or connection by the Subcontractor shall be carefully examined in the presence of the supplier before installation and connection. Any defects noted shall immediately be reported to the Engineer.

The Sub-contractor shall be responsible for verifying all dimensions relative to his work by actual measurements taken on site.

The Sub-contractor shall mark accurately on one set of drawings and indicate all alterations and/or modifications carried out to the designed system during the construction period. This information must be made available on site for inspection by the Engineer.

1.10 **Execution of the Works**

The works shall be carried out strictly in accordance with:

a) All relevant Kenya Bureau of Standards Specifications.
b) All relevant British Standard Specifications and Codes of Practice (hereinafter referred to as B.S. and C.P. respectively).
c) This Specification.
d) The Contract Drawings.
e) The Bye-laws of the Local Authority.
f) The Architect's and/or Engineer's Instructions.

The Contract Drawings and Specifications to be read and construed together.

1.11 **Validity of Tender**

The tender shall remain valid for acceptance within 120 days from the final date of submission of the tender, and this has to be confirmed by signing the Tender Bond. The tenderer shall be exempted from this Bond if the tender was previously withdrawn in writing to the Employer before the official opening.

1.12 **Firm – Price Sub-contract**

Unless specifically stated in the documents or the invitation to tender, this is a firm-price Contract and the Sub-contractor must allow in his tender for the increase in the cost of labour and/or materials during the duration of the contract. No claims will be allowed for increased costs arising from the fluctuations in duties and/or day to day currency fluctuations. The Sub-contractor will be deemed to have allowed in his tender for any increase in the cost of materials which may arise as a result of currency fluctuation during the contract period.

1.13 **Variation**

No alteration to the Sub-contract Works shall be carried out until receipt by the Sub-contractor of written instructions from the Project Manager.

Any variation from the contract price in respect of any extra work, alteration or omission requested or sanctioned by the Project Manager or Engineer shall be agreed and confirmed in writing at the same time such variations are decided and shall not affect the validity of the Contract. Schedule of Unit Rates shall be used to assess the value of such variations. No allowance shall be made for loss of profit on omitted works.

Where the Project Manager requires additional work to be performed, the Sub-contractor, if he considers it necessary, will give notice within seven (7) days to the Main Contractor of the length of time he (the Sub-contractor) requires over and above that allotted for completion of the Sub-contract.

If the Sub-contractor fails to give such notice he will be deemed responsible for the claims arising from the delay occasioned by reason of such extension of time.

1.14 **Prime Cost and Provisional Sums**

A specialist Sub-contractor may be nominated by the Project Manager to supply and/or install any equipment covered by the Prime Cost or Provisional Sums contained within the Sub-contract documents.

The work covered by Prime Cost and Provisional Sums may or may not be carried out at the discretion of the Architect.

The whole or any part of these sums utilized by the Sub-contractor shall be deducted from the value of the Sub-contract price when calculating the final account.

1.15 **Bond**

The tenderer must submit with his tender the name of one Surety who must be an established Bank only who will be willing to be bound to the Main Contractor for an amount equal to 5 % of the Sub-contract amount as per the Main Contract condition of contract.

1.16 **Government Legislation and Regulations**

The Sub-contractor's attention is called to the provision of the Factory Act 1972 and subsequent amendments and revisions, and allowance must be made in his tender for compliance therewith, in so far as they are applicable.

The Sub-contractor must also make himself acquainted with current legislation and any Government regulations regarding the movement, housing, security and control of labour, labour camps, passes for transport, etc.

The Sub-contractor shall allow for providing holidays and transport for work people, and for complying with Legislation, Regulations and Union Agreements.

1.17 **Import Duty and Value Added Tax**

The Sub-contractor will be required to pay full Import Duty and Value Added Tax on all items of equipment, fittings and plant, whether imported or locally manufactured. The tenderer shall make full allowance in his tender for all such taxes

1.18 **Insurance Company Fees**

Attention is drawn to the tenderers to allow for all necessary fees, where known, that may be payable in respect of any fees imposed by Insurance Companies or statutory authorities for testing or inspection.

No allowance shall be made to the Sub-contractor with respect to fees should these have been omitted by the tenderer due to his negligence in this respect.

1.19 **Provision of Services by the Main Contractor**

In accordance with Clause 1.08 of this Specification the Main Contractor shall make the following facilities available to the Sub-contractor:

a) Attendance on the Sub-contractor and the carrying out of all work affecting the structure of the building which may be necessary, including all chasing, cutting away and making good brickwork, etc., except that all plugging for fixing, fittings, machinery, fan ducting, etc., and all drilling and tapping of steel work shall be the responsibility of the Sub-contractor. Any purpose made fixing brackets shall not constitute Builder's Work and shall be provided and installed by the Sub-contractor unless stated hereinafter otherwise.

b) The provision of temporary water, lighting and power: All these services utilized shall be paid for by the Main Contractor. The Sub-contractor shall, however, allow for additional connections/extensions required for his purposes.

c) Fixing of anchorage and pipe supports in the shuttering, except that all anchorage shall be Supplied by the Sub-contractor who shall also supply the Main Contractor with fully dimensioned drawings detailing the exact locations.

d) i) Provision of scaffolding, cranes, etc. but only in so far as it is required for the Main Contract Works. It shall be the Sub-contractor's responsibility to liaise with the Main Contractor to ensure that there is maximum co-operation with other Sub-contractors in the use of scaffolding, cranes, etc.

ii) Any specialist scaffolding, cranes, etc. by the Sub-contractor for his own exclusive use shall be paid for by the Sub-contractor.

1.20 **Suppliers**

The Sub-contractor shall submit names of any supplier for the materials to be incorporated, to the Engineer for approval. The information regarding the names of the suppliers may be submitted at different times, as may be convenient, but no sources of supply will be changed without prior approval.

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

1.21 **Samples and Materials Generally**

The Sub-contractor shall, when required, provide for approval at no extra cost, samples of all materials to be incorporated in the works. Such samples, when approved, shall be retained by the Engineer and shall form the standard for all such materials incorporated.

1.22 **Administrative Procedure and Contractual Responsibility**

Wherever within the Specification it is mentioned or implied that the Sub-contractor shall deal direct with the Employer or Engineer, it shall mean "through the Contractor" who is responsible to the Employer for the whole of the works including the Sub-contract Works.

1.23 **Bills of Quantities**

The Bills of Quantities have been prepared in accordance with the standard method of measurement of Building Works for East Africa, first Edition, Metric, 1970. All the Quantities are based on the Contract Drawings and are provisional and they shall not be held to gauge or to limit the amount or description of the work to be executed by the Sub-contractor but the value thereof shall be deducted from the Sub-contract Sum and the value of the work ordered by the Engineer and executed there under shall be measured and valued by the Engineer in accordance with the conditions of the Sub-contract.

All work liable to adjustment under this Sub-contract shall be left uncovered for a reasonable time to allow measurements needed for such adjustment to be taken by the Quantity Surveyor or Engineer. Immediately the work is ready for measuring the Sub-contractor shall give notice to the Quantity Surveyor or Engineer to carry out measurements before covering up. If the Sub-contractor shall make default in these respects he shall, if the Project Manager so directs, uncover the work to enable the necessary measurements to be taken and afterwards reinstate at his own expense.

1.24 **Sub-contractor's Office in Kenya**

The Sub-contractor shall maintain (after first establishing if necessary) in Kenya an office staffed with competent Engineer Manager and such supporting technical and clerical staff as necessary to control and coordinate the execution and completion of the Sub-contract Works.

The Engineer Manager and his staff shall be empowered by the Sub-contractor to represent him at meetings and in discussions with the Main Contractor, the Engineer and other parties who may be concerned and any liaison with the Sub-contractor's Head Office on matters relating to the design, execution and completion of the Sub-contract Works shall be effected through his office in Kenya.

It shall be the Sub-contractor's responsibility to procure work permits, entry permits, licenses, registration, etc., in respect of all expatriate staff.

The Sub-contractor shall prepare a substantial proportion of his Working Drawings at his office in Kenya. No reasons for delays in the preparation or submission for approval or otherwise of such drawings or proposals will be accepted on the grounds that the Sub-contractor's Head Office is remote from his office in Nairobi or the site of the Sub-contract Works or otherwise.

1.25 **Builder's Work**

All chasing, cutting away and making good will be done by the Main Contractor but the Sub-contractor shall mark out in advance and shall be responsible for accuracy of the size and position of all holes and chases required.

The Sub-contractor shall drill and plug holes in floors, walls, ceiling and roof for securing services and equipment requiring screw or bolt fixings.

Any purpose made fixing brackets shall not constitute builder's work and shall be provided and installed by the Sub-contractor unless stated hereinafter to the contrary.

1.26 **Structural Provision for the Works**

Preliminary major structural provision has been made for the Sub-contract Works based on outline information ascertained during the preparation of the Specification.

The preliminary major structural provision made will be deemed as adequate unless the Sub-contractor stated otherwise when submitting his tender.

Any major structural provision or alteration to major structural provisions required by the Sub-contractor shall be shown on Working Drawings to be submitted to the Engineer within 30 days of being appointed.

No requests for alterations to preliminary major structural provisions will be approved except where they are considered unavoidable by the Engineer. In no case will they be approved if building work is so far advanced as to cause additional costs or delays in the work of the Main Contractor.

1.27 Position of Services, Plant, Equipment, Fittings and Apparatus

The Contract Drawings give a general indication of the intended layout. The position of the equipment and apparatus, and also the exact routes of the ducts, main and distribution pipework shall be confirmed before installation is commenced. The exact siting of appliances, pipework, etc., may vary from that indicated.

The routes of services and positions of apparatus shall be determined by the approved dimensions detailed in the Working Drawings or on site by the Engineer in consultation with the Sub-contractor or the Main Contractor.

Services throughout the ducts shall be arranged to allow maximum access along the ducts and the services shall be readily accessible for maintenance. Any work which has to be re-done due to negligence in this respect shall be the Sub-contractor's responsibility.

The Sub-contractor shall be deemed to have allowed in his Sub-contract Sum for locating terminal points of services (e.g. lighting, switches, socket outlets, lighting points, control switches, thermostats and other initiating devices, taps, stop cocks) in positions plus or minus 1.2m horizontally and vertically from the locations shown on Contract Drawings. Within these limits no variations in the Sub-contract Sum will be made unless the work has already been executed in accordance with previously approved Working Drawings and with the approval of the Engineer.

1.28 **Checking of Work**

The Sub-contractor shall satisfy himself to the correctness of the connections he makes to all items of equipment supplied under the Sub-contract agreement and equipment supplied under other contracts before it is put into operation. Details of operation, working pressures, temperatures, voltages, phases, power rating, etc., shall be confirmed to others and confirmation received before the system is first operated.

1.29 **Setting to Work and Regulating System**

The Sub-contractor shall carry out such tests of the Sub-contract Works as required by British Standard Specifications or equal and approved codes as specified hereinafter and as customary.

No testing or commissioning shall be undertaken except in the presence of and to the satisfaction of the Engineer unless otherwise stated by him (Sub-contractor's own preliminary and proving tests excepted).

It will be deemed that the Sub-contractor has included in the Sub-contract Sum for the costs of all fuel, power, water and the like, for testing and commissioning as required as part of the Sub-contract Works. He shall submit for approval to the Engineer a suitable programme for testing and commissioning. The Engineer and Employer shall be given ample warning in writing, as to the date on which testing and commissioning will take place.

The Sub-contractor shall commission the Sub-contract Works and provide attendance during the commissioning of all services, plant and apparatus connected under the Sub-contract Agreement or other Sub-contract Agreements, related to the project.

Each system shall be properly balanced, graded and regulated to ensure that correct distribution is achieved and where existing installations are affected, the Sub-contractor shall also regulate these systems to ensure that their performance is maintained.

The proving of any system of plant or equipment as to compliance with the Specification shall not be approved by the Engineer, except at his discretion, until tests have been carried out under operating conditions pertaining to the most onerous conditions specified except where the time taken to obtain such conditions is unreasonable or exceeds 12 months after practical completion of the Sub-contract Works.

1.30 **Identification of Plant Components**

The Sub-contractor shall supply and fix identification labels to all plant, starters, switches and items of control equipment including valves, with white traffolyte or equal labels engraved in red lettering denoting its name, function and section controlled. The labels shall be mounted on equipment and in the most convenient positions. Care shall be taken to ensure the labels can be read without difficulty. This requirement shall apply also to major components of items of control equipment.

Details of the lettering of the labels and the method of mounting or supporting shall be forwarded to the Engineer for approval prior to manufacture.

1.31 **Contract Drawings**

The Contract Drawings when read in conjunction with the text of the Specification, have been completed in such detail as was considered necessary to enable competitive tenders to be obtained for the execution and completion of the Sub-contract works.

The Contract Drawings are not intended to be Working Drawings and shall not be used unless exceptionally they are released for this purpose.

1.32 **Working Drawings**

The Sub-contractor shall prepare such Working Drawings as may be necessary. The Working Drawings shall be complete in such detail not only that the Sub-contract Works can be executed on site but also that the Engineer can approve the Sub-contractor's proposals, detailed designs and intentions in the execution of the Sub-contract Works.

If the Sub-contractor requires any further instructions, details, Contract Drawings or information drawings to enable him to prepare his Working Drawings or proposals, the Sub-contractor shall accept at his own cost, the risk that any work, commenced or which he intends to commence at site may be rejected.

The Engineer, in giving his approval to the Working Drawings, will presume that any necessary action has been, or shall be taken by the Sub-contractor to ensure that the installations shown on the Working Drawings have been cleared with the Main Contractor and any other Sub-contractors whose installations and works might be affected.

If the Sub-contractor submits his Working Drawings to the Engineer without first liaising and obtaining clearance for his installations from the Main Contractor and other Sub-contractors whose installations and works might be affected, then he shall be liable to pay for any alterations or modification to his own, the Main Contractor's or other Sub-contractor's installations and works, which are incurred, notwithstanding any technical or other approval received from the Engineer.

Working Drawings to be prepared by the Sub-contractor shall include but not be restricted to the following:

a) Any drawings required by the Main Contractor, or Engineer to enable structural provisions to be made including Builder's Working Drawings or Schedules and those for the detailing of holes, fixings, foundations, cables and paperwork ducting below or above ground or in or outside or below buildings.

b) General Arrangement Drawings of all plant, control boards, fittings and apparatus or any part thereof and of installation layout arrangement of such plant and apparatus.

c) Schematic Layout Drawings of services and of control equipment.

d) Layout Drawings of all embedded and non-embedded paperwork, ducts and electrical conduits.

e) Complete circuit drawings of the equipment, together with associated circuit description.

f) Such other drawings as are called for in the text of the Specification or Schedules or as the Engineer may reasonably require.

Three copies of all Working Drawings shall be submitted to the Engineer for approval. One copy of the Working Drawings submitted to the Engineer for approval shall be returned to the Sub-contractor indicating approval or amendment therein.

Six copies of the approved Working Drawings shall be given to the Main Contractor by the Sub-contractor for information and distribution to other Sub-contractors carrying out work associated with or in close proximity to or which might be affected by the Sub-contract Works.

Approved Working Drawings shall not be departed from except as may be approved or directed by the Engineer.

Approval by the Engineer of Working Drawings shall neither relieve the Sub-contractor of any of his obligations under the Sub-contract nor relieve him from correcting any errors found subsequently in the Approved Working Drawings or other Working Drawings and in the Sub-contract Works on site or elsewhere associated therewith.

The Sub-contractor shall ensure that the Working Drawings are submitted to the Project Manager for approval at a time not unreasonably close to the date when such approval is required. Late submission of his Working Drawings will not relieve the Sub-contractor of his obligation to complete the Sub-contract Works within the agreed Contract Period and in a manner that would receive the approval of the Architect.

1.33 **Record Drawings (As Installed) and Instructions**

During the execution of the Sub-contract Works the Sub-contractor shall, in a manner approved by the Engineer record on Working or other Drawings at site all information necessary for preparing Record Drawings of the installed Sub-contract Works. Marked-up Working or other Drawings and other documents shall be made available to the Engineer as he may require for inspection and checking.

Record Drawings, may, subject to the approval of the Engineer, include approved Working Drawings adjusted as necessary and certified by the Sub-contractor as a correct record of the installation of the Sub-contract Works.

They shall include but not restricted to the following drawings or information:

a) Working Drawings amended as necessary but titled "Record Drawings" and certified as a true record of the "As Installed" Sub-contract Works. Subject to the approval of the Engineer such Working Drawings as may be inappropriate may be omitted.
b) Fully dimensioned drawings of all plant and apparatus.
c) General arrangement drawings of equipment, other areas containing plant forming part of the Sub-contract Works and the like, indicating the accurate size and location of the plant and apparatus suitability cross-referenced to the drawings mentioned in (b) above and hereinafter.
d) Routes, types, sizes and arrangement of all pipework and ductwork including dates of installation of underground pipework.
e) Relay adjustment charts and manuals.
f) Routes, types, sizes and arrangement of all electric cables, conduits, ducts and wiring including the dates of installation of buried works.
g) System schematic and trunking diagrams showing all salient information relating to control and instrumentation.
h) Grading Charts.
i) Valve schedules and locations suitability cross-referenced.
j) Wiring and piping diagrams of plant and apparatus.
k) Schematic diagrams of individual plant, apparatus and switch and control boards. These diagrams to include those peculiar to individual plant or apparatus and also those applicable to system operation as a whole.
l) Operating Instruction

Schematic and wiring diagrams shall not be manufacturer's multipurpose general issue drawings. They shall be prepared specially for the Sub-contract Works and shall contain no spurious or irrelevant information.

Marked-up drawings of the installation of the Sub-contract Works shall be kept to date and completed by the date of practical or section completion. Two copies of the Record Drawings of Sub-contract Works and two sets of the relay adjustment and grading charts and schematic diagrams on stiff backing shall be provided not later than one month later.

The Sub-contractor shall supply for fixing in sub-stations, switch-rooms, boiler houses, plant rooms, pump houses, the office of the Maintenance Engineer and other places, suitable valve and instructions charts, schematic diagrams of instrumentation and of the electrical reticulation as may be requested by the Engineer providing that the charts, diagrams, etc., relate to installations forming part of the Sub-contract Works. All such charts and diagrams shall be of suitable plastic material on a stiff backing and must be approved by the Engineer before final printing.

Notwithstanding the Sub-contractor's obligations referred to above, if the Sub-contractor fails to produce to the Engineer's approval, either:-

a) The Marked-up Drawings during the execution of the Sub-contract Works or
b) The Record Drawings, etc., within one month of the Section or Practical Completion

The Engineer shall have these drawings produced by others. The cost of obtaining the necessary information and preparing such drawings, etc., will be recovered from the Sub-contractor.

1.34 **Maintenance Manual**

Upon Practical Completion of the Sub-contract Works, the Sub-contractor shall furnish the Engineer four copies of a Maintenance Manual relating to the installation forming part of all of the Sub-contract Works.

The manual shall be loose-leaf type, International A4 size with stiff covers and cloth bound. It may be in several volumes and shall be sub-divided into sections, each section covering one Engineering service system. It shall have a ready means of reference and a detailed index.

There shall be a separate volume dealing with Air Conditioning and Mechanical Ventilation installation where such installations are included in the Sub-contract Works.

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 Specifications:

a) System Description.
b) Plant
c) Valve Operation
d) Switch Operation
e) Procedure of Fault Finding
f) Emergency Procedures
g) Lubrication Requirements
h) Maintenance and Servicing Periods and Procedures
i) Colour Coding Legend for all Services
j) Schematic and Writing Diagrams of Plant and Apparatus
k) Record Drawings, true to scale, folded to International A4 size
l) Lists of Primary and Secondary Spares.

The manual is to be specially prepared for the Sub-contract Works and manufacturer's 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.

1.35 **Hand-over**

The Sub-contract Works shall be considered complete and the Maintenance and Defects Liability Period shall commence only when the Sub-contract Works and supporting services have been tested, commissioned and operated to the satisfaction of the Engineer and officially approved and accepted by the Employer, provided always that the handing over of the Sub-contract Works shall be coincident with the handing over of the Main Contract Works.

The procedure to be followed will be as follows:

a) On the completion of the Sub-contract Works to the satisfaction of the Engineer and the Employer, the Sub-contractor shall request the Engineer, at site to arrange for handing over.
b) The Engineer shall arrange a Hand-over Meeting or a series thereof, at site.

c) The Sub-contractor shall arrange with the Engineer and Employer for a complete demonstration of each and every service to be carried out and for instruction to be given to the relevant operation staff and other representatives of the Employer.

d) In the presence of the Employer and the Engineer, Hand-over will take place, subject to Agreement of the Hand-over Certificates and associated check lists.

1.36 **Painting**

It will be deemed that the Sub-contractor allowed for all protective and finish painting in the Sub-contract Sum for the Sub-contract Works, including colour coding of service pipework to the approval of the Engineer. Any special requirements are described in the text of the Specifications.

1.37 **Spares**

The Sub-contractor shall supply and deliver such spares suitably protected and boxed to the Engineer's approval as are called for in the Specifications or in the Price Schedules.

1.38 **Testing and Inspection – Manufactured Plant**

The Engineer reserves the right to inspect and test or witness of all manufactured plant equipment and materials.

The right of the Engineer relating to the inspection, examination and testing of plant during manufacture shall be applicable to Insurance companies and inspection authorities so nominated by the Engineer.

The Sub-contractor shall give two week's notice to the Engineer of his intention to carry out any inspection or tests and the Engineer or his representative shall be entitled to witness such tests and inspections

Six copies of all test certificates and performance curves shall be submitted as soon as possible after the completion of such tests, to the Engineer for his approval.

Plant or equipment which is shipped before the relevant test certificate has been approved by the Engineer shall be shipped at the Sub-contractor's own risk and should the test certificate not be approved new tests may be ordered by the Engineer at the Sub-contractor's expense.

The foregoing provisions relate to tests at manufacturer's works and as appropriate to those carried out at site.

1.39 **Testing and Inspection -Installation**

Allow for testing each section of the Sub-contract Works installation as described hereinafter to the satisfaction of the Engineer.

1.40 **Labour Camps**

The Sub-contractor shall provide the necessary temporary workshop and mess-room in position to be approved by the Architect.

The work people employed by the Sub-contractor shall occupy or be about only that part of the site necessary for the performance of the work and the Sub-contractor shall instruct his employees accordingly.

If practicable, W.C. accommodation shall be allocated for the sole use of the Sub-contractor's workmen and the Sub-contractor will be required to keep the same clean and disinfected, to make good any damage thereto and leave in good condition.

1.41 **Storage of Materials**

Space for storage will be provided by the Main contractor but the sub-contractor will be responsible for provision of any lock-up sheds or stores required.

Nominated Sub-contractors are to be made liable for the cost of any storage accommodation provided specially for their use. No materials shall be stored or stacked on suspended slabs without the prior approval of the Project manager.

1.42 **Initial Maintenance**

The sub-contractor shall make routine maintenance once a month during the liability for the Defects Period and shall carry out all necessary adjustments and repairs, cleaning and oiling of moving parts. A monthly report of the inspection and any works done upon the installation shall be supplied to the Engineer.

The sub-contractor shall also provide a 24 -hour break-down service to attend to faults on or malfunctioning of the installation between the routine visits of inspection.

The sub-contractor shall allow in the sub-contract Sum of the initial maintenance, inspection and break-down service and shall provide for all tools, instruments, plant and scaffolding and the transportation thereof, as required for the correct and full execution of these obligations and the provision, use or installation of all materials as oils, greases, sandpaper, etc., or parts which are periodically renewed such as brake linings etc., or parts which are faulty for any reason whatsoever excepting always Acts of God such as storm, tempest, flood, earthquake and civil revolt, acts of war and vandalism.

1.43 **Maintenance and Servicing After Completion of the Initial Maintenance**

The sub-contractor shall, if required, enter into a maintenance and service agreement with the employer for the installation for a period of up to five years from the day following the last day of the liability for Defects Period which offers the same facilities as specified in Clause 1.42 (Initial Maintenance).

The terms of any such agreement shall not be less beneficial to the employer than the terms of Agreements for either similar installation.

The sub-contractor shall submit with his tender for the works, where called upon a firm quotation for the maintenance and service of the installation as specified herein, which shall be based upon the present day costs and may be varied only to take into account increases in material and labour unit rate costs between the time of tendering and the signing of the formal maintenance and service agreement and which shall remain valid and open for acceptance by the Employer to and including the last day of the fifth complete calendar month following the end of the liability for Defects Period.

1.44 **Trade Names**

Where trade names of manufacturer's catalogue numbers are mentioned in the Specification or the Bills of Quantities, the reference is intended as a guide to the type of article or quality of material required. Alternate brands of equal and approved quality will be acceptable.

1.45 **Water and Electricity for the Works**

These will be made available by the Main Contractor. The Sub-contractor shall be liable for the cost of any water or electric current used and for any installation provided especially for their own use by the Main Contractor.

1.46 **Protection**

The sub-contractor shall adequately cover up and protect his own work to prevent injury and also to cover up and protect from damage all parts of the building or premises where work is performed by him under the Contract.

1.47 **Defects After Completion**

The defects liability period will be 6 months from the date of completion of the Main Contract as certified by the Engineer.

1.48 **Damages for Delay**

Liquidated and Ascertained damages as stated in the Main Contract Agreement will be claimed against the Main Contract for any unauthorised delay in completion. The Sub-contractor shall be held liable for the whole or a portion of these damages should he cause delay in completion.

1.49 **Clear Away on Completion**

The sub-contractor shall, upon completion of the works, at his own expense, remove and clear away all plant, equipment, rubbish and unused materials, and shall leave the whole of the works in a clean and tidy state, to the satisfaction of the Engineer. On completion, the whole of the works shall be delivered up clean, complete and perfect in every respect to the satisfaction of the Engineer.

1.50 **Final Account**

On completion of the works the sub-contractor shall agree with the Engineer the value of any variations outstanding and as soon as possible thereafter submit to the Engineer his final statement of account showing the total sum claimed sub-divided as follows:

Statement A - detailing the tender amounts less the Prime Cost and Provisional Sums, included therein.

Statement B - detailing all the variation orders issued on the contract.

Statement C - Summarizing statement A and B giving the net grand total due to the Contractor for the execution of the Contract.

1.51 **Fair Wages**

The sub-contractor shall in respect of all persons employed anywhere by him in the execution of the sub-contract, in every factory, workshop or place occupied or used by him for execution of the Contract, observe and fulfill the following conditions:

a) The sub-contractor shall pay rates of the wages and observe hours and conditions of labour not less favourable than those established for the trade or industry in the district where work is carried out.

b) In the absence of any rates of wages, hours or conditions of labour so established the sub-contractor shall pay rates and observe hours and conditions of labour are not less favourable than the general level of wages, hours and conditions observed by other employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.

1.52 Supervision

During the progress of the works, the Sub-contractor shall provide and keep constantly available for consultation on site an experienced English - speaking Supervisor and shall provide reasonable office facilities, attendance, etc., for the Supervisor.

In addition, during the whole of the time the works are under construction, the sub-contractor shall maintain on site one experienced foreman or charge-hand and an adequate number of fitters, etc., for the work covered by the Specification. The number of this staff shall not be reduced without the prior written approval of the Project manager or Engineer.

Any instructions given to the Supervisor on site shall be deemed to have been given to the sub-contractor.

One copy of this Specification and one copy of each of the Contract Drawings (latest issue) must be retained on site at all times, and available for reference by the Engineer or sub-contractor.

1.53 Test Certificates

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

1.54 Labour

The Sub-contractor shall provide skilled and unskilled labour as may be necessary for completion of the contract.

1.55 Discount to the Main Contractor

No discount to the Main Contractor will be included in the tender for this installation.

1.56 Guarantee

The whole of the work will be guaranteed for a period of six months from the date of the Engineer's certification of completion and under such guarantee the Sub-contractor shall remedy at his expense all defects in materials and apparatus due to faulty design, construction or workmanship which may develop in that period.

1.57 Direct Contracts

Notwithstanding the foregoing conditions, the Government reserves the right to place a "Direct Contract" for any goods or services required in the works which are covered by a P.C Sum in the Bills of Quantities and to pay for the same direct. In any such instance, profit relative to the P.C Sum in the priced Bills of Quantities will be adjusted as deserved for P.C Sum allowed.

1.58 Attendance Upon the Tradesmen etc

The Contractor shall allow for the attendance of trade upon trade and shall afford any tradesmen or other persons employed for the execution of any work not included in this contract every facility for carrying out their work and also for the use of ordinary scaffolding. The contractor however, shall not be required to erect any special scaffolding for them.

1.59 Trade Unions

The contractor shall recognize the freedom of his work people to be members of trade unions.

1.60 Local and other Authorities notices and fees

The contractor shall comply with and give all notices required by any Regulations, Act or by Law of any Local Authority or of any Public Service, Company or Authority who have any jurisdiction with regard to the works or with those systems the same are or will be connected and he shall pay and indemnify the Government against any fees or charges legally demandable under any regulation or by-law in respect of the works; provided that the said fees and charges if not expressly included in the contract sum or stated by way of provisional sum shall be added to the contract sum.

The contractor before making any variation from the contract drawings or specification necessitated by such compliance shall give the Project Manager written notice specifying and giving the reason for such variation and applying for instructions in reference thereto.

If the contractor within seven days of having applied for the same does not receive such instructions, he shall proceed with the works in conforming to the provision regulation or by-law in question and any variation thereby necessitated shall be deemed to be a variation in accordance to the conditions of contract.

1.61 Assignment or subletting

The contractor shall not without the written consent of the Project Manager assign this contract or sublet any portion of the works, provided that such consent shall not be unreasonably withheld to the prejudice of the contractor.

1.62 Partial Completion

If the Government shall take over any part or parts works, apparatus, equipment etc. then within seven days from the date on which the Government shall have taken possession of the relevant part, the Project Manager shall issue a Certificate stating his estimate of the approximate total value of the works which shall be the total value of that part and practical completion of the relevant part shall be deemed to have occurred, and the Defects Liability Period in respect of the relevant part be deemed to have commenced on the date Government shall have taken possession thereof.

The contractor shall make good any defects or other faults in the relevant part that had been deemed complete.

The contractor shall reduce the value of insurance by the full value of the relevant part

The contractor shall be paid for the part of works taken possession by the Government

1.63 Temporary Works

Where temporal works shall be deemed necessary, such as Temporary lighting, the contractor shall take precaution to prevent damage to such works.

The contractor shall include for the cost of and make necessary arrangements with the Project Manager for such temporary works. For temporary lighting, electricity shall be metered and paid for by the contract

1.64 Patent Rights

The contractor shall fully indemnify the Government of Kenya; against any action, claim or proceeding relating to infringement of any patent or design rights, and pay any royalties which may be payable in respect of any article or any part thereof, which shall have been supplied by the contractor to the Project Manager. In like manner the Government of Kenya shall fully indemnify the contractor against any such action, claim or proceedings for infringement under the works, the design thereof of which shall have been supplied by the Project Manager to the contractor, but this indemnify shall apply to the works only, and any permission or request to manufacture to the order of the Project Manager shall not relieve the contractor from liability should he manufacture for supply to other buyers.

1.65 Mobilization and Demobilization

The contractor shall mobilize labour plant and equipment to site according to his programme and schedule of work. He shall ensure optimum presence and utilization of labour, plant and equipment. He should not pay and maintain unnecessary labour force or maintain and service idle plant and equipment. Where necessary he shall demobilize and mobilize the labour, plant and equipment, as he deems fit to ensure optimum progress of the works and this shall be considered to be a continuous process as works progress. He shall make provision for this item in his tender. No claim will be entertained where the contractor has not made any provision for mobilization and demobilization of labour, plant and equipment in the preliminary bills of quantities or elsewhere in this tender.

1.66 Extended Preliminaries

Where it shall be necessary to extend the contract period by the Project manager the contractor shall still ensure availability on site, optimum labour, materials, plant and equipment. The contractor shall make provision for extended preliminaries, should the contract period be extended and this shall be in a form of a percentage of the total Contractor works. Where called upon in the Appendix to these Preliminaries the Contractor shall insert his percentage per month for extended preliminaries that shall form basis for compensation.

Lack of inserting the percentage shall mean that the sub-contractor has provided for this requirement elsewhere in the Bills of Quantities.

1.67 Supervision by Engineer and Site Meetings

A competent Project Engineer appointed by the Engineer as his representative shall supervise the Contract works. The Project Engineer shall be responsible for issuing all the site instructions in any variations to the works and these shall be delivered through the Contractor with the authority of the Project Manager. Any instructions given verbal shall be confirmed in writing.

The project engineer and (or) the Engineer shall attend management meetings arranged by the Project Manager and for which the Contractor or his representative shall also attend. For the purpose of supervising the project, provisional sums are provided to cover for transport and allowances. The Contractor shall in his tender allow for the provision of management meetings and site inspections, as instructed by the Engineer, and also profit and attendance on these funds. The funds shall be expended according to Project Manager's instructions to the contractor.

1.68 Amendment to Scope of Contract Works

No amendment to scope of sub-contract works is expected and in case of amendment or modification to scope of work, these shall be communicated to all tenderers in sufficient time before the deadline of the tender submission. However during the contract period and as the works progress the Project Manager may vary the works as per conditions of contract by issuing site instructions.
No claims shall be entertained on account of variation to scope of works either to increase the works (pre-financing) or reduction of works (loss of profit-see clause 1.70)

1.69 Contractor Obligation and Employers Obligation

The sub-contractor will finance all activities as part of his obligation to this contract. The employer shall pay interim payment for materials and work completed on site as his obligation in this contract, as the works progresses. No claims will be entertained for pre-financing of the project by the sub-contractor, or for loss of profit (expectation loss) in case of premature termination, reduction or increase of works as the sub-contractor shall be deemed to have taken adequate measures in programming his works and expenditure and taken necessary financial precaution while executing the works. No interest shall be payable to the Contractor, except as relates to late payment as in the conditions of contract clause 23.3. The contractor shall where called upon, insert his price to compensate for any of the occurrence stated here (premature termination, reduction or increase of works), as a percentage of the contract sum in the Appendix to this section.

1.70 APPENDIX TO SUB-CONTRACT PRELIMINARIES AND GENERAL CONDITIONS

1. ADD TO CLAUSE 1.17

Prices quoted shall include **16% VAT**

In accordance with current Government policy, the **3% Withholding Tax** and **6% advance V,A.T** shall be deducted from all payments made to the sub-contractor, and the same shall subsequently be forwarded to the Kenya Revenue Authority (KRA). The applicable taxes shall be varied according to the Act and Regulations in force.

GENERATOR

INSTALLATIONS

PARTICULAR

SPECIFICATIONS

2d. PARTICULAR SPECIFICATIONS FOR GENERATOR INSTALLATIONS

1. SCOPE

The Contractor shall supply labour and supply, deliver, install, fix, connect, test, label and commission the electrical works, clean, complete and working to every detail as described in the specification and by related specifications and on the drawings listed in the Schedule or Drawings to the satisfaction of the Consulting Engineers.

The Contractor shall be responsible for the supply, delivery, installation, connection, testing and setting to work of the entire electrical system in accordance with the Contract Documents.

The Contractor shall provide all the necessary tools, skilled and un-skilled labour to comply and complete in accordance with the main contractor's works program.

2. STANDARDS & REGULATIONS

The electrical portion of the works shall comply with the current regulations of:

- The Kenya Power and Lighting Co. Ltd.
- Energy Regulatory Commission (ERC) Standards
- The latest Kenya Bureau of Standards. (KEBS)
- National Environmental Management Authority (NEMA) regulations
- Codes of Practice of the British Standards Institution
- The Regulations for Electrical Equipment in buildings issued by the Institution of Electrical Engineers (I.E.E) in Great Britain
- Factories Act
- Any other special regulations issued by local electricity or water undertakings
- This specification.

3. POWERSUPPLY

The supply voltage at the point of use shall be

- 240 volts single phase or
- 415 volts 3 phase 50hz.

This shall be a TN-C-S system via separate neutral and protective conductor throughout the system.

GENERATOR EQUIPMENT

4. COMPLIANCE

The equipment and installation shall comply with B.S. 5514.

The Sub-Contractor shall in his statement of compliance confirm that the engine would be capable of running fuel to BS 2869: 1988 Class A2.

5. GENERATING SET ARRANGEMENT

Unless otherwise indicated the set and its auxiliaries shall be mounted on sufficiently substantial under base. All items which must be held in correct relative alignment shall be located by means of dowels. The set shall be designed and supplied for operation bolted to the floor on robust anti-vibration and shock absorbing devices. They 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 surrounding.

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.

6. OPERATING CONDITIONS

The equipment and all components shall be suitable for the operation in ambient conditions of 5^0C to 40^0C and up to 100% relative humidity

i) In an unheated ventilated building

ii) In the enclosed canopy as specified

Unless otherwise stated all ratings of equipment and components shall be interpreted as **Site Rating** and NOT sea level or other ratings

7. FUNCTIONAL OBJECTIVES

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 649.

For a set which is required for standby duty, it will be connected to the switchboard through a circuit. It shall have an automatic mains failure control, appropriately interlocked with the other incoming supply. Provisions shall be made in the control circuit of the generator for automatic and remote push button control, including the terminals and cable glands for all external cables, which will be supplied by others (unless categorically stated in the bills of quantities), where specified. It shall also be possible to start, operate and stop the set manually, independent of any automatic features.

Within the operating conditions specified in Operating conditions above, the set shall be capable of starting and accepting full load within the shortest possible time, and in any case, in not more than 10 seconds.

8. DIESEL ENGINE

8.1 GENERAL

The engine shall comply in design and performance with BS.649 “Diesel Engines for General purposes” or its approved equivalent. The engine shall be designed for satisfactory operation on fuel oil and lubricating oils complying with BS. 2869.

The engine shall be totally enclosed, with forced lubrication from an integral pump having on the suction side a course strainer and on the delivery side a dual’ full flow’ fine filter with a changeover cock

incorporating pressure by-pass, 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. Manual lubrication of any part of the engine will not be accepted. The capacity of the lubricating oil system shall be sufficient to enable the engine to run continuously for at least 12 hours at any load without replacement.

A filter with a by-pass relief valve shall be inserted in the fuel line immediately before the pump(s). The fuel filter element shall be incapable of passing particles larger than micrometers. The fuel system shall be so arranged that fuel resulting from filter, pump or pipe spillage shall be incapable of entering the engine sump. Air filters complying with KS 06-294: 1986, Grade 'A' and Grade 'B' suitable for use in a dusty atmosphere shall be fitted on the engine air intake(s)

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

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. The engine may be naturally aspirated as pressure charged, or as indicated.

The starting shall be by means of electricity supplied from a starter battery. The starter motor shall be of axial type, de-energizing by a device operated from the engine. A means of manual starting shall also be provided. Suitable means shall be provided for running by hand the engine main shaft and the associated generator to facilitate inspection and overhaul.

If weekly test runs are insufficient to prevent the drying out of the bearings, means shall be provided to ensure that the bearing surfaces are adequately and automatically wetted with lubricating oil either periodically or immediately prior to every start.

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

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 square millimeter to avoid carbonization of oil.

An efficient exhaust silencer with adequate draining facilities shall be supplied, and shall either be mounted on the set or installed in a generator room constructed. The exhaust silencer system shall be so arranged that it may be readily relocated if required. Where any additional piping bends and fittings are specified, the manufacturer shall advise on any problems involved.

8.2 CYLINDER BLOCK

The cylinder block shall be made of one-piece cast iron. It shall have full length water jacket with circulation around each cylinder. The cylinder block shall have wet liners with rubber seal at the bottom end.

8.3 CYLINDER HEAD

The cylinder head for each bank of cylinders shall be of one piece and manufactured from cast iron. It shall be secured by studs of high tensile steel and be easily detachable. Valve seats shall be replaceable.

8.4 PISTONS

The pistons shall be made of die cast aluminium alloy and tapered with a ground skirt. The pistons shall have at least three compression and two oil control rings. The combustion chamber and the valve recess shall be smooth contoured. The pistons shall have fully floating pins.

8.5 VALVES

The valves shall have separate guide presses into the cylinder head. Operation shall be of the normal pushrod/rocket type with tappet adjustment at the rocker arm.

8.6 FLY-WHEEL

The Fly-Wheel shall be of heavy cast iron with close coupling type cast iron flywheel housing and shall have a gear ring bolted onto it. The gear ring shall have heat treated teeth.

8.7 CRANKSHAFT

The crankshaft shall be forged steel with induction hardened main and journals. It shall be statistically and dynamically balanced and shall have replaceable, line steel shell bearings.

8.8 CONNECTING RODS

The connecting rods shall be of I Section forged steel.

8.9 COOLING SYSTEM

The engine may be air or water cooled unless a preference is indicated.

8.10 FUEL AND AIR SYSTEM FILTERS

The engine shall have a non-block injection pump which is gear driven through flexible coupling. The fuel pump shall be integral and shall incorporate a hand primer. The engine shall have a multi-core injector nozzle. A fuel filter shall be provided complete with a replaceable element and the engine shall have a heavy duty oil bath air cleaner.

8.11 GOVERNOR

The Governor shall be of the centrifugal type operating direct on the fuel line and shall be capable of maintaining the speed constant within 33/34 of nominal output in accordance with B.S.849:1958 Class A2.

8.12 PROTECTION

The engine shall be provided with the following protective devices capable of providing audible and visible alarm signals at one or more remote locations.

a) Low lubricating oil pressure.

b) High lubricating oil temperature.

c) High cooling water temperature.

d) High engine speed.

8.13 LUBRICATION

The engine components shall be lubricated via a pressure oil system from an integral oil pump driven by the engine. The system shall incorporate oil filters, the secondary oil filter being of the changeable type. A suitable relief valve shall be provided to maintain the pump discharge pressure within safe limits.

8.14 STARTING

The engine shall start up by means of a D.C motor which shall be supplied from a set of rechargeable batteries of an appropriate voltage and of such a capacity as to enable up to ten start-ups in one hour when fully charged.

8.15 NOISE LEVEL

The Sub-Contractor shall state in his statement of compliance the level of noise in decibels expected in the engine room. In any case this shall not exceed 70 dBA at 7m. The set shall incorporate an integral acoustic canopy to significantly reduce the noise level.

8.16 ANCILLARY POWER REQUIREMENTS

In selecting the size of the diesel engine, the Sub-Contractor shall make suitable allowances for power requirements for the cooling system, the lubricating system and any other requirements that may be necessary for that set.

8.17 VENTILLATION OF ROOM

The Sub-Contractor must ensure that adequate ventilation in the generator room is provided. If any alterations need be carried out to facilitate this, the Sub-Contractor shall communicate this information before installing the generator set.

8.18 FUEL OIL SYSTEM

The set shall have an integral belly/base fuel tank for daily services with an operational running capacity of 8 hours on full load as a minimum or as specified otherwise.

If specified, an auxiliary fuel storage tank whose minimum capacity shall be sufficient to run the engine continuously on full load for at least 72 hours (or as specified otherwise) shall be installed in the position indicated in the contract drawing. It shall be supplied complete with supports. The tank shall be fitted with a fuel pump with a flexible suction hose to permit filling from a drum on the floor.

A three way cock shall be fitted in the line from tank to the engine to enable the fuel to be supplied from a source other than the storage tank. The position of the cock shall be clearly marked 'MANUAL, AUTOMATIC, OFF' as applicable.

A duplex oil filter shall be supplied between the storage tank and the diesel engine. The duplex filter shall be capable of being cleaned without dismantling, or in interruption of the fuel flow, and shall be easily maintainable.

The tank shall be equipped with a graduated dipstick, a clearly visible contents' gauge (not of glass type) and with drain, vent, overflow and inlet and outlet connection.

8.19 LUBRICATING OIL SYSTEM

An engine driven integral gear type lubricating oil pump shall be provided. The lubricating oil system shall include an oil cooler and fine mesh filters, together with devices to indicate lubricating oil pressure and to initiate a 240 volt A.C. Lubricating oil Low pressure Alarm, Lubricating Oil High Temperature Alarm and Cooling Water High Temperature Alarm.

A separate 240 volt A.C. Motor driven automatic lubricating oil priming pump shall be provided for intermittent operation when the diesel is lying idle.

8.20 STARTING OF ENGINE

The diesel generator set shall have facilities for local and remote push button starting, with a Local / Remote / Automatic selector switch at the local panel.

On mains failure the engine shall be capable of being automatically started from battery located near the generator set. The battery shall be complete with drip tray and trickle charger. All necessary relays, contacts, switches and miscellaneous items for the starting sequence shall be supplied and installed in the local control panel.

The system shall be designed to give maximum reliability in starting. The Contractor shall state in detail his proposals to ensure reliable starting and prevention of deterioration of the diesel engine, generator and exciter during idle periods.

All manually operated valves and controls on whose setting the correct operation of the automatic starting equipment depends shall be provided with locking devices.

8.21 AIR COOLING OF ENGINE

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 649 and under the conditions of operations stated earlier.

The engine shall be so designed that the cooling air discharges into or is drawn through a reasonably 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 may be readily attached when necessary, to enable hot air from the cooling system to be discharged outside the building.

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 hand(s) and the engine shall shut down if the maximum is exceeded.

8.22 WATER COOLING OF ENGINE

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

The radiator shall be mounted on the set and the fan(s) shall be mechanically driven from the engine. Where indicated the radiators shall be suitable for remote wall or floor mounting, in which case the fan shall be electric motor driven from a supply similar in voltage, phase and frequency to the alternator output and shall be started on line.

Where remotely mounted, the fan shall only operate when generating set is running and shall be controlled by a thermostat mounted in the radiator such that the fan motor will start on rising temperature 50^0C and stop on falling temperature.

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. 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 drive shall be capable of transmitting the full load with one belt removed.

Circulation by thermosyphon will be accepted provided the engine will operate under the conditions stated in “Air Cooling of Engine” above and in accordance with BS 649. 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 thermosyphon systems and sealed or pressurized 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 the terms stated in the section of "Lubricating Oil System" above

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

A radiator make-up/expansion tank, fitted with float control inlet, shall be provided. If a sealed or pressurized unit is offered the tank may be dispensed with. Where indicated provision shall be made on the radiator framework to permit the attachment of ducting for the discharge air.

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

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.

8.23 GOVERNING SYSTEM

Governing shall conform to B.S. 640 Class A. The governor shall control the frequency within the limits stated in Sections above. Manual speed adjustment shall be provided over a range of +/-15% of the rated speed at any load. The governor system shall be of the mechanical or hydraulic type. In addition the engine shall be fitted with an approved over-speed trip device which shall operate independently of the normal speed governor and shall act directly upon the fuel supply to the engine. The over-speed shall act at a speed of 12% to 15% in excess of normal operating speed.

8.24 EXHAUST SYSTEM

The diesel engine shall be provided with a suitable exhaust system for horizontal discharge outside the diesel generator room. The silencer shall be of spark arresting type and shall be equipped with cleaning and draining arrangements. If an exhaust driven turbo-charger is supplied it shall include air intake filters, manifolds and outlet manifolds.

All necessary ducting, piping, supports and lagging required for the system shall be included. Weatherproof wall boxes permitting expansion shall be fitted where the exhaust piping passes through the building wall or roof. Pipe work shall be connected at site by butt weld connections or use of flanged joints. The use of screwed connectors shall be avoided.

Flanges shall conform to the appropriate Table of B.S.10: 1962. Welding of flanges at site shall be carried out in accordance with B.S.806. The faces of flanges shall be machined and the backs shall be machined or spot faced to receive the bolt heads.

Valves and fittings shall be of approved design and manufacture and shall be subject to the same tests as the highest pressure piping or vessel to which they are connected.

8.25 ENGINE INSTRUMENTS

Unless otherwise indicated the following instruments shall be provided:

a) A lubricating oil pressure & Temperature gauge

b) A fuel gauge

c) A running hour's meter

d) A tachometer indicating the engine speed

e) A water thermometer

f) A cooling water pressure gauge

g) An exhaust gas pyrometer or thermometer mounted near the manifold

h) Lubricating oil thermometers on the inlet to and outlet from the engine, when a lubricating oil cooler if fitted

i) Exhaust turbo-blower pressure gauge(s) as applicable

8.26 ENGINE INSTRUMENTS

All internal unit piping shall comply with requirements of KS-259:11989 for mild steel pipes.

Provision shall be made for ready handing of all parts of the plant during assembly or disassembly of the unit.

Adequate provision shall be made for attaching lifting devices, slings and eyebolts.

9. GENERATOR – ALTERNATOR & EXCITER

9.1 GENERAL

The generator shall comply with B.S.2613:1975, for service in tropical conditions, and shall withstand being idle for considerable periods without any harmful drop in the insulation resistance.

The generator shall have a prime rated net output as specified in the schedules of the Bills of Quantities, at 0.8 lagging power factor, 50 Hertz with brushless rotating rectifier excitation system and voltage regulator. It shall be directly coupled to the engine and be sized such that it will accept the maximum output of the engine including overload. The output voltage shall be maintained within plus or minus 2 ½ % from no load to full load conditions. The alternator shall be capable of operating within the range of plus or minus 15% of the nominal voltage according to the automatic voltage regulator.

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

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 necessarily drying out the insulation.

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

The set is to be used for mains failure duty and an 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), all auxiliaries, fault warnings and shut downs. All faults, warning and shut-downs shall be separately indicated. There shall be test facilities for indication lamps, etc., preferably by means of a single test button.

Means shall be provided for isolating all supplies to the starting panel either by an isolating switch or by withdrawable fuses.

When the set is stopped other than under lock-out conditions, it shall be self-resetting ready for the next start. The set shall be suitable for starting by manual means e.g. by cranking or direct operation of the starter solenoid.

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

It shall be possible to operate the ‘Start’ and ‘Stop’ buttons and to see the ‘Set Failure’ indications without opening the panel doors.

9.2 ALTERNATOR

The alternator shall be of 12 wire reconnectable brushless type rated at 0.8.p.f lagging in accordance with B.S.2612:1975 and having a revolving field, a single self-aligning roller bearing and solid half coupling to connect to the engine.

The alternator shall be screen protected, drip-proof and shall be wound with high temperature, tropicalized class B insulation of the stator and class F insulation on the rotor. The stator frame shall be barrel design with conventional two layer winding in semi-enclosed skewed slot, pitched to give a good wave-form with low harmonic content.

The rotor core shall be specially constructed with strip winding to obtain maximum cooling to the rotor and stator.

9.3 EXCITATION

Excitation shall be by means of brushless direct coupled exciter armature. The exciter frame shall be of modular iron and shall serve additionally as the bearing housing. The exciter armature shall be mounted on a tub on the alternator shaft. Connections shall be taken to the rotating rectifiers, which shall be carried on aluminium castings, from the main room.

The alternators shall be designed for an excitation voltage at full load of not less than 50 Volts unless prior approval is given.

9.4 AUTOMATIC VOLTAGE REGULATOR

A Thyristor type static automatic voltage regulator shall be built into the machine. This regulator shall incorporate a zener diode bridge reference voltage circuit, thyristor drive reactor with series silicon diode and a further commutating diode. Under steady conditions, the automatic voltage regulator shall maintain the voltage within plus or minus 2 1/2% for all balanced loads between no load and full load at power factors between unity and zero lagging. The automatic voltage regulator shall be complete with hand-operated manual control potentiometer which shall be fitted in control panel.

The voltage level controls shall enable the terminal voltage to be adjustable within the range - 5% to +10%.

The Voltage drop controls shall be adjustable for proper division in reactive kVA when operating in parallel with other alternators.

The voltage gain controls shall be adjustable to compensate for engine speed variations when operating with a speed-droop governor.

After any change of load, the voltage shall not vary by more than plus or minus 15% the rated voltage, and shall return to within plus or minus 3% within 3 seconds, and to within plus or minus 2.5 % of rated voltage within 15 seconds.

On starting, the voltage overshoot shall not exceed 15% and shall return to within plus or minus 3% within 3 seconds.

9.5 TERMINAL BOX

Any suitably dimensioned terminal box suitable for conduit or cable entry shall be supplied with undrilled gland plate.

9.6 RADIO INTERFERENCE SUPPRESSION

The generator sets shall be suppressed for radio interference in accordance with B.S.800 and VDE Class G/N.

9.7 RATING

The machine shall be continuously maximum rated in accordance with B.S. 2613 and shall be so derated owing to site conditions - at the specified electrical output is obtained from the alternator. The Sub-Contractor shall provide additional labelling on the generator to distinguish clearly between the nameplate ratings and the actual ratings on site.

The tenderer's manufacturer's catalogue should indicate the percentage reductions from the nameplate rating resulting from altitude and inlet temperature for any of the following engine variations:-

a) Naturally aspirated

b) Turbo-charged without a charge air cooler.

c) Turbo-charged with a charge air cooler.

9.8 ELECTRICAL CONTROL PANEL (AMF PANEL)

The Automatic Mains Failure control panel shall be provided and fitted with the following:-

a) Two contactors and two incoming MCCB's each of suitable rating for controlling the supply from the mains transformer and standby generator.

b) An automatic voltage regulator for the set.

c) Control equipment as necessary including phase failure protection relay for both the mains supply and the generator supply (with both under and over voltage protection) and phase sequence protection relay for the mains supply all to fulfill the functional requirements and automatic changeover as detailed in Part 7.32

d) One ammeter and a selector switch to measure each phase current and neutral current

e) One voltmeter and a selector switch to read line to line and line to neutral voltage

f) A frequency meter. The meters shall comply with BS 89, table 7.

9.9 AUTOMATIC CHANGEOVER CONTROLS

The controls shall be installed and wired in the machine control panel. The control shall be provided such that on failure of the normal electricity supply, it will automatically initiate the starting of and effect the transfer of load to the standby generator. The schematic for the controls shall be approved by the Electrical Engineer before manufacture commences.

Where failure of the normal supply is referred to, it shall be defined as follows:

a) Complete loss of voltage in one line or in all the three lines

b) Falling of voltage below 85% of the normal voltage between two lines or line and neutral

c) Voltage overshoot to 110% of the normal voltage between two lines or line and neutral

d) Incorrect phase sequence

On failure of the normal supply, the unit shall operate in the following manner:

a) After a delay, adjustable from 0 to 15 seconds (to avoid operation by a transient dip in voltage) a signal shall be given to start the standby generating set.

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

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 120 second) the standby contactor shall open and the normal supply contactor shall close; the starting relay contacts shall then open to shut down the generating set.

Provision shall be made so that automatic return to normal supply can be prevented if required. Once a start signal has been sent to 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.

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 standby supply when the set is ready to take load.

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:

a) 'Main Supply Available'

b) 'Generator Supply Available'

c) 'Mains Supply on load'

d) 'Generator Supply on load'

9.10 AUTOMATIC CHANGEOVER CONTROLS

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

a) It fails to start when the electric starter motor has been in operation for 20 seconds under automatic start condition.

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

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

d) In water cooled engines the cooling water temperature exceeds a predetermined limit.

e) In air cooled engines the cylinder head temperature exceeds a safe maximum.

f) The over speed trip has operated.

Failure of the circuits concerned shall also cause a set to shut down. Reset of lock out shall be by hand.

9.11 FAULT INDICATION

Each lock-out 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.

9.12 STARTING BATTERY AND CHARGER

The battery shall be 24 volts and capable of with-standing 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.

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

A single phase supply for battery charging shall be available from the main M.V SWITCHBOARD.

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 may also supply the load of any automatic starting and control equipment, and an additional load up to 24 watts 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 charger and discharge current excluding the starter motor current.

9.13 WIRING AND EARTHING

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 coded and terminated with lugs or eyes or to be soldered, the terminations shall be clearly marked with the numbers and letters of the 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.

All metal work housing electrical equipment shall be bonded to a Copper earthing terminal and connected to station Earth and as detailed in the schedule.

9.14 CONTACTORS

Contactors shall have magnetic circuits designed for a.c. or d.c. operation and shall be rated in accordance with KS 04-182:1982. 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.

9.15 RELAYS

Relays shall preferably be of sealed type mounted in approved plug-in bias 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.

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

9.16 FUSES

Fuses shall comply with KS-183:1978. A spare fuse cartridge for each pole shall be mounted inside each equipment.

9.17 RECTIFIERS, CAPACITORS AND SOLID STATE COMPONENTS

Rectifiers, capacitors and solid state components shall be suitable for any transient voltage and high currents 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.

9.18 ENCLOSURES FOR 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.

10. CONTROL PANEL

10.1 GENERAL

The generator set control shall be a microprocessor-based generator set monitoring, metering and control system which gives the operator a high level of information and control for monitoring and operating the

generator set including comprehensive metering. By lagging trends it shall be possible for the generator to avert possible faults in future.

The control panels shall be totally enclosed IP 32 type plant mounted on an anti-vibration mountings on the alternators, fitted with removable covers giving access to the control gear, terminal and connection blocks and undrilled gland plates for cables entry and shall be finished in tropicalized weather proof paint to suit the set. The control panels shall be rated for the output of the generators.

10.2 FUNCTION

The control cubicle shall house the start/stop buttons and protection systems and shall be complete with all the necessary relays and circuitry for the following requirements.

It shall integrate automatic voltage regulation and engine speed governing.

It shall provide true alternator overcurrent protection, incorporate additional protective functions and offer some degree of load protection.

It shall regulate short circuit current, limiting damage to the distribution system, particularly during single-phase faults.

10.3 CONTROL AND LOGIC SECTION

Facilities shall be available with suitable circuit breakers protection for the following functions:-

a) Manual start

b) Manual stop

c) Stall lockout, i.e. a lockout to prevent re-cranking of an engine upon fuel failure, or stall conditions.

10.4 PROTECTION CIRCUITS

Suitably fused protection circuits, for oil, water, speed and one spare, shall be allowed for. The first stage protection shall be by means of fail-safe circuits while the second stage shall be energized on halt circuits. All circuits except overspeed shall be commissioned after a delay following engine start-up.

The circuits for:-

a) Lubricating oil pressure

b) Water temperature

c) Spare.

Shall be either alarm, or alarm and shut-down. The latter shall be achieved by means of a link within the control panel.

The circuit for engine overspeed shall give simultaneous alarm and shut down. When the engine has a faulty condition, the protection circuits shall still accept further faults. Once a shut-down signal has been given, the protection circuits shall be locked on so as:-

i) Not to give further fault indication as engine stops.

ii) To give indication of fault condition even when the engine has stopped.

The fault circuit shall be re-set by pushing the "Re-Set" button.

One audible alarm mute shall be provided for each fault channel. This shall mute the alarm for the fault causing the alarm, but shall leave the others prepared for further faults.

10.5 SWITCHING SECTION

A suitably fused switching section for engine functions as per list below shall be provided:

a) Fuel rack solenoid (start or stop)

b) Starter motor solenoid via a repeater.

10.6 INDICATION

Indicator lamps (LEDs) as per list below shall be provided:

a) Engine running and protection circuits commissioned - green.

b) Fault parameters - all red.

The indication circuits shall have a lamp test pushbutton by means of which the LED's can be tested.

10.7 CONTROL SWITCHING

A rotary switch with off/on positions, to switch the control circuit supplies. In the 'ON' position the engine shall be started by depressing a push button and stopped by depressing a 'Stop' push button.

The indicators, switches and push buttons shall be mounted on the front face of the chassis unit.

10.8 ALARM

The Contractor shall supply and install an alarm bell which is loud enough to be heard even when the engine is running. The supply for the bell shall be obtained from the control cubicle through suitably rated fuses or circuit breaker.

10.9 MAINS DETECTION

A mains detection unit which can register a mains voltage failure under the following conditions shall be provided:-

a) Failure of any one or more phases

b) Incorrect phase sequence {Contractor shall check phase sequence prior to connection if the detection unit is not available}.

c) Over/under volts on any individual or all phases - i.e. –15% and +5% nominal voltage.

d) Excessive frequency change i.e. minus or plus 3 Hz.

The failure condition shall be used to produce a start signal for the standby engine after a delay. The delay shall be adjustable and shall ensure the failure is not a transient condition.

Mains detection units shall receive their sensing supplied from the busbars feeding the load.

10.10 TERMINATIONS

All internal wiring terminations shall be numbered and marked with appropriate and approved tags whose writing shall not wear out with time.

10.11 TRICKLE CHARGER

The trickle charger shall have rating and service parameters such as to keep the engine start batteries fully charged and ready for service whenever required. When the engine is running the batteries shall be charged from an integral charger alternator.

10.12 BATTERY MONITORING SYSTEM

There will also be a battery monitoring system to warn if battery is "weak" or charge drops too low for a prolonged period of time.

10.13 HOURS COUNTER

The Contractor shall allow for the installation of an hours counter on the control panel of the generator.

11. SURFACE FINISH

All ferrous metal work shall be either painted or processed to give a rust proof coating. Ferrous metal work to be painted shall first to 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 four 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.

Successive coats of paint shall be 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.

12. FACTORY TESTS

The set shall be tested as a unit at the manufacturer's workshop (or elsewhere by agreement) for output and performance generally in accordance with the requirements of BS 649 and as 2613.

The Engineer shall be given adequate notice in writing of the date and time of the work tests and he, or his representative shall if he so desires, be present at such tests and given all reasonable facilities for his own inspections during the course of the tests.

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

13. SPARE PARTS

The contractor shall submit with his tender a separate priced list of recommended spare parts including any optional extras which he recommends should be purchased for the set and its control equipment and are not supplied as standard with the unit. The initial spares required at handover shall be deemed to have been included in the tender pricing as per the schedules attached as part of this document.

14. 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 it controls as per the schedules attached as part of this document.

The tools shall be 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 Contractor in the execution of the contract works but will not be accepted as part of the Contract works by the Engineer unless they are handed over in clean and undamaged condition, in perfect working order and effectively in new condition.

15. TRANSPORT AND STORAGE

All plant equipment shall, during transportation, be suitably packed, crated and protected to minimize the possibility of damage, and prevent corrosion or other deterioration.

On arrival at site all plant and equipment shall be examined and any damage to parts and protective priming coats made good before storage or installation at the contractors cost.

16. MAINTENANCE OF EQUIPMENT

The Contractor shall maintain the complete set and associated control equipment forming the unit for the DLP Period as stated in the other sections of this document from the date that the unit is put into commission and regular use.

During this maintenance period, the contractor shall at his own expense.

a) Make good any defects in the unit and replace any parts that fail or show signs of weakness or undue wear in consequences of faulty design, workmanship or materials.

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

c) Carry out regular examination and services 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 (where necessary) to keep the unit in sound and efficient working order.

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

If during the maintenance period the unit is or is likely to be out of use for a period greater than 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 Contractor, the 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 to proper working order.

At the end of the DLP of maintenance the Contractor shall (in addition to normal servicing work) carry out a compressive examination and test of the set and its auxiliaries, to ensure that the unit is in proper working order and in satisfactory condition for handing over to the Engineer/User whose representative shall be present at such examination and test.

17. MAINTENANCE CONTRACT

The Contractor may be called upon to enter into maintenance contract with the Employer for the servicing the Generating sets after the expiry of the initial DLP Maintenance period. The Contractor shall indicate his willingness to carry out this service at the time of tendering and shall ensure that component personnel are available locally to be called at short notice to attend to Generator faults.

FUEL SYSTEMS

18. COMPLIANCE

The fuel installations must comply with:

a) NFPA 30, NFPA 37, NFPA 54, NFPA 55, NFPA 58, NFPA 70, NFPA 101, NFPA 110,

b) The International Mechanical Code,

c) Underwriters Laboratories: UL 58, UL 142 and/or UL 2085.

19. FUEL PIPEWORK COMPLIANCE

All fuel pipework, fittings, nipples, swaged sleeves, clips, bushes, backnuts etc. shall be as Schedule 40

The fuel pipework & Fittings installations must comply with:

a) Underwriters Laboratories: UL971 standard for all four test fuels: MV, CT, HB, AM

b) Underwriters Laboratories: UL971 and ULC/ORD-C971-2005 for Non-metallic Underground Piping for Flammable Liquids and approved for use for Normal Vent, Vapor Recovery and Product Piping. The International Mechanical Code

20. AUXILLIARY TANK – ABOVE GROUND

If specified, an auxiliary fuel storage tank whose minimum capacity shall be sufficient to run the engine continuously on full load for at least 72 hours (or as specified otherwise) shall be installed in the position indicated in the contract drawing. It shall be supplied complete with supports.

The tank shall be fitted with a fuel pump with a flexible suction hose to permit filling from a drum on the floor.

A three way cock shall be fitted in the line from tank to the engine to enable the fuel to be supplied from a source other than the storage tank. The position of the cock shall be clearly marked 'MANUAL, AUTOMATIC, OFF' as applicable.

A duplex oil filter shall be supplied between the storage tank and the diesel engine. The duplex filter shall be capable of being cleaned without dismantling, or in interruption of the fuel flow, and shall be easily maintainable.

The tank shall be equipped with a graduated dipstick, a clearly visible contents' gauge (not of glass type) and with drain, vent, overflow and inlet and outlet connection.

21. AUXILLIARY TANK – BELOW GROUND

If specified, an auxiliary fuel storage tank whose minimum capacity shall be sufficient to run the engine continuously on full load for at least 72 hours (or as specified otherwise) shall be installed in the position indicated in the contract drawing.

Tank shall be in conformance with Underwriters Laboratories Subject UL-58 and STI-P3® specifications.

The corrosion control system shall be in strict accordance with STI-P3® specifications as applied by a licensee of the STEEL TANK INSTITUTE and shall have the STI-P3® limited warranty against failure due to exterior corrosion and internal corrosion when used with petroleum products or alcohols.

Tank shall bear UL and STI-P3® labels.

The tank, and all steel appurtenances shall be fabricated from commercial or structural grade steel. All carbon steel shall comply with the latest edition of the Specification for Structural Steel, ASTM A36; or

Specifications for Steel, Carbon (0.15 Maximum, Percent), Hot Rolled Sheet and Strip, Commercial Quality, ASTM A569.

The thickness of primary and secondary shell shall be 5/16 inch & 10 gauge respectively.

The vent shall be sized in accordance with API Standard 2000.

Tank shall be complete with Fuel leakage sensor: Discriminating Steel UST Interstitial fuel leakage Sensors with both visual and audio alarm complete with control panel as Veeder-root-sensors and internal ladder.

SCHEDULE No. 1: INFORMATION TO BIDDER

INFORMATION TO BIDDER			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment (√ or X)**
1.1	**Operating Conditions**	As Per Specifications	
1.2	**Site (Address & Details**	As Indicated Under Site Location	
1.3	**Altitude**	Rated for "On Site"	
1.4	**Temperature Range & Relative Humidity to operate in**	As Stated in section 5, In Unheated Building	
1.5	**Dust Conditions if not stated**	As Stated	
1.6	**Functional Requirements**	Automatic Mains failure	
1.7	**Performance**	As specified, 415/240V, 3-Phase ON SITE	
1.8	**Set arrangement** **Weather proof roof and removable side panels**	Required	
1.9	**Remote governor control**	Electronic governor required	
1.10	**Aspiration**	Natural	
1.11	**Manual override starting - For sets larger than 35 kW**	Required	
1.12	**Silencer - Details of additional exhaust pipe work and fittings if required**	Required. Must meet NEMA requirements	
1.13	**Daily Service Tank**	Required	

Item	Feature	Minimum Requirements	Bidder's Response / Comment (√ or X)
1.14	**Manual Transfer Pump**	Required	
1.15	**Fuel Storage Tank (External)**	Required	
1.16	**Fuel Jettison Cock, Fuel Tank**	Required	
1.17	**Engine Instruments – Details to be given if not stated**	Required	
1.18	**Cooling System**	Required	
1.19	**Water Cooling**	Required	
1.20	**Radiator Mounting**	On Engine	
1.21	**Provision for Hot air Ducting**	Required	
1.22	**Electrical Control panel:** • **17 (1) Main Switch** • **17 (2) Provision for parallel Running** • **17 (4) Alternator Field Circuit** • **17 (10) 'Exciter"**	• Circuit Breaker • Not Required • Switch • Not Required	
1.23	**Kilowatt Meter**	Required	
1.24	**Lock Out Remote Indication Circuit**	Not Required	
1.25	**Service Terminals**	Not Required	
1.26	**Earth Field**	Required	
1.27	**Building Drawings, as Comments to Issued Drawings**	Required	

SCHEDULE No. 2: INFORMATION TO BE SUPPLIED BY BIDDER (Kindly FILL)

A. ENGINE

Item	Feature	Bidder's Response (Fill in Pen)
A1.01	Make & Type	
A1.02	Bore	
A1.03	Stroke	
A1.04	Net Continuous Rating (B.S. 5574)	• At Sea Level =
		• On Site =
A1.06	Speed	
A1.07	Year of Unit being put into service	
A1.08	Total Number of Units Sold	Word Wide =
		East Africa =
		Kenya =
A1.09	Supercharger: Make & Type Number in Use	
A1.10	Thermometers: Make & Type	
A1.11	Air Cooling	
A1.12	Quantity of Air Required	
A1.13	Details of Ducting Required	
A1.04	Water Cooling	
A1.15	Details of Water Cooling Circuits	
A1.16	Radiator: Make & Type	
A1.17	Heat Exchanger: Make & Type	

B. ALTERNATOR & EXCITER

Item	Feature	Bidder's Response (Fill in Pen)
B1.01	Make & Type	
B1.02	Bearings	
B1.03	Insulation (B.S. 2757)	
B1.04	Quantity of Cooling Air Required	

C. ELECTRICAL CONTROL PANEL

Item	Feature	Bidder's Response (Fill in Pen)
C1.01	Automatic Voltage Regulator: • Make & Type • Mounting Location	• •
C1.02	Control Circuits & Wiring Diagrams	
C1.03	Relays: • Make & Type • Method of delayed operation	• •
C1.04	Meters: Make & Type	
C1.05	Circuit Breaker: Make & Type	

D. AUTOMATIC CHANGEOVER

Item	Feature	Bidder's Response (Fill in Pen)
D1.01	Contactor unit: Type & Model	
D1.02	Control Switches: Type & Model	
D1.03	Relays: Type & Model	
D1.04	Fuses: Type & Model	
D1.05	Current drawn from Control supply under Prime & Standby Conditions • Prime • Standby	 • •
D1.06	Dimensions • Length • Width • Height	 • • •

E. LUBRICATION OIL

Item	Feature	Bidder's Response (Fill in Pen)
E1.01	Recommended Lubricating Oil(s)	• • • •

F. AUXILLIARIES

Item	Feature	Bidder's Response (Fill in Pen)
F1.01	Lubricating Oil Circuits	
F1.02	Filters	
F1.03	Coolers	
F1.04	Primary Pumps	
F1.05	Tachometer & Drive	
F1.06	Governor	
F1.07	Special; Cold Start Devices	
F1.08	Running Hours Meter	
F1.09	Safety Devices • High Temperature • Low Pressure (Lubricating Oil) • Cooling Water flow trip • Over Speed Trip • Speed sensing devices • Lubricating oil Thermometer (Number and Position) • Water Thermometer • Starting Battery & Charger	• • • • • • • •

G. PERFORMANCE DATA

Item	Feature	Bidder's Response (Fill in Pen)
G1.01	**Exhaust Fans** • **Type** • **Rating**	 • •
G1.02	**Fuel Consumption (L/h)** • **@110%** • **@100%** • **@75%** • **@50%** • **@30%**	 • • • • •
G1.03	**Generator Dimensions & Weight** • **Length(mm)** • **Width (mm)** • **Height (mm)** • **Weight (Kgs)**	 • • • •
G1.04	**Noise Levels – Initial Sound Levels in accordance to National Environment Management Authority (NEMA) Standards** • **dBA @1m** • **dBA @5m** • **dBA @10m**	 • • •
G1.05	**Vibration Dampers: Means of Vibration Dampers Mounted on generator set to prevent vibrations being transferred from generator set to building**	• •

SCHEDULE No. 4: LIST OF TOOLS TO BE SUPPLIED WITH EACH SET

The following tools shall be handed over to the Engineer for handing over to the client before completion of the contract:

Item	Description	Price (Kshs.)
1	Metal tool box with lock and keys	
2	Set of 8 No. Chrome vanadium ring spanners in sizes to suit the set	
3	Set of 8 No. Chrome vanadium open-ended spanners in sizes to suit the set	
4	Set of screwdrivers, 75 mm, 200 mm and 300 mm plus one 200 mm Philips type	
5	One set of feeler gauges	
6	One grease gun to suit greasing points	
7	One oil can, trigger type	
8	One Hydrometer and Plastic Filler bottle with pouring spout	
TOTAL TO BE CARRIED FORWARD TO PRICE SUMMARY SCHEDULE		

Bidder should give details below of any special tool(s) which is deemed necessary and is not captured in the list above and the client should consider buying as an extra option:

Item	Description	Price (Kshs.)
1		
2		
3		
4		
5		
TOTAL		

SCHEDULE No. 5: LIST OF SPARES AND LUBRICANTS TO BE SUPPLIED WITH EACH SET

The following items shall be handed over to the Engineer for handing over to the client before completion of the contract:
These items **SHALL NOT** be used by the contractor to carry out their normal maintenance

Item	Description	Price (Kshs.)
1	Oil Filters - 3 Nos.	
2	Air Filters - 3 Nos.	
3	One injector to suit the set	
4	One set of fan belts comprising..... belts	
5	One set of indicator bulbs comprising ..... bulbs	
6	One set of indicator lenses comprising..... Lenses	
7	One set of fuses comprising.....fuses	
8	One overhaul kit	
9	One 200 Liter drum of sump grade oil.....	
10	One 2 Kilogram tin of grease of grade.....	
11	One 10 Liter plastic container of distilled water.....	
TOTAL TO BE CARRIED FORWARD TO PRICE SUMMARY SCHEDULE		

Bidder should give details below of any other spare(s) which is deemed necessary and is not captured in the list above and the client should consider buying as an extra option:

Item	Description	Price (Kshs.)
1		
2		
3		
TOTAL		

SCHEDULE No. 6: EARTHING

Item	Description	Price (Kshs.)
1	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 meters 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 meter of intervals, connected to the station earth bar via a brass test clamp. **NB:** **WHERE CONDITIONS DEMAND AN EARTH MAT, THE CONTRACTOR SHALL PROVIDE THE SAME IN LIEU OF THE ABOVE. THE PRICING SHOULD INCLUDE SUCH A REQUIREMENT SHOULD THE ENGINEER SO INSTRUCT.**	
TOTAL TO BE CARRIED FORWARD TO PRICE SUMMARY SCHEDULE		

NOTE: The earthing shall strictly be carried out as stated above.

SCHEDULE No. 11: EXTERNAL DIESEL STORAGE FUEL TANK

A. SCOPE

(i) Supply, delivery and installation of fuel (diesel) storage tank (s) together with fuel plant and materials for the complete works as shown on the contract drawing.
(ii) Supply and installation of fuel pumps.
(iii) Testing and commissioning of the complete works as required elsewhere in this specification and as per the factory act.

B. STRUCTURAL DRAWINGS & APPROVALS

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

C. SPECIFICATION OF TANK

Tank shall be non – pressurized steel fuel tanks.

The tank shall be constructed form mild steel having the following properties.

- Tensile strength - 400 – 480 Mpa
- Yield strength - 210 – 240 Mpa

	Min	Max
• Carbon Content	0.2	0.25
• Sulphur content	-	0.05
• Phosphorous content	-	0.05

The tank shall have a shell thickness of 6mm approximately.

Thus the tank shell and the end plates shall be fabricated from either 9mm thick carbon steel plate complying with the requirements of Bs 4360. 1974 grade 40a, or any amendments thereafter. The plates shall be pickled or blast cleaned or otherwise treated for the removal of the mill scale.

Tank Dimension Tolerance

The diameter of the tank at any point on the length of the tank shell, derived from external diameter measurement, shall not exceed + or – 0.25% of the specified diameter.

The tolerance on the circularity at any point on the length of the tank shell i.e. the difference between maximum internal shell diameter shall not exceed 1% of the nominal specified diameter. the overall length of the tank shall not differ by more than 0.5 of the nominal specified overall length.

D. TANK FABRICATION

The entire tank shall be fabricated and factory tested at the manufacturer's works and delivered to site. No further fabrication shall be done at the site.

The plate edge shall be, prepared for welding by flame cutting and thereafter planning or machining to size as required. They shall then be examined for any laminations. (and rejected if laminations found).

All the plates shall then be rolled to the required curvature over the full width length of the plate, ensuring that continuity of curvature is maintained at the longitudinal butt welds. The plates shall then be welded together using any suitable fusion welding process. The shell shall be plated circumferentially, and overlapping with all seams but welded.

If alternative methods of plate joining are adopted, the tenderer shall indicate this at the time of tendering. Nevertheless, the contractor shall supply to the electrical Engineer welding procedures drawings for his prior approval before commencement of manufacture of the tank.

If possible, a single plate shell shall be used to fabricated a given tank. Where this is not possible, the number of shell plates shall be kept to a minimum. In such a case the longitude seams shall break joint at intermediate circumferential seams. The longitudinal seam shall not be situated in the lower third of the tank or on the top centerline.

E. WELDS

All butt welds shall have a throat section not less than the thickness of the plates being joined and shall be welded from both sides. The root faces or root edges shall not be out of alignments by more than 2mm. The leg length of fillet weld shall not be less than the thickness of plates being joined due to poor workmanship or incorrect fit – up shall not exceed 0.5mm.

The welded joints shall be free from defects that would impair the service performance of the tank. The weld metal shall be properly fused with the parent metal a without serious undercutting or overlapping at the toes of the weld. All slag shall be removed from welds and the surfaces shall be clean, regular and of consistently uniform contour. Examination of welds shall both be visual and other non-destructive means such as X-rays or Ultrasonix means.

Defects in welding detected during pressure testing shall be cut out for a distance of not less than 25mm on either side of the defects and re-welded to the satisfaction of the Electrical Engineer and regulation Authorities.

F. TANK OPENING (MANHOLES)

The tank manhole shall be fabricated as per contract drawing which is in accordance with table 3 and figure 7 of BS 2594: 1975. The manhole centerline shall be 450mm form one end of the tank shell. The manhole shall be 600mm inside diameter. The manhole shall be fabricated form carbon steel of same thickness as the tank to which it is welded. Thus, the thickness shall be 9 mm.

The height of the neck from the tank to the top face of the flange shall be 100mm.

Under no circumstances shall manhole neck protrude inside the tank.
Bold holes, of the number and size shown in the contract drawing, shall be drilled off the tank longitudinal axis.
Bolts or studs, nuts and washers, complying with B.S 4190, necessary for bolting the manhole cover shall be supplied.

The manhole cover and flange shall be made from carbon steel of 15mm thickness. A full face manhole gasket of an approved material shall also be supplied.

G. MANLIDS CONNECTIONS

The following shall be fitted to the tank manlids.

(i) 50mm diameter, 4 screwed dip socket complying with requirement of BS 1387 and BS 21.
(ii) A 75mm diameter flanged suction galvanized steel pipe to BS 1387 and BS 21.
(iii) 50mm diameter screwed vent socket complying with BS 1387 and BS 21.
(iv) 100mm diameter screwed fill pipe to BS 1387 and BS 21.

H. LIFTING LUGS

Lifting lugs shall be provided at centre to centre the tank. They shall be welded to the tank as detailed in the contract drawing. The lugs shall only be used for lighting and empty tank.

I. TESTING OF TANK

The Electrical Engineer shall witness all factory and on site tests.
The tank shall be thoroughly cleaned internally of all loose matter and tested hydraulically and then pneumatically as detailed below: -

1) Hydraulic testing
The tank shall be filled slowly until a pressure of 700m bar measured at the top of the tank, is reached. The test pressure shall be maintained for one hour while thorough examination is conducted to ensure that the tank is sound without distortion or leaks.

The tank shall then be thoroughly dried out before subjecting it to pneumatic test.

2) Pneumatic test

The tank shall be filled pneumatically slowly and steadily to a test pressure of 700m bar. Precautions shall be taken not to be near the tank for the first 10 minutes of filling the tank to the test pressure, to avoid injury should the tank fail Inadvently. The test pressure shall register on the pressure gauge. While the tank is under pressure, examination for leaks from joints or seams shall be made, by applying to the tanks external surface soap and water, mixed to a lather, with 50mm paint brush. Tank that shows distortion and/ or leak shall be rejected until substituted or fault remedied to the satisfaction of the Electrical Engineer

Once the tank has been satisfactory tested, the test set shall be removed and the tank thoroughly dried out
The tank manlid and pipe connections shall then be and pipe connections shall then firmly placed in position.
All pipes shall be capped before the tank is finally installed into position.

A test certificate recording results of the above outlined factory and on site tests shall be issued and made available to the Electrical Engineer before the tank is installed into position.

J. MARKETING

The following information shall be permanently and clearly marked on a name –plate attached to the manhole lid or stamped on the lid.

(i) Welding shall be carried out in accordance with KS – 06 – 202 KS – 06 – 206
(ii) Nuts, bolts and washers shall comply with KS – 06 – 217
(iii) The tanks shall have a manhole of diameter of 600mm with the body thickness of 6mm. the fill, suction and vent pipe shall be fitted on the manhole cover.
(iv) All tank fittings shall be fitted on the top of the tank.
(v) In no circumstances shall any galvanized steel be used. The tank shall be painted internally and externally with a primer and finished with black paint. The tank shall be installs supported on base which forms part of these works.

K. PIPEWORK

All pipe work shall be welded construction.

(i) The filling pipe shall be 65mm bore and is to terminate 75mm above the bottom of the tank.
(ii) The suction pipe shall be 40mm bare. It shall be installed to run from the tanks to the generator room. A strainer unit shall be provided as shown on the drawing immediately prior to the connection for the fuel pump. The strainer mesh shall be such that it prevents the passage of particulars larger than 1mm. A gate valve shall be fitted above the strainer.
(iii) The vent pipe shall be 50mm and shall rise 4M above the ground level and terminate with a return bend.
(iv) The dip stick pipe shall be 38mm bore and securely fixed at the bottom of the tank. The dip stick shall be made of brass and calibrated in divisions of 250 Liters the ground with a lockable cap and chain.

L. INTIAL FILLING OF TANK

The initial fuel / oil to fill the tanks shall be supplied by others unless otherwise stated in the bills of quantities

M. TESTING & COMMISSIONING

The tank shall be subjected to an air pressure test of 70 Kpa, both prior to installation and after installation. Suitable safety precautions shall be taken by the sub – contractor to guard against injury and damage in the event of faults in the tank shell.

N. DIESEL PUMP

The fuel in the main storage tanks shall be transferred to the generators base tanks by sparkless diesel pump.

O. DATA LOGGER

The tank must have a calibrated Programmable data logger indicating the volume of the fuel in the tank. The data logger must be supplied complete with software cable of sending SMS if the fuel goes below a certain level. The data logger must be compatible to BACnet BMS RTU protocol

Ksh. _____ **(TOTAL TO BE CARRIED FORWARD TO PRICE SUMMARY SCHEDULE)**

Signed: (as in Tender) _____

Date: _____

Company Stamp: _____

2e. PARTICULAR QUALIFICATION FOR BIDDERS

TABLE 01:

NOTE: All Attachments should be bound in 1No. document with fliers separating the particular sections which shall be presented as part of the Bid. **Presentation shall follow the order stated below.**

BIDDERS REQUIREMENTS			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment** (√ or X)
A	***MANDATORY REQUIREMENTS FOR BID EVALUATION***		
A1	**Company / Firm Registration Certificate**	Attach Certificate	
A2	**Registration with Relevant Bodies & Category as Applicable** **(Note:** For any document Listed, Documentary Evidence of the Certificate Should be attached)		
		NCA	
		LOCAL AUTHORITY	
		P.I.N. Registration Certificate	
		VAT Registration Certificate	
		Tax Compliance Certificate	
		ERC	
		Manufacturers Authorization Letter	
		OTHER (Fill in Pen)	
A3	**Company Profile** A detailed soft company profile indicating the principle place of business MUST be attached to the Bid (Hard Copy or Soft copy in CD / USB Flash drive)	Attach Copy	
A4	**Power of attorney of signatory of Bid (if Joint Venture)**	Attach Copy	
A5	**Long Lead Items Program of Works:** Bidder to attach a Proposed program (Work method and schedule), Descriptions, drawings, and charts, as necessary, which show the lead times for the long lead items timelines	Attach	

BIDDERS REQUIREMENTS			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment** (√ or X)
A6	**Indicate Total Annual Revenue of Construction work performed in the last 3 years in KShs.** • Attach Proof of Financial Statements • Attach Bank Contacts: Name, Address & Telephone Numbers of the banks that may provide references if contacted by Employer		
		2019	
		2020	
		2021	
B	***OTHER REQUIREMENTS***		
B1	**Brochures of Equipment's offered**	Attach with all details	
B2	**Financial Resources Access:** • Evidence of access to Financial Resources to meet the qualification requirements: cash in hand, lines of credit, etc. • List here as appropriate & Note that Proof in Documentary Evidence may be require to be provided upon request	Attach	
B3	**Equipment Guarantee (By bidder) and warranty period specified by manufacturer** **Note:** Minimum of 24 Months is required **Note:** Schedule to be attached of all equipment on warranty	Attach: Note: Warranty shall be specific from date of completion of project.	
B4	**Annual Maintenance Charges** • After Expiry of DLP and Warranty Period, Indicate the proposed charges to be levied for annual maintenance of equipment & accessories • NOTE: The above are to be Labour only charges excluding parts which shall be fitted only with prior approval by the client.		
		1st Year (KShs.)	**Kshs.**
		2nd Year (KShs.)	**Kshs.**
		3rd Year (KShs.)	**Kshs.**
B5	**Foreign Currency**	State Foreign currency used in the pricing (if any) and rate of exchange to KShs.	**1…… (Foreign Currency)** **= ……. KShs.**

BIDDERS REQUIREMENTS			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment (√ or X)**
B6	**Response Time**	In event of emergency, the response time shall be how many hours (Preferred is 3 Hours)	..... **Hours**
B7	**Delivery Period of Equipment from Date of Award (Fill Where Applicable)**		
		Days	
		Weeks	
		Months	
		Years	
B8	**Delivery Period of Site Works from Date of Award (Fill Where Applicable)**		
		Days	
		Weeks	
		Months	
		Years	

TABLE 02:

1.11	**Work of a similar nature and volume performed as Prime Contractor over the last five years. The values should be indicated in the same currency used above. Also list details of work under way or committed, including expected completion date.**			
PROJECT NAME & COUNTRY	**CLIENT / CONTACT PERSON**	**LEAD CONSULTANT**	**TYPE OF WORK DONE & YEAR OF COMPLETION**	**CONTRACT VALUE (KShs.)**

TABLE 03:

1.12	**Qualification and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data.**		
POSITION	**NAME**	**QUALIFICATIONS**	**YEARS OF EXPIRIENCE IN PROPOSED POSITION**
PROJECT MANAGER			
SITE FOREMAN			
OTHER(S)			

TABLE 04:

1.13	Proposed contracts and firms involved.		
SECTION OF THE WORKS	**VALUE OF CONTRACT**	**CONTRACTOR (NAME & ADDRESS)**	**EXPIRIENCE IN SIMILAR WORK**

TABLE 05:

1.14	Information on current litigation in which the Bidder is involved.	
OTHER PARTY(IES)	**CAUSE OF DISPUTE**	**AMOUNT INVOLVED**

TABLE 06:

1.15	**Additional Requirements:** Bidders should provide any additional information required in these documents to fulfill the requirements thereof if applicable		

Signed (As in form of Tender)_____

Official Stamp & Date _____

AVS

INSTALLATIONS

PARTICULAR

SPECIFICATIONS

2c. PARTICULAR SPECIFICATIONS - AVS INSTALLATIONS

22. SCOPE

The Contractor shall supply labour and supply, deliver, install, fix, connect, test, label and commission the electrical works, clean, complete and working to every detail as described in the specification and by related specifications and on the drawings listed in the Schedule or Drawings to the satisfaction of the Consulting Engineers.

The Contractor shall be responsible for the supply, delivery, installation, connection, testing and setting to work of the entire electrical system in accordance with the Contract Documents.

The Contractor shall provide all the necessary tools, skilled and un-skilled labour to comply and complete in accordance with the main contractor's works program.

23. STANDARDS & REGULATIONS

The electrical portion of the works shall comply with the current regulations of:

- The Kenya Power and Lighting Co. Ltd.
- The latest Kenya Bureau of Standards.
- Codes of Practice of the British Standards Institution
- The Regulations for Electrical Equipment in buildings issued by the Institution of Electrical Engineers (I.E.E) in Great Britain and
- This specification.

24. POWERSUPPLY

The supply voltage at the point of use shall be

- 240 volts single phase or
- 415 volts 3 phase 50hz.

This shall be a TN-C-S system via separate neutral and protective conductor throughout the system.

AVS EQUIPMENT

25. GENERAL

The AVS Contractor shall supply labour and supply, deliver, install, fix, connect, test, label and commission the AVS works, clean, complete and working to every detail as described in the specification and by related specifications to the satisfaction of the Consulting Engineers.

26. AVS FOR PROPOSED DEVELOPMENT

The installations indicated in the schematics shall be fed by uninterruptible power supply. This supply shall be from a centralized AVS system.

The AVS unit supplied must have Independent Correction of each phase.

The AVS shall be supplied together with an AVS By-Pass Switch Gear which shall comprise an Input breaker & under/over voltage relays with contactors, Reversed Phase sequence detection and correction, Delay on Start (Soft Start) and It must also have TVSS provided as part of the package. Cabling and

terminations between the power Automatic Voltage stabilizer and the By-pass switch shall be part of these works and all materials and labor for such must be included in the bid.

27. POWER DISTRIBUTION REQUIREMENT

The AVS will be located in the AVS room located at the indicated designated space within the premises and will be supplied from a three-phase input mains. The AVS output shall be three phase and should have its own supply bus separate from the other electrical power supply up to the work area outlets or as may otherwise be indicated in the schematics.

28. POWER DISTRIBUTION REQUIREMENT – FOR THE PREMISES

The AVS will feed a dedicated stabilized power distribution board which shall feed sub boards or various final sub circuits on their respective zones or as may otherwise be indicated in the schematics.

The various distribution boards or consumer units will be supplied and installed by others

29. OPERATING CONDITIONS

- The equipment and all components shall be suitable for operation in ambient conditions of 5º to AVS 45º centigrade and up to 100% relative humidity in an unheated ventilated building.
- All ratings of equipment and components shall be interpreted as site ratings and NOT sea level or other ratings.
- The AVS Contractor is deemed to have visited the site and if unable to locate it to apply to Norkun Intakes ltd, P.O. Box 605, 00100 – Nairobi or info@norkun.com, for directions to enable him to do so. The AVS Contractor is deemed to have acquainted himself therewith as to its nature, position, means of access, etc., and no claim in this connection will be allowed. No claim will be allowed for traveling or other expenses which may be incurred by the AVS Contractor in visiting the site or preparing a tender for the contract works, and subsequent site visits to be called by the Engineer and / Architect during the contract period.

30. FEATURES OF THE AUTOMATIC VOLTAGE STABILIZER

STANDARD SPECIFICATIONS ON SITE			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment (√ or X)**
1	**Input**	415 ± 25% (3P+N)	
2	**Output**	415 ± 1% (3P+N)	
3	**Capacity**	KVA as Specified	
4	**Regulation**	Better than ± 1%	
5	**Winding**	Copper Wound	
6	**Duty Cycle**	Continuous	
7	**Frequency (adjustable)**	50 HZ ± 0.5% HZ	
8	**Waveform Distortion**	Nil	
9	**Power Factor**	Nil	
10	**Ambient Temperature**	5° C to 45° C Max	
11	**Start / Stop**	Must be Soft Start & Soft Stop	
12	**Transient voltage Surge suppression**	Mandatory to have	
13	**Monitoring relay for under / over voltage**	Mandatory to have	
14	**Environment**	Designed for indoor tropical use up to 100% relative Humidity in an unheated unventilated building.	
15	**Mounting**	Free on wheel (lockable) / with floor mounting brackets as per manufacturer's recommendation	
16	**Server Motor**	Brushless	
17	**Control Type**	Servo Control / Relay Control	
18	**Cooling**	Air Cooling / Oil Cooling	
19	**Temperature Rise (Max)**	45° C Above Ambient	
20	**Correction Speed**	50 Volt per Second minimum	
21	**Correction Accuracy**	± 1%	
22	**Trip & Restart**	Auto System	
23	**Duty Cycle**	100% Continuous	
24	**International Compliance standards**	IEC 439, BS 6527, IEEE 587	
25	**Transient Suppression**	Above 270V I-ph. 450V 3-Ph.	
26	**Servo Bypass Switch**	Mandatory to have	
27	**Digital /Analog frequency voltmeter & Ammeter**	Mandatory to have	
28	**Start / Stop Push Buttons**	Mandatory to have	
29	**RFI Filter / Surge suppressor**	Mandatory to have	
28	**Meter**	Voltmeter with input and output selector switch	
30	**Indicating Lamps**	Power ON, High/Low Voltage indication	

Item	Feature	Minimum Requirements	Bidder's Response / Comment (√ or X)
31	**Protection**	• Under voltage / Over voltage cutoff at output • Over load protection	
32	**Controls**	• Auto / Manual selector switch • Increase / Decrease selector switch • Input / Output Volt selector switch • Port for variation in output in auto mode	
33	**Auto Start / Stop**	The inverter should stop and start automatically upon mains power outage and restoration. Must be soft start and soft stop	
34	**Auto Search Facility**	The inverter runs on auto by-pass with alarm if the load is greater than its' rated output and keeps searching for its correctness after every 5 secs. As soon as the load is decreased, it gets on	
35	**BMS Compatibility**	As a mandatory requirement, the unit must come factory fitted with a BACnet IP BMs port fully configured and any necessary software for plug and play for all the parameters in the LCD display pane	

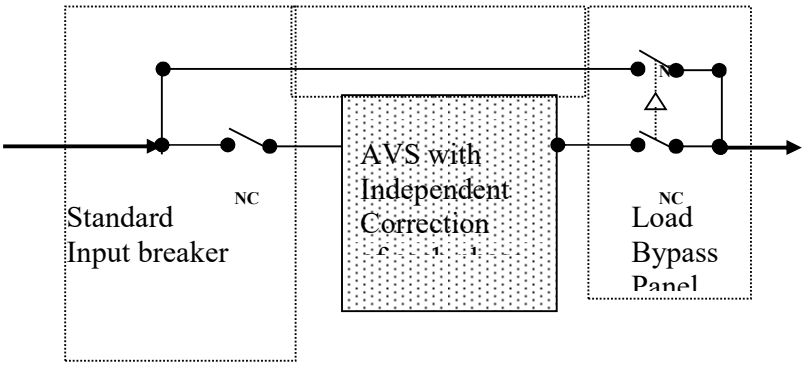
31. BMS Compatibility

As a mandatory requirement, the unit must come factory fitted with a BACnet IP BMs port fully configured and any necessary software for plug and play for all the parameters in the LCD display pane

Line Drawing for AVS By-Pass Switch Gear

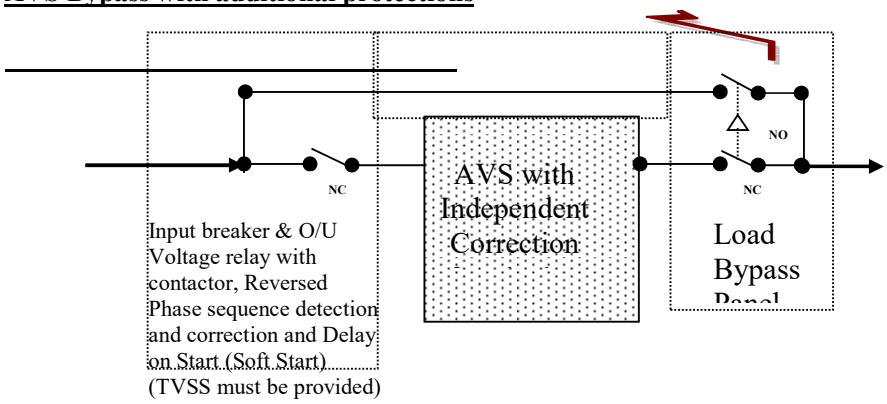
OPTION 1:

AVS Bypass standard with Manual bypass only



OPTION 2: (THIS IS THE OPTION TO BE PRICED FOR COMPLETE WITH BY PASS AND ALL MCCBS INDICATED

AVS Bypass with additional protections



KEY NC – Normally Closed
NO – Normally Open

UPS

INSTALLATIONS

PARTICULAR

SPECIFICATIONS

PARTICULAR SPECIFICATIONS FOR UNINTERRUPTIBLE POWER SUPPLY UNITS

1.1 GENERAL

This specification describes the general features of a continuously rated, solid state three / single phase Uninterruptible Power Supply (UPS). The UPS utilizes true on-line, double conversion topology, whereby the output power supplied is derived directly from the UPS inverter without the need for an internal step-up output transformer. The UPS will be used to operate in conjunction with the existing building supplies and shall provide high quality power distribution for critical loads.

1.2 STANDARDS

The product shall have CE marking in compliance with the following European directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

The manufacturer shall demonstrate conformity with the UPS harmonized standards and directives EN 62040-1-1 (Safety) and EN 62040-2 (EMC).

The UPS shall be designed in accordance with the applicable sections of the current revision of the following standards. Where a conflict arises between these documents and statements made herein, the statements in this specification shall govern.

Safety Standard:

- EN 62040-1-1:2003
- EN 60950-1:2001/A11:2004

Electromagnetic Compatibility Standard (EMC):

- EN 62040-2:2005
- EN 61000-3-2:2000
- EN61000-3-3:1995?A1:2001
- EN61000-6-2:2001
- EN61000-6-4:2001

Performance Standard:

- EN 62040-3:2001

1.3 SYSTEM DESCRIPTION

1.3.1 General

The UPS system shall consist of a single UPS module or the appropriate number of UPS modules connected in parallel for operation in capacity / N+n / n+1 redundancy mode as stated in the schedules.

For a parallel configuration, the UPS shall be supplied complete with automatic parallel connection terminals, communication cables, individual module isolators, input/output power terminals and an integral wrap around maintenance bypass switch. Single points of failure shall be eliminated whereby each UPS module is autonomous, incorporating individual active components such as Power Units, Static Bypass Switches, CPU's, Control Panels and Separate Battery Sets. All UPS modules must operate simultaneously and equally share the load without utilizing a centralized static bypass switch or system control module.

1.3.2 Parallel Installation

1.3.2.1 Capacity (non-redundant) system.

All the UPS modules connected in parallel are required to supply the full rated load. If a UPS module should malfunction, the load is to be transferred automatically, and simultaneously, to the bypass line via each of the UPS internal static bypass switches.

The battery set should consist of at least two protected strings so that in the event of a battery malfunction the affected string is automatically isolated from the system thereby ensuring battery autonomy is retained, albeit of a shorter duration.

1.3.2.2 Redundant operation

The UPS system shall operate in an N+n configuration where N is the number of UPS units connected in parallel to support the load and n is the number of UPS units connected in parallel to provide the coefficiency of redundancy.

The parallel UPS units shall be capable of operation with a separate dc supply for each UPS unit. The batteries should be configured so that in the event of a failure of one battery set the specified autonomy at full load is maintained.

The malfunction of one of the UPS modules shall cause that particular UPS module to be automatically isolated from the system and the remaining UPS modules shall continue to support the load.

Replacement or repair of a UPS module shall be achieved on line, without risk to personnel, and without disturbance or risk to the connected load. It should not be necessary to place the parallel UPS configuration into maintenance bypass mode, thereby switching the connected load directly on to mains or generator supply, to facilitate the replacement or repair of a UPS module.

1.3.3 Modes of Operation

The UPS module shall be designed to operate as a true on-line, double conversion, Voltage and Frequency Independent (VFI-SS-111) system where the UPS output is independent of supply

(utility/generator) voltage variations, and frequency variations are controlled within EN 62040-3:2001 limits.

The following modes of operation shall apply:

A Normal - The critical a.c. load is continuously supplied directly by the UPS inverter. The UPS input free running rectifier derives power from the utility or generator a.c. source and supplies d.c. power to the inverter. A separate but integral battery charger shall maintain a ripple free float-charge voltage to the battery.

B Battery - Upon failure of the input a.c. power supply the critical a.c. load is supplied by the inverter, which obtains power from the battery. There shall be no interruption in power to the critical load upon failure or restoration of the utility or generator a.c. source.

C Recharge - Upon restoration of utility or generator a.c. power after a power outage, the input rectifier shall automatically restart and resume supplying power to the inverter and the battery charger shall recommence recharging the battery. The UPS input rectifier shall provide a soft start on the return of the utility or generator a.c. power. For parallel configurations, each UPS module shall switch on sequentially, with a switch on delay of between approximately 5 to 10 seconds.

D Automatic Restart - Upon restoration of utility or generator a.c. power, after an a.c.power outage and after a complete battery discharge, the UPS module(s) shall automatically restart and resume supplying power to the connected load via the inverter.

E Static Bypass - The static bypass shall provide an alternate path for power to the connected a.c. load and shall be capable of operating in the following manner:

Single UPS module installation

1 Automatic - In the event of a UPS failure or should the inverter overload capacity be exceeded, the UPS unit shall perform an automatic transfer of the connected a.c. load from the inverter to the bypass source.

2 Manual Operation - Should the UPS module need to be taken out of service for limited maintenance or repair, manual activation of the bypass shall cause an immediate transfer of the connected a.c. load from the inverter to the bypass source. Full electrical isolation of the UPS system shall therefore be obtained, without disruption to the critical load, by operation of an integral wrap-around maintenance bypass switch.

Parallel UPS module installation

1 Automatic - In the event of a UPS failure the faulty UPS module shall automatically disconnect itself from the critical bus without affecting the critical load. If the remaining UPS module(s) are unable to support the load, e.g. an overload condition, all the UPS modules (including the faulty module) shall perform an automatic transfer of the connected a.c. load to the bypass source via each of their internal static bypass switches.

2 Manual - Should all the UPS modules need to be taken out of service for limited maintenance or repair, manual activation of the static bypass switch on one of the UPS modules shall cause an immediate transfer of the connected a.c. load to the bypass source via each of the UPS modules' internal static bypass switch. Full electrical isolation of the UPS system shall therefore be obtained, without disruption to the critical load, by operation of an integral wrap-around maintenance bypass switch.

1.4 SYSTEM CONFIGURATION

The UPS system configuration shall comprise of fully enclosed, free standing module(s)

One System cabinet

1. The system cabinet shall be fitted with UPS modules. Each module shall be rated for a full load capacity of the kVA stated in the schedules, at 0.8p.f., 400Vac, 50Hz, three phase input/output.

2. The modules shall be internally and automatically connected in parallel within the system cabinet to provide the indicated capacity / redundancy.

3. The above configuration shall include for spare ways within the system cabinet to permit future UPS redundancy, or capacity, upgrade without disruption to the critical load.

Two System cabinets

1. The system cabinets shall be fitted with a total of UPS modules. Each module shall be rated for a full load capacity of kVA, at 0.8p.f., 400Vac, 50Hz, three phase input/output.

1. The modules shall be internally and automatically connected in parallel within each system cabinet. Separate external switchgear shall be provided by the UPS manufacturer to enable the output of each system cabinet to be connected in parallel. The switchgear shall be designed to comply with the LV specifications described elsewhere and shall incorporate all the necessary, protective devices, isolators and bypass switches to ensure safe and correct parallel operation in accordance with the UPS manufacturers recommendations.

3. The above configuration shall include for a total of spare ways within the two system cabinets to permit future UPS redundancy, or capacity, upgrade without disruption to the critical load.

1.5 PERFORMANCE REQUIREMENTS

The UPS shall be a true on-line double conversion, Voltage and Frequency Independent (VFISS-111) technology in accordance with the performance standard EN 62040-3:2001. The UPS system shall be capable of paralleling for capacity or redundancy up to a maximum of 10x UPS modules connected in parallel.

1.5.1 AC Input to UPS

Voltage configuration:, 415/240 Vac nominal, three- phase, 4-wire-plus-ground.

Input frequency: 35 to 70 Hz, without switching to battery supply

Input current distortion: sinewave <2% THDi maximum at 100% rated load, 415/240 Vac

Input power factor: equal or greater than 0.99 at 100% rated load, 0.96 at 50% rated load (lagging)

Inrush current: limited by soft start and not exceeding In

The input voltage window shall be ±20%, based on a nominal input voltage of 230/400V. Within the input voltage range shown below the UPS shall not draw power from the batteries to support the load.

AC Output

Output Rating	Single or Capacity UPS Installation Continuously for rated kVA />0.9 p.f.
Output Rating	Parallel Redundant UPS Installation
	N+1 parallel redundant, continuously at rated p.f kVA and >0.9
Voltage configuration	415/240 Vac, three-phase, 4-wire-plus-ground.
Voltage tolerance	static ± 1% dynamic ± 4% (zero to 100% to zero load steps)
Frequency regulation	50 Hz, ± 0.1% (free running)
Frequency slew rate	2.0 Hz/sec maximum
Bypass frequency synchr. range (selectable)	<± 2%
Voltage Distortion	± 2% total harmonic distortion (THD) maximum -100% linear load ± 4% total harmonic distortion (THD) maximum -100% non-linear load (EN 62040-3:2001)
Load power factor range	>0.9, without de-rating
Load peak (crest) factor	3:1 minimum
Load unbalance	100% (all 3 inverter phases shall be regulated independently)
Overload capability (inverter)	125% Load -10 min 150% Load -60 sec If the overload limits or times are exceeded the UPS(s) will transfer the load to bypass supply (if available) via the internal static transfer switch(s)
Phase Angle Tolerance	± 0 deg.
Short circuit capability (rms)	Inverter 2 x In for 250ms Bypass 10 x In for 10ms
Transient recovery time	to within 1% of steady state output voltage within 20 milliseconds

1.5.3 UPS Efficiency

The overall efficiency (ac-dc-ac, on-line mode) shall not be less than 90% at 10% to 100% of full rated load.

1.5.4 Batteries

A The battery system shall be sized to support a connected load (>0.9 p.f.) for a minimum of **10** minutes (unless otherwise specified in the schedules) at an ambient temperature of 0° to 40°C.

B The battery system shall consist of gas recombination, valve regulated, lead acid cells (VRLA), compliant to BS6290 Part 4 and BS EN6089-2.

C The UPS battery charging circuit shall comprise of a separate battery charger and not depend on a charge voltage being derived from the UPS input rectifier. Consequently the battery charging voltage shall have zero a.c. (ripple) content.

D For single UPS modules the battery system shall consist of a minimum of 2 parallel strings of multiple cells. Each individual parallel string shall have its own dedicated means of electrical protection.

E For multiple UPS modules connected in parallel the battery system shall comprise of a separate battery set for each individual UPS module. Each separate battery set may consist of one protected string of multiple cells. If two or more parallel strings are used then each individual string shall have its own dedicated means of electrical circuit protection.

For the above battery system arrangements the batteries shall be configured so that in the event of a battery malfunction the affected string is automatically isolated from the system thereby ensuring battery autonomy is retained (see System Description 1.3.2).

F The batteries shall be housed in cabinet/s comprising a floor-standing steel enclosure with dimensions and paint finish to match the UPS system cabinet/s to form a continuous suite when standing immediately adjacent to the UPS system cabinet/s.
The battery cabinet/s shall have full width opening doors to permit ease of access for the purposes of maintenance and/or repair of the batteries.

G Alternatively, the batteries shall be housed on open or cladded racks of a steel construction, having an epoxy powder-coated finish, with adjustable feet for leveling and adequately designed to support the weight of the batteries and permit ease of access for the purposes of maintenance and/or repair of the batteries.

H A fully discharged battery system shall be capable of being recharged to 80% of the UPS output capacity within a maximum period of 10 times the normal total discharge time period, and to 90% of the UPS output capacity within a maximum period of 4 hours.

I The UPS d.c. bus voltage shall be variable whereby the number of battery blocks can be adjusted between 40 to 50 (12 Vdc blocks) or 80 to 100 (6 Vdc blocks) to enable the battery system to be optimized for size and cost.

1.6 ENVIRONMENTAL CONDITIONS

1.6.1 The UPS system shall be designed to operate continuously at full load without degradation of its reliability, operating characteristics or service life in the following environmental conditions:

- UPS ambient temperature range 0°C to 40°C,
- Battery ambient temperature range 0°C to 40°C

- Humidity 5 to 95% RH non-condensing

1.6.2 The UPS system shall be designed for operation in altitudes up to 1000 metres, without the need for derating or reduction of the above environmental operating temperatures.

1.6.3 The audible noise generated by each UPS module during normal operation shall not exceed 65 dBA measured at 1 metre from the surface of the UPS.

1.6.4 The UPS system shall be able to withstand a minimum 15kV electrostatic discharge without affecting the critical load.

1.6.5 The maximum floor load of a fully populated system cabinet (excluding batteries) shall not exceed a UDL of 9.0 kN/ m2

1.6.6 To permit access through a standard single doorway opening, either the width or the depth of the UPS system and battery cabinets shall not exceed 750mm.

1.6.7 For UPS modules within a cabinet, the UPS system cabinet shall comprise of a floor standing steel enclosure to house the UPS module(s), automatic parallel connection terminals, communication cables, individual module isolators, input/output power terminals and an integral wrap around maintenance bypass switch, necessary for the correct operation of the UPS in accordance with the requirement of the specifications. All switchgear and interconnections must be adequately protected to enable an isolated UPS module to be safely maintained or repaired whilst the remaining system supports the load.

1.6.8 It shall be possible to true 'hot-swap' each UPS module to enable the safe removal, or insertion, of a UPS module without risk or disruption to the critical load and without the need to transfer the critical load directly to mains or generator supply.

1.6.9 The UPS system shall be designed to limit the injection of current harmonics in to the incoming utility supply and as such the maximum total input current harmonic distortion should not exceed 2% THDi when the UPS system is operating at the UPS manufacturer's specified rating.

1.7 USER DOCUMENTATION

The specified UPS system shall be supplied with one (1) user's manual. Manuals shall include:

1. General arrangement of the UPS showing dimensions and weight
2. User operating instructions
3. Single line schematic diagram with functional description of the equipment
4. Installation drawing along with recommended cable and protective device sizes
5. Safety and maintenance guidelines

1.8 AFTER SALES SERVICE

1.8.1 Warranty

The UPS manufacturer shall warrant the UPS system, including the batteries, against defects in materials and workmanship for 12 months from the date of commissioning or 15 months from the date of delivery, whichever is soonest. Subject to the UPS's being commissioned by the manufacturers trained engineer, the warranty shall provide free replacement parts and onsite labour.

1.8.2 Extended Warranty

The UPS manufacturer shall provide the facility for enhancing or extending the warranty by providing an annual maintenance contract. The maintenance contract shall provide:

- guaranteed response time
- at least two preventative maintenance visits per year
- 24 hour telephone support directly from the UPS manufacturer
- labour, travelling to site and incurred expenses
- replacement parts (excluding batteries outside the warranty period)

1.9 QUALITY ASSURANCE

1.9.1 UPS Manufacturer Qualifications

The UPS manufacturer shall have acceptable experience in the design, manufacture, and testing of static UPS systems.

1.9.2 Factory Testing

Before shipment, the manufacturer shall fully and comprehensively test the system to assure compliance with the specification.

SECTION 2 • PRODUCT

2.1 FABRICATION

2.1.1 Construction

All materials and components making up the UPS shall be new, of current manufacture, and shall not have been in prior service except as required during factory testing. The UPS shall be constructed of replaceable sub-assemblies.

2.1.2 Wiring

Wiring practices, materials, and coding shall be in accordance with the requirements of the EN 50091 and other applicable British and European codes and standards.

2.1.3 UPS Cabinet

The UPS system cabinet shall offer a minimum degree of protection to the EN 60529 standard, IP20 code. The UPS cabinet shall be cleaned, primed and painted in RAL 9007. Either the width or the depth of the UPS system cabinet should not exceed 750mm, to permit access through a standard doorway.

2.1.4 Battery Cabinet

The battery cabinet shall offer a minimum degree of protection to the EN 60529 standard, IP20 code. The battery cabinet shall be cleaned, primed and painted to RAL 9007 and should match the UPS system cabinet(s) in appearance and height. Either the width or the depth of the battery cabinet should not exceed 800mm to permit access through a standard doorway.

2.1.5 Battery Racks

The battery racks shall be of a steel construction, having an epoxy powder-coated finish, with adjustable feet for levelling. Open racks shall not exceed 2 meters in height to the top tier and should not be more than 2 rows deep if it is not possible to gain rear access, e.g. the rack is placed against a wall.

Cladded racks shall offer a minimum degree of protection to the EN 60529 standard, IP20 code and the panels shall be cleaned, primed and painted to RAL 9007.

2.1.6 Cooling

The UPS module shall be forced-air cooled by an internally mounted fan.

2.2 COMPONENTS

2.2.1 Input Converter

A General

Incoming a.c. power shall be converted to a regulated d.c. output by the input converter for supplying d.c. power to the inverter. The input converter shall provide input power factor and input current harmonic distortion correction.
12 pulse rectifier and/or filter devices will not be accepted if they have a detrimental effect on the overall UPS efficiency.

B AC Input Current Limit

The input converter shall be provided with a.c. input over current protection.

C Input Protection

The UPS shall have built-in protection against undervoltage, overcurrent, and overvoltage conditions, including low-energy surges introduced on the primary a.c. source and the bypass source. The UPS cabinet shall not contain an input circuit breaker. The electrical contractor shall supply an input circuit breaker/fuse sized to supply the rated load and to recharge the battery at the same time.

D Battery Recharge

To prolong battery life, the UPS shall have the facility for automatically adjusting the battery charging voltage according to the environmental temperature of the batteries.

The battery charger shall be ripple-free avoiding premature battery ageing.

2.2.2 Inverter

A General

The inverter shall convert d.c. power from the input converter output, or the battery, into precise regulated sinusoidal wave a.c. power for supporting the critical a.c. load.

B Overload

The inverter shall be capable of supplying current and voltage for overloads exceeding 100% and up to 150% of full load current. A visual indicator and audible alarm shall indicate overload operation. The load shall be immediately transferred to bypass when the load current exceeds this level of overload.

In the event the bypass supply is unavailable (e.g. mains failure), the inverter shall have electronic current-limiting protection to prevent damage to internal components. The inverter shall be self-protecting against any magnitude of connected output overload and the inverter control logic shall sense and disconnect the inverter from the critical a.c. load within 200 mS.

C Output Frequency

The output frequency of the inverter shall be controlled by an oscillator. The oscillator shall hold the inverter output frequency to ± 0.1% for steady state and transient conditions. The inverter shall synchronize with the bypass supply assuming the bypass supply stays within the selected range. If the bypass source fails to remain within the selected range, the inverter shall revert to the internal oscillator.

D Battery over Deep Discharge Protection

To prevent battery damage from deep discharging, the UPS control logic shall monitor the discharge voltage and shut the UPS down at a pre-set minimum dc voltage. This level is dependent on the rate of discharge and battery autonomy and shall be adjusted at the time of commissioning the UPS equipment. Under any circumstances it should not be set to less than 1.67V per cell.

2.2.3 Display and Controls

A General

Each UPS module shall have its own discrete status/alarm panel located on the front door of the system cabinet. The status/alarm panel shall consist of multiple status LEDs, switches, and an alphanumeric LCD display for additional alarm/configuration information. During normal operation (on-line), all mimic display LEDs shall be green in colour and indicate the following:

Line 1 (a.c. Input rectifier)
Line 2 (a.c. Input by-pass)
Battery (Load supplied from the battery)
On Inverter (Load supplied from the inverter)
On Bypass (Load supplied from the by-pass)

A UPS fault shall be identified via additional indicators and audible alarms to notify the user that a UPS fault condition has occurred. During mains failure the colour of the LED's shall be as follows:

Line 1 (a.c. Input rectifier) red
Line 2 (a.c. Input by-pass) red
Battery (Load supplied from the battery) green
On Inverter (Load supplied from the inverter) green
On Bypass (Load supplied from the by-pass) off (no colour)
If there is a fault condition, the UPS shall attempt to maintain conditioned power to the load or at minimum transfer to bypass. In addition to a visual fault signal (alarm), the UPS shall also record fault occurrences in a rolling event log. The event log shall record up to 64 occurrences, with the oldest events discarded first, etc. The user shall have access to the event log through the LCD display. Every alarm and/or event recorded in the event log will contain a time and date stamp.

B Audible Alarms

The volume of all audible alarms shall be at least 65 dBA at a distance of one meter. An audible alarm shall be used in conjunction with the LED/LCD display to indicate a change in UPS status.The audible alarms shall warn loss of mains or generator supply, low battery (whilst on battery), and all other alarm conditions. For all audible alarm conditions, the display shall identify the cause of error/alarm. All alarm tones shall be a continual tone until the condition rectifies itself or the alarm is silenced. Once silenced, the audible alarm shall not sound until a new alarm condition is present, but the LED indication shall continue to identify the alarm condition.

C Alarm Silence Button

The display panel shall include an audible alarm 'Reset' switch. If the alarm mute (Reset) switch is pressed for one second, all current audible alarms shall be disabled. If a new alarm occurs, or a cancelled alarm condition disappears and then re-appears, the audible alarm is re-enabled.

D LCD Display

The LCD display shall be used to provide the following information to the user and UPS service engineer:

- Phase Voltages: Input to converter
- Input to by-pass
- UPS output
- Battery DC Voltage (voltage to/from battery)
- Current: UPS output (line current)
- Battery charging/discharging
- Frequency: UPS Input
- UPS output
- Autonomy: Remaining back-up time (minutes)
- Battery capacity (%)
- Others: UPS output active power (kW)
- UPS output reactive power (Kvar)
- UPS output apparent power (kVA)
- UPS load (% per phase)

2.2.4 Automatic Battery Test

The UPS shall initiate an automatic battery testing sequence periodically (default setting once a month), at a programmed day and time of day, selectable by the end user. It shall be possible for the user to disable the automatic battery test. Should a fault with the battery be detected, the UPS will immediately return to normal mode and a fault status (visual, audible, and remote) shall be indicated. No audible or remote signal indication of the battery test shall be communicated during the duration of the automatic battery test.

The automatic battery test shall operate if no UPS alarm conditions are present and if the battery is at least 90% of its full capacity.

2.2.5 Remote Emergency Power Off (EPO)

The remote 'emergency power off' function (EPO) shall allow the user to immediately shutdown the UPS output supply in an emergency situation. The EPO shall be able to interface with normally closed, volt-free contacts external to the UPS. The EPO connection to the UPS shall be to a clearly identified terminal block type connector.

The UPS EPO shutdown function shall not operate if the UPS internal manual bypass switch is in the bypass position. When the external EPO function has been re-set, manual intervention is required to restart

the UPS. The electrical contractor shall include the facility for interfacing the EPO circuit with the supply feed of the UPS and provide a means of disconnecting all sources of power to the UPS.

2.2.6 Standby Generator On contact

The UPS shall have the facility whereby, on receipt of a volt free contact closure start signal from a standby generator supplying the UPS, the UPS system will automatically

- inhibit battery recharge (selectable)
- inhibit transfer to bypass (selectable)

2.2.7 Bypass

A. General

A static bypass circuit shall be provided as an integral part of the UPS module. The bypass control logic shall contain an automatic transfer control circuit that senses the status of the inverter logic signals and operating and alarm conditions. This control circuit shall provide a transfer of the load to the bypass source, without exceeding the transient limits specified herein, when an overload or malfunction occurs within the UPS.

B. Automatic Transfers

The transfer control logic shall automatically activate the bypass, transferring the critical a.c. load to the bypass source, after the transfer logic senses one of the following conditions:

- Inverter overload capacity exceeded
- Inverter over temperature
- UPS fault condition (non redundant configuration)

For inverter overload conditions, the transfer control logic shall inhibit an automatic transfer of the critical load to the bypass source if one of the following conditions exists:

- Inverter/Bypass voltage difference exceeding preset limits (-20/+15 % of nominal load)
- Bypass frequency out of preset limits (± 4 % of nominal frequency)

C. Automatic Retransfer

Retransfer of the critical a.c. load from the bypass source to the inverter output shall be automatically initiated unless inhibited by manual control. The transfer control logic shall inhibit an automatic retransfer of the critical load to the inverter if one of the following conditions exists:

- Bypass out-of-synchronization range with inverter output
- Overload condition exists in excess of inverter full load rating
- UPS fault condition present (non redundant configuration)

D. Manual Transfer

In addition to the UPS module internal static bypass switch, the UPS system shall have an internal manual bypass ‘make-before-break’ transfer switch. The manual bypass function shall be provided via a switch, which is accessible from the front of the system cabinet and located behind the system cabinet door.

The manual bypass switch shall be electrically interlocked to prevent back-feeding the UPS output in the event of incorrect operation, e.g. transferring the load to bypass via the manual bypass switch when the load ids supplied by the inverter.

The UPS module(s) shall initiate an audible alarm upon transfer to manual bypass.
The audible alarm shall be capable of being muted by the user. The alarm shall continue to sound (unless muted) while in bypass mode. This shall provide a reminder to the user that the load continues to be powered from utility or generator supply alone.

2.3 COMMUNICATIONS

2.3.1 The UPS shall incorporate voltage-free relay contacts suitable for direct communication with either a computer system, remote alarm panel or the clients BMS system and an RS-232 communication port for serial communications and to enable communication via modem equipment.

2.3.2 Relay Contacts

The relay contacts shall be available through via a multi-port connector block comprising of Phoenix spring terminals suitable for 0.5 mm² and shall easily be accessible behind the system cabinet front door. The UPS shall communicate, via volt-free relay changeover contacts, the following status signals:

- Mains Present (normally open)
- Mains Failure (normally closed)
- Load on inverter (normally closed)
- Load on mains (normally open)
- Battery low (normally open)
- Battery OK (normally closed)
- Load on mains (normally open)
- Load on inverter (normally closed)
- Common alarm (system) (normally open)
- No alarm condition (normally closed)
- UPS Module 1 alarm (normally open)
- UPS Module 1 no alarm (normally closed)
- UPS Module 2 alarm (normally open)
- UPS Module 2 no alarm (normally closed)
- UPS Module 3 alarm (normally open)
- UPS Module 3 no alarm (normally closed)
- UPS Module 4 alarm (normally open)
- UPS Module 4 no alarm (normally closed)
- UPS Module 5 alarm (normally open)
- UPS Module 5 no alarm (normally closed)

All the volt free relay changeover contacts shall be rated to a minimum 60Vac, 500mA

2.3.3 Serial Communications

The UPS shall have the facility for communication via an RS-232 port for monitoring and network management integration. As a minimum, the number of ports available shall be as follows:

- RS232 - Sub-D9 1 per system cabinet
- RS232 - Sub-D9 1 per UPS module

2.3.4 Network Communications

The UPS system shall include a facility for installing an optional SNMP adapter card to the UPS to permit one or more network management systems (NMS) to monitor the UPS system in TCP/IP network environments. 10/100 Mbit Ethernet support shall be included.

2c. PARTICULAR QUALIFICATION FOR BIDDERS

TABLE 01:

NOTE: All Attachments should be bound in 1No. document with fliers separating the particular sections which shall be presented as part of the Bid. **Presentation shall follow the order stated below.**

BIDDERS REQUIREMENTS			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment** (√ or X)
A	***MANDATORY REQUIREMENTS FOR BID EVALUATION***		
A1	**Company / Firm Registration Certificate**	Attach Certificate	
A2	**Registration with Relevant Bodies & Category as Applicable** **(Note:** For any document Listed, Documentary Evidence of the Certificate Should be attached)		
		NCA	
		LOCAL AUTHORITY	
		P.I.N. Registration Certificate	
		VAT Registration Certificate	
		Tax Compliance Certificate	
		ERC	
		Manufacturers Authorization Letter	
		OTHER (Fill in Pen)	
A3	**Company Profile** A detailed soft company profile indicating the principle place of business MUST be attached to the Bid (Hard Copy or Soft copy in CD / USB Flash drive)	Attach Copy	
A4	**Power of attorney of signatory of Bid (if Joint Venture)**	Attach Copy	
A5	**Long Lead Items Program of Works:** Bidder to attach a Proposed program (Work method and schedule), Descriptions, drawings, and charts, as necessary, which show the lead times for the long lead items timelines	Attach	

BIDDERS REQUIREMENTS			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment** (√ or X)
A6	**Indicate Total Annual Revenue of Construction work performed in the last 3 years in KShs.** • Attach Proof of Financial Statements • Attach Bank Contacts: Name, Address & Telephone Numbers of the banks that may provide references if contacted by Employer		
		2019	
		2020	
		2021	
B	***OTHER REQUIREMENTS***		
B1	**Brochures of Equipment's offered**	Attach with all details	
B2	**Financial Resources Access:** • Evidence of access to Financial Resources to meet the qualification requirements: cash in hand, lines of credit, etc. • List here as appropriate & Note that Proof in Documentary Evidence may be require to be provided upon request	Attach	
B3	**Equipment Guarantee (By bidder) and warranty period specified by manufacturer** **Note:** Minimum of 24 Months is required **Note:** Schedule to be attached of all equipment on warranty	Attach: Note: Warranty shall be specific from date of completion of project.	
B4	**Annual Maintenance Charges** • After Expiry of DLP and Warranty Period, Indicate the proposed charges to be levied for annual maintenance of equipment & accessories • NOTE: The above are to be Labour only charges excluding parts which shall be fitted only with prior approval by the client.		
		1st Year (KShs.)	**Kshs.**
		2nd Year (KShs.)	**Kshs.**
		3rd Year (KShs.)	**Kshs.**
B5	**Foreign Currency**	State Foreign currency used in the pricing (if any) and rate of exchange to KShs.	**1…… (Foreign Currency)** **= ……. KShs.**

BIDDERS REQUIREMENTS			
Item	**Feature**	**Minimum Requirements**	**Bidder's Response / Comment (√ or X)**
B6	**Response Time**	In event of emergency, the response time shall be how many hours (Preferred is 3 Hours)	…… **Hours**
B7	**Delivery Period of Equipment from Date of Award (Fill Where Applicable)**		
		Days	
		Weeks	
		Months	
		Years	
B8	**Delivery Period of Site Works from Date of Award (Fill Where Applicable)**		
		Days	
		Weeks	
		Months	
		Years	

TABLE 02:

1.11	**Work of a similar nature and volume performed as Prime Contractor over the last five years. The values should be indicated in the same currency used above. Also list details of work under way or committed, including expected completion date.**			
PROJECT NAME & COUNTRY	**CLIENT / CONTACT PERSON**	**LEAD CONSULTANT**	**TYPE OF WORK DONE & YEAR OF COMPLETION**	**CONTRACT VALUE (KShs.)**

TABLE 03:

1.12	**Qualification and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data.**		
POSITION	**NAME**	**QUALIFICATIONS**	**YEARS OF EXPIRIENCE IN PROPOSED POSITION**
PROJECT MANAGER			
SITE FOREMAN			
OTHER(S)			

TABLE 04:

1.13	Proposed contracts and firms involved.		
SECTION OF THE WORKS	**VALUE OF CONTRACT**	**CONTRACTOR (NAME & ADDRESS)**	**EXPIRIENCE IN SIMILAR WORK**

TABLE 05:

1.14	Information on current litigation in which the Bidder is involved.	
OTHER PARTY(IES)	**CAUSE OF DISPUTE**	**AMOUNT INVOLVED**

TABLE 06:

1.15	**Additional Requirements:** Bidders should provide any additional information required in these documents to fulfill the requirements thereof if applicable

Signed (As in form of Tender)_____

Official Stamp & Date _____

ASSOCIATED ELECTRICAL INSTALLATIONS PARTICULAR SPECIFICATIONS

32. INSTALLATION OF CABLES

32.1 GENERAL

Cables shall be rated for the maximum connected load with due consideration to the following factors: -

i. Voltage drops not in excess of 4% of the nominal voltage.
ii. Ambient temperature.
iii. Degree of excess-current protection.
iv. Grouping
v. Cables run under defined conditions.

32.2 BENDING OF CABLES

Bending of cables shall be in accordance with clause 522.8.3 of the IEE Regulations and no cable shall be bent to radius less than that specified by the cable manufacturers.

32.3 JOINTS IN CABLES

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

32.4 PVC / XPLE INSULATED CABLE

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

32.5 WIRING INSTALLATION

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

32.6 CABLES IN CONDUITS AND TRUNKING

All cables shall be polyvinyl chloride (PVC) insulated to BS 6604, "PVC-insulated cables (non-armoured) for electric power lighting", 450/750-volt grade, or cross linked polyethylene (XPLE) unless an alternative is specified elsewhere in the contract documents.

The quality and size of cables contained in any one conduit shall comply with IEE Regulations.

No cable with a cross-section area of less than 1.5mm2 shall be used. All cables installed in a conduit or trunking system shall be PVC / XLPE insulated conductors and shall be colour coded in accordance with the IEE Regulation 524.3 and 514.3.

Final sub-circuits shall be run in conduits separate from main or sub-main cables.

All cables in conduit shall be drawn in simultaneously.

All cables shall be drawn in without the use of excessive force, without the use of lubricants and the wiring shall be easily withdrawable.

32.7 TERMINATION OF CABLES

Cables shall be terminated in accordance with **Chapter 52 of the IEE Regulations, particularly Section 527.**

Cables shall be terminated by one of the following methods: -

a) The cable conductors shall be sweated into lugs of the appropriate size for the cable and equipment terminal.
b) The cable conductors shall be secured by compression type lugs of the correct size for the cable and equipment terminal.
c) The cable conductors shall be secured in pinch screw terminals.
d) The cable shall be secured by means of clamps.

Cables terminating at pinch screw terminals shall be twisted together and single cables shall have the conductor doubled back to ensure adequate surface for pinching screws.

All terminations on PVC/SWA/PVC insulated cables shall be by compression type glands of an approved design and manufacture with facilities for clamping the armouring the outer sheath of the cable.

Glands mounted outdoors shall incorporate a seal to prevent ingress of moisture into the gland, and all glands shall be fitted with a thermoplastic shroud.

Where circular terminations are to be made, these shall be completed using Ross Counterney terminals.

Where cables are terminated in "Klippon" type terminals with parallel faced jaws, the individual cores shall be terminated using the appropriate flat or hook blade crimped lugs. Where the terminal faces are concaved, the cores shall be terminated in wires pin crimped lugs.

The Contractor shall avoid multiple connections under one screw or one pin. Where more than two wires are required, a common termination jumper bar shall be used.

Terminals shall be mounted on rails or supports. All internal wiring is to be clearly marked by markers.

32.8 SEGRAGATION OF SERVICES

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

32.9 IDENTIFICATION OF CABLES

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

33. EARTHING

All earthing shall be as PME Earthing (TN-C-S) System

The whole of the metallic portion of the installation, other than current carrying parts, shall be electrically and mechanically bonded to the main earth terminal and also if applicable, to the lightning protection system or other points specified.

The installation shall be earthed in accordance with the Seventeenth Edition of the Regulations for Electrical Installation issued by the IEE, BS CP1013, "Earthing" and BS 6651' "The protection of structures against Lightning". The electrical Contractor's attention is drawn to Chapter 54 of the IEE Regulations and to the Earthing and Lightning Protection Consultants Handbook publication CHB/4/95 by W. J. Furse & Co Ltd.

A main earth terminal shall be supplied and installed adjacent to the electricity supply cable termination. The terminal shall be of ample size and capacity to suit the installation. All items of equipment, switchgear, etc., shall be bonded to this earth terminal using PVC / XLPE insulated PVC / XLPE sheathed cables, coloured green and yellow as per table 51 and sized in accordance with **section 543 of the IEE Regulations**. An invorine label reading **"SAFETY ELECTRICAL CONNECTION - DO NOT REMOVE" in engraved upper case characters not less than 4.75mm high**, shall be permanently fixed immediately adjacent to or on the earth terminal.

A heavy duty copper clamp **complying with BS. 951** shall be used to bond the main protective conductor to the electricity supply cable armouring or metallic sheath (where applicable the armouring and sheath shall be bonded together).

All protective conductors shall, where possible, be enclosed within metal trunking or conduit serving switchgear, distribution board, Generators, etc., so as to provide mechanical protection. Where protective conductors are run on building surfaces they shall be properly fixed and supported by means of PVC coated metal saddles along selected routes.

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

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

At every terminal point on the fixed wiring an integral earth terminal shall be provided e.g BESA boxes, accessory boxes etc. A protective conductor shall be provided and installed between this terminal and the earth terminal on the associated switch, socket outlet, luminaire etc.

Each circuit protective conductor shall be connected to a multiway earth terminal provided and fixed within each distribution board. The earth terminal shall be provided with an adequate number of ways such that not more than one conductor per terminal shall be installed and the earthing conductors shall be connected in the same sequence as the current carrying conductors.

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

The value of earth resistance from any point of an installation to the general mass of earth shall be low enough to ensure operation of circuit protective devices and shall in any case not exceed the following:

i. **Four (4) ohms for electrical equipment**
ii. **One (1) Ohm for ICT Equipment**

Each earthing cable shall terminate in an approved design of cable lug.

Where earth conductors are run upon structures or walls they shall be fastened by means of heavy gauge non-ferrous fasteners not more than 0.75 m apart on horizontal runs and not more than 1.2 m apart on vertical runs and to give a minimum clearance of 4 mm from the fixing face.

In the event of the Contractor not being able to establish a suitable earth connection to the electricity supply cable, earth electrodes shall be installed which shall be galvanized or copper clad steel extendable

rods not less than 16 mm diameter and not less than 1.2 m in length. Connections to electrodes shall be made by means of solderless mechanical clamps.

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

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

34. FUSED SWITCH UNITS, SWITCHFUSES AND ISOLATORS

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

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

The switch action mechanism shall be of the parallel operation (double break type having cartridge fuses mounted switches) and shall be **ASTA certified** to meet adequately all the duties specified.

The end plates shall be removable for drilling for conduit or cable entry and shall be fitted with additional distance pieces where necessary. Switchgear boards shall be fixed to the wall/floor by Rawl bolts or other approved fixings.

No building alteration shall be allowed when moving the switchboard into position, the switchboard being supplied in sections to be built in position, if so required.

Switchgear shall be delivered to site when required to suit the progress of the works. Care shall be taken to preserve the manufacturer's paint finish. Any refurbishing etc. shall be carried out, using paint obtained from the switchboard manufacturer, to the original standard of finish.

All fuses in switchgear shall be HRC fuses sized for the fused-switch units or switch-fuses etc., in which they are incorporated. They shall be ASTA certified for compliance with BS 88, Category of Duty 440 A.C 5 Class 01 and in all cases fuse links shall be selected to provide circuits discrimination.

35. CONTROL PANELS AND CUBICLES

The details specified shall apply as far as fused switches, bus-bars and rating etc are concerned. The panels shall be constructed from rolled steel channel minimum size 60 mm x 30 mm deep x 5 mm or equivalent angle section clad with sheet steel of 3 mm gauge. 2 mm gauge may be used for covers and doors of not more than 1 m square.

Terminals shall be of the "Klippon" standards rail-mounted feed-through type or approved equal. All terminals shall be identified by means of numbered or lettered marking tags, which shall be identical to the number of letters applied to the cables. Cables shall be identified as terminations by means of cable markers as manufactured by "Klippon" or approved equal. 25% spare terminals capacity within wiring duct shall be provided. All components motors, starters, relays, timbers, etc. shall be labelled showing their reference and function and these shall relate to the panels' schematic wiring diagram provided with the "As-built" drawing and manuals.

All control panels shall be fitted with multi-pole isolating switches through which all electricity supplies shall pass. The door(s) of the control panel shall not open unless the isolating switch is in the "off" position. A facility to lock the control panel isolating switch in the "off" position shall be included.

36. DISTRIBUTION BOARDS

a) General

All distribution boards, unless stated otherwise, shall be miniature Circuit Breaker Distribution Boards and shall be of surface or flush type, as specified or instructed on site. Facilities for local isolation of the distribution boards shall be provided by either a local fused-switch unit or an integral isolating switch, whichever is specified.

Where surface mounted on a flush installation, all conductors shall terminate behind the board in an adequate box. For surface mounting, trunking shall be fixed between the board and ceiling level, or conduits run directly into the board. Adequate earth continuity connection shall be made between the various components.

b) Miniature Circuit Breaker Distribution Boards

MCB distribution boards shall comply with BS. 5486 part 12 'Particular requirements for miniature circuits-breaker boards'. The cases shall be constructed of heavy gauge sheet steel, in such a manner as to afford rigidity and maximum ease of wiring for full size circuit and main cables.

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

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

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

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

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

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

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

Where installations are carried out with cables with a protective conductor, all distribution boards shall also contain internal earthing bars similar to the neutral bars detailed above, with one terminal for each MCB within the board. Earthing conductors shall be connected in the manner described for neutral conductors to neutral bars.

Where a main integral isolating switch is provided in an MCB case it shall be arranged to isolate incoming live and neutral main cables from the bus-bars. The isolator switch shall be rated at 500 volts and of the quick make-and break pattern with positive action. Incoming and outgoing terminals shall be fitted with two clamping screws and outgoing conductors to the bus-bars shall be high conductivity hard drawn copper rods.

Isolating switches shall comply with IEE Regulations, Part 537, and shall be capable of carrying their full rated load continuously and shall 'make' or 'break' their full rated load without undue burning of the contacts.

c) Miniature Circuit Breakers (MCB's)

All MCB's shall have movements which are positive in both directions (make and break) so as to enable units to be closed decisively by the operation of the handle, and to be able to assume the 'OFF' position unless the contacts are definitely separated, to safeguard against false indications.

The hand shall be trip free to make it impossible for the operator to hold the breaker in the closed position under faulty conditions. The operating mechanism and arc chambers of the circuit breaker shall be separated from the terminals and fixing screws.

Terminal identification shall be readily discernable as viewed from the front of the board with automatic and clear signal identification for both 'ON' and 'OFF' position.

All terminals shall be readily accessible from the front and each wiring chamber shall be closed by a screw fixed cover which protects the terminals and prevents dust from settling on the insulation.

Where the full capacity of a distribution board is not required the electrical Contractor shall fix blanking plates in the vacant MCB housings. All MCB's shall be rated at 500 volts minimum, and comply with BS 3871 "Miniature and moulded case circuits breakers" and 4752 part 1, "Circuit breakers".

37. LABELLING AND ENGRAVING

a) Labelling

All fused-switch units, switch fuses, switches, bus-bar chambers, distribution boards etc., and all items of equipment on the main panel shall be identified in accordance with **Section 514 of the IEE Regulations** and shall have securely fitted externally a white 'Traffolyte', 'Formica' or other approved plastic laminate label engraved with 6 mm high black letters detailing the function of the equipment and any reference number.

Red, Yellow, Blue, Black & Green plastic laminate phase discs shall be fixed inside all switchgear and distribution boards to indicate to which phase of the supply the various circuits are connected. The colour rings shall comply with **Part 524 of the IEE Regulations.**

Each TP or TP & N item of switchgear shall have fitted on the cover a white plastic laminate label having **'CAUTION' - 415 VOLTS'** engraved in 10 mm high red lettering.

b) Engraving

The electrical Contractor shall allow for engraving of all switched fused spurs, double pole switch accessories and any other accessories which are customarily required.

The accessory plate shall be engraved in either black or red, capital letters 5 mm high, detailing and appliance or equipment being supplied by the accessory e.g., 'WATER PUMP' etc.

38. INSPECTION AND TESTING

A visual inspection shall be made in accordance with IEE Regulations Chapter 61. References shall be made to Appendix 6 of the IEE Regulations, which is a checklist for initial inspection of installations.

The installation shall be inspected and tested by the Contractor in accordance with Chapter 61 of the IEE Regulations.

Where any part of installation is to be concealed within a building, fabric tests shall be made to ensure that the installation is satisfactory prior to concealment.

Upon completion of the works the whole installation shall be subjected to the tests detailed hereafter and every defect shall be noted, corrected and brought to the notice of the Engineer.

All tests shall be witnessed by the Engineer to his full satisfaction and he shall be given at least one week's notice in writing of the proposed tests.

All labour and test instruments shall be provided by the Contractor and the instruments shall be correctly calibrated and certified for the limits of accuracy required and shall be operated by a competent person. If, in the Engineer's opinion, a particular instrument is not suitable, then an acceptable alternative shall be provided. The Engineer shall be at liberty to demand the use of any testing instrument or apparatus that he may reasonably consider to be necessary in the execution of the testing.

In the event of the installation failing to pass the test, the Engineer has the full authority of the Employer to deduct from the Contract Price all reasonable expenses incurred, due to him being required to attend a repetition of the test.

The following items, where relevant, shall be tested in the sequence indicated. Standard methods of testing, in respect of some of the following regulations of this section, are given in Appendix 6 of the IEE Regulations.

i. Continuity of ring final circuit conductors.
ii. Continuity of protective conductors, including main supplementary equipotential bonding.
iii. Earth electrode resistance.
iv. Insulation resistance.
v. Insulation of site-built assemblies.
vi. Protection of barriers or enclosures provided during erection.
vii. Insulation of non-conducting floors and walls.
viii. Polarity.
ix. Earth fault loop impedance.
x. Operation of residual current devices and fault voltage operated protected devices.

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

39. DEFINITIONS & INTEPRATION OF TERMS

The terms, phrases and abbreviations shall be deemed to have the following meanings wherever used hereinafter and in all contract documents.

i. Consumer Unit:

"Supply and install SP/N power consumers unit complete with .SP/N Integral isolator".

ii. Distribution Board:

"Supply and install TP/N power distribution board, complete with TP/N integral isolator."

iii. Earthing:

Protective multiple earthing to Kenya Power and Lighting Co. (K. P. & L. Co.) Standards comprising 1200mm deep-driven pure electrolytic copper earth electrode, electrode clamps, yellow/green earth lead, earth pit complete with cover and all accessories".

iv. Labelling:

"Comprehensive, concise and instructive permanent labelling of all the sub-circuits, complete with identification of the sizes of all the sub-circuit cables, permanent traffolyte identification of the board such as "DB A" and identification of the sizes of the sub-mains and their origin e.g. "Board A: Supply, 4.x16mm2; SOURCE, DB1"

v. Specifications

All Distribution boards / Consumer units and associated accessories to be used shall be as Specified in the bills of quantities. Where the in the event it is not mentioned, the default manufacturers shall be Merlin Gerlin but shall be subject to the approval of the Engineer.

All Conduits and associated accessories to be used shall be as Specified in the bills of quantities. Where the in the event it is not mentioned, the default manufacturers shall be Metro but shall be subject to the approval of the Engineer.

All conduits/ducts must be heavy gauge. Where steel pipes are specified, they must be minimum of **Class B** in strength.

vi. Contract

The contract shall be for supplying, delivering, fixing / installing, testing, commissioning and setting to work to the full satisfaction of the Engineer and the Contractor's price must include all costs for the entire process.

The installation shall be carried out strictly in accordance with the provision of the **17th Edition of Wiring regulations as published by the Institution Electrical Engineers, Great Britain**, the most current relevant **standards issued by the Kenya Bureau of Standards**, and with strict adherence to the safety requirements and **by-laws of the Kenya Power and Lighting Co. Ltd.**

All equipment and accessories supplied for the contract must be certified by the Kenya Bureau of Standards and a certificate issued upon request.

The Contractor shall ensure that the highest standards of workmanship and highest quality materials are used at all times. Inferior workmanship and low quality materials shall be rejected and replaced at the Contractors own cost.

All the mounting heights will be re-confirmed with the Engineer on site.

FORM OF AGREEMENT

FORM OF AGREEMENT

THIS AGREEMENT, made the_____ day of_____ 20_____

between

KENYA MEDICAL SUPPLIES AUTHORITY of P.O.BOX 47715 – 00100 NAIROBI

(hereinafter called "the Employer") of the one part

AND_____

_____

of [or whose registered office is situated

at]_____

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

WHEREAS THE Employer is desirous that the Contractor executes

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF GENERATORS, AUTOMATIC VOLTAGE STABILIZER (AVS) AND UNINTERUPTED POWER SUPPLY (UPS) AT KEMSA NEW WAREHOUSE,

TENDER NO.: GF-KEMSA/CONST 02/ONT2/2021/2022 (hereinafter called "the Works") located on **Land LR No. 9042/176 Embakasi, Nairobi** and the Employer has accepted the tender submitted by the Contractor for the execution and completion of such Works and the remedying of any defects therein for the Contract Price of

Kenya Shillings_____(Amount in figures],

Kenya Shillings_____(Amount in figures],

NOW THIS AGREEMENT WITNESSETH as follows:

3. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
4. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.
    (viii) Letter of Acceptance
    (ix) Form of Tender
    (x) Conditions of Contract Part I
    (xi) Conditions of Contract Part II and Appendix to Conditions of Contract
    (xii) Specifications
    (xiii) Drawings
    (xiv) Priced Bills of Quantities
5. In consideration of the payments to be made by Kenya Medical Supplies Authority to the Contractor as hereinafter mentioned, the Contractor hereby covenants with Kenya Medical Supplies Authority to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
6. Kenya Medical Supplies Authority hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

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

The common Seal of

_____

Was hereunto affixed in the presence

of_____

Signed Sealed, and Delivered by the said_____

Binding Signature of Kenya Medical Supplies Authority_____

_____

Binding Signature of Contractor_____

In the presence of

(i) Name_____

Address_____

Signature_____

(ii) Name_____

Address_____

Signature_____

FORM OF TENDER

FORM OF TENDER

Tender No.: GF-KEMSA/CONST 02/ONT2/2021/2022

Date_____

To: Kenya Medical Supplies Authority

P. O. Box 47715 - 00100

NAIROBI.

Dear Sirs,

RE: TENDER FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF GENERATORS, AUTOMATIC VOLTAGE STABILIZER (AVS) AND UNINTERUPTED POWER SUPPLY (UPS) AT KEMSA NEW WAREHOUSE

In accordance with the Instructions to Tenderers, Specifications and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct, install and complete such Works and remedy any defects therein for the sum of Kshs.-

_____*[Amount in figure]*

Kenya

Shillings_____

_____ *[Amount in words]*.

We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Architect's notice to commence, and to complete the whole of the Works comprised in the Contract within _____*(In Words)* (_____) *(in Figures)* Weeks.

We agree to abide by this tender until _____ *[Insert date],* and it shall remain binding upon us and may be accepted at any time before that date. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any tender you may receive. Dated this_____ day of _____ 20_____

Signature_____ in the capacity of_____ duly authorized to sign tenders

for and on behalf

of_____

Tenderer's Name:

_____

Tenderer's Address:

_____

Tenderer's Signature:

_____

Witness's Name:

_____

Witness's Address:

_____

Witness's Signature: _____ Date _____

BILLS OF QUANTITIES

A GENERATOR INSTALLATIONS

SUPPLY AND INSTALLATION OF SOUND - ATTENUATED THREE PHASE PRIME RATED GENERATOR(S)

- *The Contractor shall supply labour and supply, deliver, install, fix, connect, test, label and commission the works, clean, complete and working to every detail as described below and in the related specifications and /or on the drawings to the satisfaction of the Consulting Engineers.*

- *Bidders should note that Specifications Stated in the BQ shedules below shall be followed strictly and pricing shall include the same as specified. No change in specifications shall be allowed unless with the express authority of the engineers after validation of cause of change.*

- *Safety Sinage Legible from 3m away as a minimum shall be installed at all areas where deemed possible to avoid injury or damage to proerty and live. This should be quoted for under Signage in the document.*

- *Technical product catalogues and specifications for quoted models to be attached*

- *Model to be as Cummins, Caterpillar, SDMO or Equivalent to Approval*

GENERATOR SPECIFICATIONS

- 3 Phase in - 3 Phase out rated @415V
- All weather Sound Attenuated
- Super silent operation with a noise level of not more than 59dB at 7M and atleast 60 dB at 1M

- c/w Alternator and voltage regulator
- c/w Cranking batteries
- c/w ov/uv relays
- c/w Battery charger with auto start capability
- c/w all operational accessories as per attached specifications
- c/w Integrated Fuel Base tank to cater for 8hrs Operation as a minimum
- Voltage regulation rate: ≤±1%
- Random voltage variation: ≤±1%
- Frequency regulation rate: ≤±5%
- Random frequency variation: ≤±0.5%
- Cooling system: Forced water cooling cycle
- Starter motor: DC24V
- Three Phase MCCB for genset protection.
- Inteligence control system as deep sea controller
- Inteligent & Integratable Synchronizing Panels
- Electronic governor to allow for synchronizing with other multiple generator sets of different or equal ratings
- Genset and AMF controller :- Control systems, LED display, remote monitoring (BMS), digital metering, engine protection, auto-start and two genset synchronizing and load sharing.

A1 GENERATOR SET(S)

Item	Description	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A1.01	**GENERATOR(S):** Supply & installation of a power generating set c/w the features outlined in the particular specifications herein. The main specifications are: • **900KVA PRIME RATED on site**	No.	2		
A1.02	**Sub-Total Exclusive of VAT c/f to Generator Price Summary Page**				

A2 GENERATOR ACCESSORIES

Item	Description	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A2.01	**GENERATOR HOT AIR VENTS:** Allow for any necessary enhanced ventillation or hot air ductwork for the generator model quoted for. Attach calculations and manufactures reccomendations for the same. This should include: • Extract fans • Ductwork using galvanised mild steel duct of 0.8mm thickness • External Aluminium louvres • Flexible connections • Associated electrical works	M2	240		
A2.02	**EXHAUST:** Sum for the supply and installation of the entire exhaust system complete with the appropriate exhaust duct, lagging materials, asbestos, tape, cap, fixing and fastening materials to approval. **REMEASUREMENTS WILL BE DONE ON SITE.**	LM	200		
A2.03	**EXHAUST CLADDING:** External grade Aluminium Cladding for the full length of exhaust piping c/w all accessories	LM	200		

Item	Description	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A2.04	Supply and install complete (3CR12) exhaust system c/w silencers, lagging and ultra-critical rated muffler with minimum of 35 dB attenuation of exhaust noise as well as extended exhaust by 15 meters	No	4		
A2.05	Supply and install any additional internal to the generator room sound attenuation to achieve a minimum of 65dB's at 7m.	Sum	2		
A2.06	**ELECTRICAL WORKS:** Allow Sum for associated electrical termination works i.e. termination of cables supplied by the electrical contractor on the Gensets.	Item	1		
A2.07	**EARTHING:** Cost of earthing as per "Schedule No.6"	Item	1		
A2.08	**BMS ACTIVATION:** BMS link & activation and the necessary programing for all Gensets.The generator should be Able to communicate in BACNet protocol the Run Status, Total runtime, system voltages and current among other parameters and alarm status.	Item	1		
A2.09	**TOOLS:** Cost of tools for all Gensets as per Manufacturers encl. list of recommended tools as per "Schedule No.4"	Item	1		
A2.10	**SPARES:** Cost of spares parts and lubricants for all Gensets as per Manufactures encl. List of recommended spares for two years (or 2000 hours. Whichever is greater) normal operations as per "Schedule No.5"	Item	1		
A2.11	**Sub-Total Exclusive of VAT c/f to Generator Price Summary Page**				

A3 FUEL SYSTEMS (EXTERNAL)

***FUEL PIPEWORK** : Supply and install Pipes complete with fitting, nipples, unions, clips bushes, backnuts, etc All pipework shall be welded black steel pipe painted according to the fuel lines color code. All the pipe joints shall be welded seamless Heavy gauge Black steel pipework complete with flanges for supply and return with anchor clips,bends, valves, all fixings and accessories.*

Certificates shall be issued on the same.

ITEM	DESCRIPTION	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A3.01	**FUEL TANK (EXTERNAL):** Supply & installation of external fuel tank with a holding capacity of 5,000litres in capacity ("Schedule No.11").	Item	1		
A3.02	**AUTOMATIC FUEL PUMP:** The pump shall be capable of filling the tank within 15 minutes. Therefore the pump should be diesel pump complete with an electric motor, coupling and any other necessary accessories capable of delivering diesel at $4m^3/hr$ (1.2 litres / sec) against a head of 10 metres. The pump shall have an adapter to be able to connect to a 50mm pipe on the sunction side and 32mm on the deliver side.	No.	1		
A3.03	**PUMP POWER SUPPLY:** power supply to the automatic fuel pump wired in 4.0mm2 twin + earth PVC Insulated CU cable drawn in 25mmØ HG PVC Conduit from the DB with a 20Amp MCB protection and 20 Amp DP switch isolation adjacent to the pump.C/w bends, fixings, etc.	No.	1		

Item	Description	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A3.04	**MANUAL FUEL TRANSFER PUMP (Stand-by of the automatic):** Supply & installation of manual fuel transfer pump plus the necessary piping to interconnect the daily service tank and the fuel storage tank. This will be connected in parallel to the automatic pump to act as a stand-by.	No.	1		
A3.05	**DATA LOGGER (Programable):** Calibrated Programmable data logger indicating the volume of the fuel in the tank. The data logger must be supplied complete with software capable of sending sms & emails if the fuel goes below a predetermined level . The data logger must be compatible to BACNet BMS protocol	No.	2		
A3.06	50mm welded black steel pipe pipework Complete with anchor clips and Chained Lockable end cap	LM	135		
A3.07	50mm welded black steel pipe bends	No.	12		
A3.08	50mm shut valve	No.	1		
A3.09	50mm float valve	No.	1		
A3.10	20mm welded black steel pipes Complete with anchor clips	LM	15		
A3.11	20mm shut valve	No.	2		
A3.12	20mm float valve	No.	2		
A3.13	20mm welded black steel bends	LM	7		
A3.14	50mm fuel tranfer hose with Female and male quick coupling units on both ends	LM	20		
A3.15	Fuel Polishing System complete with necessary pumps, filters etc	No.	1		

Item	Description	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A3.16	In Line Filters per System	No.	1		
A3.17	Fuel Pipework Camlock completed with necessary accessories	No.	1		
A3.18	Allow for necessary fuel for above testing of Generators	Item	1		
A3.19	Allow Diesel for handover to the client on completion.	Ltrs	5000		
A3.20	**Sub-Total Exclusive of VAT c/f to Generator Price Summary Page**				

A4 SYNCHRONIZATION PANEL

Switchgear shall be Type Tested Assembly & Conform to IEC 60439-1 Standards

ITEM	DESCRIPTION	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A4.01	**GENERATOR SYNCHRONIZATION PANEL** as per specifications The Panel should be free standing, FTTA, modular, extensible, metal clad, cubicle pattern to IP42 rating & of Form 3b separation. The Panel should comprise of a termination point for connection of remote signals for Generators available & Generators on Load on all incomers. MUST be BMS compatible and the interphase module(s) for BACnet link incorporated to monitor as a minimum the following: Generator available & Generator on Load, voltage, current, kW, kWh, KVA, etc.	No.	1		

ITEM	DESCRIPTION	Unit	Qty	RATE (Kshs.)	COST (Kshs)
	Supply and Install a Set of digital energy multimetres (complete with current transformers and fuse holder/fuses) for indication of voltage, current, kW, kWh, KVA, power factor, etc. as shown in drawings The Panel should comprise the following switchgear:				
A4.02	**Logic / circuitry**				
●	A Generator Control Unit for automatically matching generator frequency and voltage levels with that of the bus. ● A Synchronizer Unit for sending the closing command to the breaker ● A Synchronizer Check logic circuitry for performing the progressive function of verifying voltage and phase angle conditions and ensuring that they are within preset limits, before allowing the breaker(s) to close and any other necessary circuitry and programing for proper operation.	Item	1		
●	Should be provided with control switches in the front panel for manual option of raising and lowering of speed and voltage of the generator to match the bus frequency and voltage before synchronizing. Should have volt meters and digital meters in the device that offer generator and bus measurements. To operate such that the various generators pick or release each at a time or in multiples progressively depending on the actual load demand.				
A4.03	**Synchronization Operations**				
●	Should operate such that in event of mains outage, all the generator sets should come on simultaneously and the output synchronised before transfer to load.	Item	1		

ITEM	DESCRIPTION	Unit	Qty	RATE (Kshs.)	COST (Kshs)
●	Load transfer then takes place using load tamping to suite the actual demand and only the generator(s) required for that particular load are left running. This should operate in the following manner: ☺ When the load demand is < 90% of Each Generator then the Next Available genset picks the load and Vice Versa ☺ When the load demand is > 90% of 900KVA then Both gensets picks the load				
●	☺ When the Load reduction is observed and is consistent for a period of 10Minutes then the shut down of the generators can occour as stated above The engagement / disengagement of any / both of the generators should be seamless in power supply to the load. Upon mains resumption, the panel should first synchronise the generator output to the mains bus and then pull off seamlessly from the load such that no outage is experienced. This means that we should have only one outage during mains outage but none on resumption				
A4.04	**INCOMERS**				
a	1500Amp 4P ACB (ADJUSTABLE -0.75 to 1) with adjustable overcurrent settings, having a short circuit breaking capacity of 80KA at 415Vac, 50Hz.	No.	2		
b	1500Amp 4P ACB (ADJUSTABLE -0.75 to 1) with adjustable overcurrent settings, having a short circuit breaking capacity of 80KA at 415Vac, 50Hz.	No.	1		
c	3500A TPN rated busbars for above incomers.	No.	1		
d	Neutral link bar and earth bar	Item.	1		

A4.05 Outgoers

ITEM	DESCRIPTION	Unit	Qty	RATE (Kshs.)	COST (Kshs)
a	3200Amp 3P ACB (ADJUSTABLE) with adjustable overcurrent settings, having a short circuit breaking capacity of 80KA at 415Vac, 50Hz.	No.	1		
b	3-PHASE Blanked Spareways for upto 630A 3P MCCB	No.	2		
A4.06	**EARTHING:** Cost of earthing the panels and associated system c/w all accessories as per IEEE Regulations	Item	1		
A4.07	**Sub-Total Exclusive of VAT c/f to Generator Price Summary Page**				

Kindly give approximate dimensions of Panel above (L x W x H):

Length = **Height =**

Width = **Weight =**

A5 <u>GENERATOR CABLING</u>

ITEM	DESCRIPTION	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A5.01	**GENERATOR 01 - SYNCH PANEL:** 630mm sq PVC SC XPLE CU Cables. (Wired in 2 runs / phase + 2 runs of Neutral)	LM.	660		
A5.02	Cable glands for above cables	No.	16		
A5.03	Cable lugs for for above cables	No.	16		
A5.04	**GENERATOR 02 - SYNCH PANEL:** 630mm sq PVC SC XPLE CU Cables. (Wired in 2 runs / phase + 2 runs of Neutral)	LM.	660		
A5.05	Cable glands for above cables	No.	16		

ITEM	DESCRIPTION	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A5.06	Cable lugs for for above cables	No.	16		
A5.07	**SYNCH PANEL - MAINS & GENERATOR SUPPLY CHANGEOVER LV PANEL:** 500mm sq PVC SC XPLE CU Cables. (Wired in 3 runs / phase + 2 runs of Neutral)	LM.	440		
A5.08	Cable glands for above cables	No.	22		
A5.09	Cable lugs for for above cables	No.	22		
A5.10	Cable ties	Item	1		
A5.11	**SYNCH PANEL - MAINS & GENERATOR SUPPLY CHANGEOVER LV PANEL 2:** 300mm sq PVC SC XPLE CU Cables.	LM.	440		
A5.12	Cable glands for above cables	No.	8		
A5.13	Cable lugs for for above cables	No.	8		
A5.14	Cable ties	Item	1		
A5.15	**HORIZONTAL CABLE TRAY (POWER)**: 600 x 150mm POWDER COATED (WHITE) steel factory fabricated Cable tray complete with angle bends, Tees, end caps to detail and mounting brackets & accessories to approval.. Includes equipotential bonding.	LM.	110		
A5.16	**VERTICAL CABLE LADDER (POWER)**: 400 x 100mm POWDER COATED (WHITE) steel factory fabricated Cable tray complete with angle bends, Tees, end caps to detail and mounting brackets & accessories to approval. Includes equipotential bonding.	LM.	40		
A5.17	**Sub-Total Exclusive of VAT c/f to Generator Price Summary Page**				

A6 CONTRACTUAL CONDITIONS

Item	Description	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A6.01	Preliminaries and General Conditions	Item	1		
A6.02	**LOAD BANK:** Allow for 2 MVA Load bank for 8 Hrs Testing of both the Generators	Item	1		
A6.03	**HOISTING:** Allow sum for Hoisting of equipment and fuel tanks where necessary	Item	1		
A6.04	**SIGNAGE:** Allow sum for putting Up signage as required by the International safety standards	Item	1		
A6.05	**ATTENDANCE & LIAISON:** Allow sum for attendance to other specialists, Contractors & Management team e.g. Electrical, Fuel Systems Contractor, Building management, Client, BMS Specialist, etc.	Item	1		

Item	Description	Unit	Qty	RATE (Kshs.)	COST (Kshs)
A6.06	**DOCUMENTATION:** Sum for Completion documents: Comprising Workshop drawings, manufacturer's technical product catalogues, users manuals, maintenance manuals, as installed drawings, test certificates, etc. { **NOTE: Penultimate Valuation will not be paid until these are fully availed & signed off by the engineer** }	Item	1		
A6.07	**TESTING & COMMISSIONING:** Sum for Testing and commissioning of the entire installations Including HT, LV and Switchgear complete with all accessories, interconnections, controls, BMS link & activation and the necessary programing.	Item	1		
A6.08	**TRAINING:** Sum for Training of client personel / users (At least 5No Staff for 1Week)	Item	1		
A6.09	**DLP SUM:** Sum for 6 months comprehensive maintenance from date of practical completion i.e. for maintainance and replacement of consumables such as blown out devices	Item	1		
A6.10	**LABELLING:** Allow sum for putting permanent Labels on all installations including cabling as required. Main Labels should be a Minimum of 200mm by 200mm. All labels should be permanet engraved labels (trafollyte material) including the cable labelling.	Item	1		
A6.11	**FACTORY INSPECTION:** Allow for the factory material Pre-Shipment inspection and approvals for 2No Project managers 2No Client and 2No Engineers. The cost shall cover Air Flight, accomodation, meals and subsistence allowance as per SRC guidelines for Directors Range	Item	1		
A6.12	Contingency	Item	1		3,500,000
A6.13	**Sub-Total Exclusive of VAT c/f to Generator Price Summary Page**				

GENERATOR PRICE SUMMARY PAGE.

Item	Description	COST (Kshs)
AA1	GENERATOR SET(S)	
AA2	GENERATOR ACCESSORIES	
AA3	FUEL SYSTEMS (EXTERNAL)	
AA4	SYNCHRONIZATION PANEL	
AA5	GENERATOR CABLING	
AA6	CONTRACTUAL CONDITIONS	
AA7	**TOTAL Exclusive of VAT c/f to GENERATOR, STABILIZER & UPSes PRICE SUMMARY PAGE.**	

B AUTOMATIC VOLTAGE STABILIZER

- *The Contractor shall supply labour and supply, deliver, install, fix, connect, test, label and commission the works, clean, complete and working to every detail as described below and in the related specifications and /or on the drawings to the satisfaction of the Consulting Engineers. He will also be expected to attend site meetings / inspections to ascertain all necessary provisions are in place well in advance.*
- *Bidders should note that Specifications Stated in the BQ shedules below shall be followed strictly and pricing shall include the same as specified. No change in specifications shall be allowed unless with the express authority of the engineers after validation of cause of change.*

NOTE:

- *Model to be as ORTEA or Equivalent to Approval*
- *Safety Sinage Legible from 3m away as a minimum shall be installed at all areas where deemed possible to avoid injury or damage to proerty and live. This should be quoted for under Signage in the document.*
- *Technical product catalogues and specifications for quoted models to be attached*
- ***NOTE: Kindly Note that all Bidders Will be required to give the Authorization Letter from the Local Authorized agent for AVS. This will be Mandatory in the Evaluation.***

B1 3-Φ AUTOMATIC VOLTAGE STABILIZER

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
B1.01	**AVS (WAREHOUSE):** Automatic Voltage stabilizer c/w the features outlined in the particular specifications herein. The main specifications of the AVS are: • **1500KVA Rated AVS** • Three Phase with Independent Regulation on each phase • Input: 415 ± 25% (3P+N) • Output: 415 ± 1% (3P+N) • Efficiency: 95% and above AC-AC • Cooling: Should be self cooling and should have extract fans to enhance the cooling • C/w all software and hardware necessary for operation • Must be BMS compatible & ready with • BACNET IP Protocol compatible Gateway to be supplied in event of different protocol. • Should include Enclosed emergency trip push button and associated cabling	No.	1		

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
B1.02	**BYPASS PANEL:** Supply and install a Voltage stabilizer maintenance by pass panel IP-44 free standing front access fabricated from 16SWG steel sheet and frames powder coated to approved shade, complete with 2500A 4P ACB units with micrologic control units, mechanically interlocked, 3 phase In and Out indication lamps, manager with communication port control module for communication with various parameters such as voltage, AVR status, On/Off/trip, temp etc.	No.	1		
B1.03	**CABLING: STABILIZER and MAINS & GENERATOR SUPPLY CHANGEOVER LV PANEL:** 630mm sq PVC SC XPLE CU Cables. (Wired in 3 runs / phase + 2 runs of Neutral)	LM.	650		
B1.04	Cable glands for above cables	No.	44		
B1.05	Cable lugs for for above cables	No.	44		
B1.06	**CABLING: STABILIZER BYPASS PANEL OUTPUT AND THE VOLTAGE STABILIZER INPUT AND VICE VERSA:** 400mm sq PVC SC XPLE CU cable	LM.	400		
B1.07	Cable glands for above cables	No.	32		
B1.08	Cable lugs for for above cables	No.	32		
B1.09	**HORIZONTAL CABLE TRAY (POWER)**: 600 x 150mm POWDER COATED (WHITE) steel factory fabricated Cable tray complete with angle bends, Tees, end caps to detail and mounting brackets & accessories to approval.. Includes equipotential bonding.	LM.	95		

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
B1.10	**VERTICAL CABLE LADDER (POWER)**: 400 x 100mm POWDER COATED (WHITE) steel factory fabricated Cable tray complete with angle bends, Tees, end caps to detail and mounting brackets & accessories to approval. Includes equipotential bonding.	LM.	50		
B1.11	**EARTHING:** Earthing of the Stabilizer and associated system c/w all accessories as per IEEE Regulations	Item	1		
B1.12	**ELECTRICAL WORKS:** Allow Sum for associated electrical termination works for AVS above.	Item	1		
B1.13	**HOISTING:** Allow sum for Hoisting of equipment where necessary	Item	1		
B1.14	**SIGNAGE:** Allow sum for putting Up signage as required by the International safety standards	Item	1		
B1.15	**ATTENDANCE & LIAISON:** Allow sum for attendance to other specialists e.g. Electrical, Building management, Client, BMS, etc.	Item	1		
B1.16	**DOCUMENTATION:** Sum for Completion documents: Comprising Workshop drawings, manufacturer's technical product catalogues, users manuals, maintenance manuals, as installed drawings, test certificates, etc. **{ NOTE: Penultimate Valuation will not be paid until these are fully availed & signed off by the engineer }**	Item	1		

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
B1.17	**TESTING & COMMISSIONING:** Sum for Testing and commissioning of the entire installations set complete with all accessories, interconnections, controls, BMS link & activation and the necessary programing.	Item	1		
B1.18	**TRAINING:** Sum for Training of client personel / users (At least 5No Staff for 1Week)	Item	1		
B1.19	**DLP SUM:** Sum for 6 months comprehensive maintenance from date of practical completion i.e. for maintainance and replacement of consumables such as blown out devices	Item	1		
B1.20	Preliminaries & General Conditions	Item	1		
B1.21	Contingency				2,000,000
B1.22	**TOTAL Exclusive of VAT c/f to GENERATOR, STABILIZER & UPSes PRICE SUMMARY PAGE.**				

C UPS INSTALLATIONS

- *The Contractor shall supply labour and supply, deliver, install, fix, connect, test, label and commission the works, clean, complete and working to every detail as described below and in the related specifications and /or on the drawings to the satisfaction of the Consulting Engineers. He will also be expected to attend site meetings / inspections to ascertain all necessary provisions are in place well in advance.*

- *Bidders should note that Specifications Stated in the BQ shedules below shall be followed strictly and pricing shall include the same as specified. No change in specifications shall be allowed unless with the express authority of the engineers after validation of cause of change.*

NOTE:

- *Model to be as GAMATRONICS, APC, EATON, MGE, DELTA or Equivalent to Approval*

- *Safety Sinage Legible from 3m away as a minimum shall be installed at all areas where deemed possible to avoid injury or damage to proerty and live. This should be quoted for under Signage in the document.*

- *Technical product catalogues and specifications for quoted models to be attached*

- ***NOTE: Kindly Note that all Bidders Will be required to give the Authorization Letter from the Local Authorized agent for UPS. This will be Mandatory in the Evaluation.***

C1 WAREHOUSE UPS - MODULAR

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
C1.01	**UPS UNIT:** UPS Unit c/w the features outlined in the particular specifications herein. The main specifications of the UPS Unit are: • **80KVA Rated True Online UPS** • Modular UPS Unit upgradable to 100KVA at intervals of 20KVA modules • Three phase IN / Three phase OUT • C/w all software and hardware necessary for operation • Must be BMS compatible & ready with BACNET IP protocol • BACNET IP compatible Gateway to be supplied in event of different protocol.	No.	1		

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
C1.02	**UPS MODULES:** UPS Modules c/w the features outlined in the particular specifications herein. The main specifications of the UPS Modules are: • Each Module to be 20KVA • Hot Swappable Modules • C/w all software and hardware necessary for operation • c/w Housing for the Modules	No.	4		
C1.03	**BATTERY UNIT:** Battery Unit (Batteries & Cabinet) c/w the features outlined in the particular specifications herein. The main specifications are: • Stand Alone battery Rack to give a minimum of 30Minutes back up • Enclosed Battery Cabinet and to Match the UPS System • C/w all software and hardware necessary for operation	No.	1		
C1.04	**MANUAL BYPASS (EXTERNAL):** External Manual bypass for the above UPS (Should be from the same supplier as the UPS). • Bypass Breakers / Isolators should be for the full capacity of the UPS	No.	1		
C1.05	**STS:** Static Transfer Switch for the Above UPSes (3-Phase)	No.	1		
C1.06	**CABLING: UPS and MANUAL BYPASS:** 50 mm sq 4Core PVC XPLE SWA CU Cables plus 35mm ECC.	LM.	50		
C1.07	Cable glands for above cables	No.	2		

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
C1.08	Cable lugs for for above cables	No.	10		
C1.09	**CABLING: MANUAL BYPASS/CLEAN POWER PANEL:** 70 mm sq 4Core PVC XPLE SWA CU Cables plus 50mm ECC.	LM.	80		
C1.10	Cable glands for above cables	No.	2		
C1.11	Cable lugs for for above cables	No.	10		
C1.12	**EARTHING:** Cost of earthing the Equipment and associated system c/w all accessories as per IEEE Regulations	Item	1		
C1.13	**ELECTRICAL WORKS:** Allow Sum for associated electrical termination works for UPS(es) above. This includes associated cabling in between the UPS and the Battery Banks.	Item	1		
C1.14	**CABLE MANAGEMENT:** Sum for cable Ties for holding the cables to the cable trays and cabinets	Item	1		
C1.15	Any other additional items, please specify below and attach catalogues. (If none write NIL)				
i)		Item	1		
ii)		Item	1		
iii)		Item	1		
iv)		Item	1		
C1.16	**Sub-Total Exclusive of VAT c/f to UPSes Price Summary Page**				

C2 OFFICES BLOCK UPS - MODULAR

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
C2.01	**UPS UNIT:** UPS Unit c/w the features outlined in the particular specifications herein. The main specifications of the UPS Unit are: • **140KVA Rated True Online UPS** • Modular UPS Unit upgradable to 200KVA at intervals of 20KVA modules • Three phase IN / Three phase OUT • C/w all software and hardware necessary for operation • Must be BMS compatible & ready with BACNET IP protocol • BACNET IP compatible Gateway to be supplied in event of different protocol.	No.	1		
C2.02	**UPS MODULES:** UPS Modules c/w the features outlined in the particular specifications herein. The main specifications of the UPS Modules are: • Each Module to be 20KVA • Hot Swappable Modules • C/w all software and hardware necessary for operation • c/w Housing for the Modules	No.	7		
C2.03	**BATTERY UNIT:** Battery Unit (Batteries & Cabinet) c/w the features outlined in the particular specifications herein. The main specifications are: • Stand Alone battery Rack to give a minimum of 30Minutes back up • Enclosed Battery Cabinet and to Match the UPS System • C/w all software and hardware necessary for operation	No.	1		
C2.04	**MANUAL BYPASS (EXTERNAL):** External Manual bypass for the above UPS (Should be from the same supplier as the UPS). • Bypass Breakers / Isolators should be for the full capacity of the UPS	No.	1		

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
C2.05	**STS:** Static Transfer Switch for the Above UPSes (3-Phase)	No.	1		
C2.06	**CABLING: UPS and MANUAL BYPASS:** 70 mm sq 4Core PVC XPLE SWA CU Cables plus 50mm ECC.	LM.	50		
C2.07	Cable glands for above cables	No.	2		
C2.08	Cable lugs for for above cables	No.	10		
C2.09	**CABLING: MANUAL BYPASS/CLEAN POWER PANEL:** 70 mm sq 4Core PVC XPLE SWA CU Cables plus 50mm ECC.	LM.	80		
C2.10	Cable glands for above cables	No.	2		
C2.11	Cable lugs for for above cables	No.	10		
C2.12	**HORIZONTAL CABLE TRAY (POWER)**: 600 x 150mm POWDER COATED (WHITE) steel factory fabricated Cable tray complete with angle bends, Tees, end caps to detail and mounting brackets & accessories to approval.. Includes equipotential bonding.	LM.	100		
C2.13	**VERTICAL CABLE LADDER (POWER)**: 400 x 100mm POWDER COATED (WHITE) steel factory fabricated Cable tray complete with angle bends, Tees, end caps to detail and mounting brackets & accessories to approval. Includes equipotential bonding.	LM.	50		

ITEM	DESCRIPTION	UNIT	QTY	RATE (Kshs)	COST (Kshs)
C2.14	**EARTHING:** Cost of earthing the Equipment and associated system c/w all accessories as per IEEE Regulations	Item	1		
C2.15	**ELECTRICAL WORKS:** Allow Sum for associated electrical termination works for UPS(es) above. This includes associated cabling in between the UPS and the Battery Banks.	Item	1		
C2.16	**CABLE MANAGEMENT:** Sum for cable Ties for holding the cables to the cable trays and cabinets	Item	1		
C2.17	Any other additional items, please specify below and attach catalogues. (If none write NIL)				
i)		Item	1		
ii)		Item	1		
iii)		Item	1		
iv)		Item	1		
C2.18	**Sub-Total Exclusive of VAT c/f to UPSes Price Summary Page**				

UPS PRICE SUMMARY PAGE.

Item	Description			COST (Kshs)	
CC1	WAREHOUSE UPS - MODULAR				
CC2	OFFICES BLOCK UPS - MODULAR				
CC3	**HOISTING:** Allow sum for Hoisting of equipment where necessary	Item	1		
CC4	**LIAISON:** Sub contractors liason with Other contractors supplying the equipment, Client team, etc for connections and all matters pertaining to BMS Installations for the project	Item	1		
CC5	**DOCUMENTATION:** Sum for Completion documents: Comprising Workshop drawings, manufacturer's technical product catalogues, users manuals, maintenance manuals, as installed drawings, test certificates, etc. **{NOTE: Penultimate Valuation will not be paid until these are fully availed & signed off by the engineer}**	Item	1		
CC6	**TESTING & COMMISSIONING:** Sum for Installations, Termination, Programming, Testing, Customization, Training (5No.) and Certification of all the above mentioned system to a working and functional condition.	Item	1		

Item	Description			COST (Kshs)	
CC7	**TRAINING:** Allow sum for training client personel (At least 5No. Personel) for a Period of 1 week Minimum	Item	1		
CC8	**DLP SUM:** Sum for 6 months comprehensive maintenance from date of practical completion.	Item	1		
CC9	**LABELLING:** Allow sum for putting permanent Labels on all installations including cabling as required. Main Labels should be a Minimum of 200mm by 200mm. All labels should be permanet engraved labels (trafollyte material) including the cable labelling.	Item	1		
CC10	Preliminaries & General Conditions	Item	1		
CC11	Contingency	Item	1		2,500,000
CC12	**TOTAL Exclusive of VAT c/f to GENERATOR, STABILIZER & UPSes PRICE SUMMARY PAGE.**				

D GENERATOR, STABILIZER & UPSes PRICE SUMMARY PAGE

Item	Description	Cost (Kshs)
D1	GENERATOR INSTALLATIONS	
D2	AUTOMATIC VOLTAGE STABILIZER	
D3	UPS INSTALLATIONS	
D4	**TOTAL Exclusive of VAT**	
D5	Add: 16% VAT including all PC sums & Contingencies	
D6	**TOTAL Inclusive OF VAT c/f to Form of Tender**	