



**RURAL ELECTRIFICATION & RENEWABLE
ENERGY CORPORATION**

Ground Floor, Kawi House, South C
P O Box 34585 – 00100
NAIROBI, KENYA

Tel: +254 20 4953000, 4953600

E-mail: tenders@rerec.co.ke

Fax: +254 20 2710944

Website: www.rerec.co.ke

**INVITATION TO TENDER (ITT) No; RFX No.
1000001485**

**TENDER FOR SUPPLY, INSTALLATION,
TESTING, AND COMMISSIONING OF SOLAR
MINI- GRID IN KIBUOGI ISLAND, HOMABAY
COUNTY-RETENDER**

Contents

PART 1 - TENDERING PROCEDURES	5
SECTION II - TENDER DATA SHEET (TDS).....	27
SECTION III - EVALUATION AND QUALIFICATION CRITERIA	33
2. PRELIMINARY EXAMINATION FOR DETERMINATION OF RESPONSIVENESS.....	33
1.1 Nationality.....	41
1.2 Conflict of Interest	41
1.3 PPRA Ineligibility (if debarred/Sanctioned)	41
1.4 State Owned Enterprise or Institution	41
1.5 Ineligibility based on a United Nations resolution or Kenya laws.....	41
1.6 Tax Obligations for Kenyan Tenderers	41
Year 1	72
Year 2	72
Year 3	72
Year	72
Year n	72
Avg. 72	
Avg. Ratio	72
Information from Balance Sheet	72
Total Assets (TA)	72
Total Liabilities (TL).....	72
Net Worth (NW).....	72
Current Assets (CA)	72
Current Liabilities (CL).....	72
Information from Income Statement	72
Total Revenue (TR).....	72
Profits Before Taxes (PBT).....	72
MANUFACTURER'S CONTACT DETAILS FORM.....	81
.....	83
TERMS OF REFERENCE.....	84
SECTION IV: TECHNICAL SPECIFICATIONS OF KIBUOGI ISLAND SOLAR MINI-GRID.....	84
PART I: Power Plant Specifications	84
General Description.....	84
Project Location.....	84
System Description	84
Equipment Housing.....	92
Main Technical Specification of Solar PV Hybrid Power Plant.....	95
Documentation	96
Site Preparation	96
Installation Phase.....	97
Commissioning Test.....	97
Operator Training	97
Information for Installer Companies.....	97
System Layout.....	97
Notice Board	98
CIVIL AND STRUCTURAL WORKS.....	98
TECHNICAL SPECIFICATIONS FOR MATERIALS AND EQUIPMENT	122
PART II: Sub-Station Specifications.....	135
The Scope of the project.....	135
Specifications for 415 V Ac Metal-Clad Switchgear Board	135
1.1 General Specifications.....	135
Equipment and Switchgear Earthing	139
Materials and Workmanship	139

Protection, Cleaning and Painting	140
Drawings.....	140
Operating and Maintenance Instructions	141
Testing At Place of Manufacture	142
Software.....	142
The software shall support secure online firmware updates to allow remote maintenance, bug fixes, and feature enhancements without physical intervention.....	142
Key Requirements:.....	142
I. Remote Accessibility.....	142
II. Security	142
III. Reliability.....	143
IV. Compatibility & Management	143
Spare Parts	143
Detailed Specifications for 415 V Ac Metal-Clad Indoor Switchgear Panels	143
ANNEX 2 – TECHNICAL REQUIREMENTS	155
 PART III: Low Voltage (LV) Single Core Aluminium Cables (PVC)	 161
 PART IV: Specifications for 0.415/11kV Step-up Transformer	 163
FOREWORD	163
1.1 SCOPE.....	163
REFERENCES	163
TERMS AND DEFINITIONS	163
REQUIREMENTS	163
ANNEX C: TECHNICAL REQUIREMENTS FOR STEP-UP TRANSFORMER	167
 PART V: Specification for 11 KV Circuit Breakers (Triple Pole)	 169
FOREWORD	169
1.1 SCOPE.....	169
REFERENCES	169
TERMS AND DEFINITIONS	169
REQUIREMENTS	169
RATINGS	172
CONTROL AND RELAY PANEL	172
DRAWING AND MANUALS.....	173
PACKING	173
TESTS.....	173
INFORMATION.....	173
ANNEX D: TECHNICAL REQUIREMENTS FOR:	174
 SECTION V: DRAWINGS AND TOOLS	 181
DRAWINGS	181
TOOLS AND EQUIPMENT	181
 SECTION VI: BILLS OF QUANTITIES	 182
Introduction	182
CIVIL WORKS SPECIFICATIONS AND BILL OF QUANTITIES	183
BILL OF QUANTITIES AND PRICE SCHEDULE FOR STEP UP SUBSTATION	194
BILL OF QUANTITIES AND PRICE SCHEDULE FOR 100 KWp SOLAR PV SYSTEM	195
BILL OF QUANTITIES AND PRICE SCHEDULE FOR TOOLS AND CRITICAL SPARES.....	197
BILL OF QUANTITIES AND PRICE SCHEDULE FOR SERVICES	198
COST SUMMARY TO BE TRANSFERRED TO FORM OF TENDER AND ITEM TAB IN SRM SYSTEM.....	199
 PART III - CONDITIONS OF CONTRACT AND CONTRACT FORMS	 213
BENEFICIAL OWNERSHIP DISCLOSURE FORM	280
(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)	280

INVITATION TO TENDER

RURAL ELECTRIFICATION AND RENEWABLE ENERGY CORPORATION

CONTRACT NAME AND DESCRIPTION: RFX No. 1000001485

The Rural Electrification and Renewable Energy Corporation Invites Tenders for Supply, Installation, Testing, and Commissioning of Solar Mini- grid in Kibuogi Island, Homabay County-Retender.

1. Tendering will be conducted under open competitive method (National) using a standardized tender document. Tendering is open to all qualified and interested Tenderers.
2. Qualified and interested tenderers may obtain further information and inspect the Tender Documents during office hours **8.00am - 12.45pm to 1.45pm-4.00pm Monday to Friday** at *Rural Electrification and Renewable Energy Corporation* Offices situated in Kawi Complex, Block C, Ground floor.
3. A complete set of tender documents may be viewed and downloaded by interested tenderers free of charge electronically from the Website www.rerec.co.ke under tender documents or through the e-procurement portal using <https://suppliers.rea.co.ke:44300/irj/portal> and on the **Public Procurement Information Portal** <https://tenders.go.ke>

Tenderers who are not yet registered with REREC must register their companies in order to participate in the tender using link below that can be found from the website www.rerec.co.ke Procurement-

Supplierregistration:[https://suppliers.rea.co.ke:44200/supportal\(bD11biZjPTUwMCZkPW1pbg==\)/bspwdapplication.do#VIEW_ANCHOR-ROS_TOP](https://suppliers.rea.co.ke:44200/supportal(bD11biZjPTUwMCZkPW1pbg==)/bspwdapplication.do#VIEW_ANCHOR-ROS_TOP)

4. Tenders shall be quoted in Kenya Shillings and shall include all taxes. Tenders shall remain valid for 147 days from the date of opening of tenders.
5. All Tenders must be accompanied by tender Securities in form of a bank guarantee as prescribed below;

Lot No.	Tender Security Amount (Kshs)
1	1,900,000.00

Original Bid securities delivered to the tender Box (Kawi Complex, Block C, Ground floor, Off Popo Road,) on or before **28th January, 2026 @ 10.00am.**

6. The Tenderer shall chronologically serialize all pages of the tender documents submitted.
7. Completed tenders must be delivered to Rural Electrification and Renewable Energy Corporation electronically through <https://suppliers.rea.co.ke:44300/irj/portal> on or before **28th January, 2026 @ 10.00am.**
8. Only Electronic Tenders will be permitted.
9. Tenders will be opened immediately after the deadline date and time specified above or any dead line date and times specified later. Tenders will be publicly opened in the presence of the Tenderers' designated representatives who choose to attend at the address below.
10. Any addendum to this tender shall be uploaded to the Corporation's website www.rerec.co.ke under tender documents.
11. Late tenders will be rejected.
12. The addresses referred to above are:

Address for obtaining further information on tender documents

Original Bid security delivered to the tender Box (Kawi Complex, Block C, Ground floor, Off Popo Road,). Contact Manager, Supply chain management, telephone number: 0709193000 and e-mail address: tenders@rerec.co.ke

Address for Submission of Tenders:

Online Through <https://suppliers.rea.co.ke:44300/irj/portal>

Address for Opening of Tenders.

Kawi Complex, Block C, Ground floor, **online opening system**

Name: **Dr. Rose N. Mkalama;**

Designation: **Chief Executive Officer**

PART 1 - TENDERING PROCEDURES

SECTION I -INSTRUCTIONS TO TENDERERS

A. General

1. Scope of Tender

- 1.1 In connection with the Invitation to Tender (ITT), specified in the Tender Data Sheet (TDS), the Procuring Entity, issues this Tendering document for the Design, Supply and Installation of Plant and equipment as specified in Section VII, Procuring Entity's Requirements.

2. Definitions

- 2.1 Throughout this Tender document:

- a) The term “in writing” means communicated in written form (e.g.by mail, e-mail, fax, including if specified **in the TDS**, distributed or received through the electronic-procurement system used by the Procuring Entity) with proof of receipt;
- b) if the context so requires, “singular” means “plural” and vice versa; and
- c) “Day” means calendar day, unless otherwise specified as “Business Day.” A Business Day is any day that is an official working day in Kenya. It excludes the Kenya's official public holidays.

3. Fraud and Corruption

- 3.1 The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 “Declaration not to engage in corruption”. The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.
- 3.2 The Procuring Entity requires compliance with the provisions of the Competition Act 2010, regarding collusive practices in contracting. Any tenderer found to have engaged in collusive conduct shall be disqualified and criminal and/or civil sanctions may be imposed. To this effect, Tenders shall be required to complete and sign the “Certificate of Independent Tender Determination” annexed to the Form of Tender.
- 3.3 Unfair Competitive Advantage-Fairness and transparency in the tender process require that the firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender. To that end, the Procuring Entity shall indicate in the Data Sheet and make available to all the firms together with this tender document all information that would in that respect give such firm any unfair competitive advantage over competing firms.
- 3.4 Tenderers shall permit and shall cause their agents (where declared or not), subcontractors, sub consultants, service providers, suppliers, and their personnel, to permit the Procuring Entity to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, tender submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Procuring Entity.

4. Eligible Tenderers

- 4.1 A Tenderer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITT 4.6, or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a Form of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the Tendering process and, in the event the JV is awarded the Contract, during contract execution. The maximum number of JV members shall be specified in the TDS.
- 4.2 Public Officers of the Procuring Entity and their relatives (i.e. spouse, child, parent, brother or sister and a child, parent, brother or sister of a spouse) their business associates or agents and firms/organizations in which they have a substantial or controlling interest shall not be eligible to tender or be awarded a contract. Public Officers are also not allowed to participate in any procurement proceedings.

- 4.3 A Tenderer shall not have a conflict of interest. Any Tenderer found to have a conflict of interest shall be disqualified. A Tenderer may be considered to have a conflict of interest for the purpose of this Tendering process, if the Tenderer:
- a) Directly or indirectly controls, is controlled by or is under common control with another Tenderer; or
 - b) Receives or has received any direct or indirect subsidy from another Tenderer; or
 - c) Has the same legal representative as another Tenderer; or
 - d) Has a relationship with another Tenderer, directly or through common third parties, that puts it in a position to influence the Tender of another Tenderer, or influence the decisions of the Procuring Entity regarding this Tendering process; or
 - e) or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Plant and Installation Services that are the subject of the Tender; or
 - f) or any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as Project Manager for the Contract implementation; or
 - g) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the TDS ITT
2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; or
 - h) has a close business or family relationship with a professional staff of the Procuring Entity who:
 - (i) are directly or indirectly involved in the preparation of the Tendering document or specifications of the Contract, and/or the Tender evaluation process of such Contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity.
- 4.4 A tenderer shall not be involved in corrupt, coercive, obstructive or fraudulent practice. A tenderer that is proven to have been involved in any of these practices shall be automatically disqualified and would not be awarded a contract
- 4.5 A firm that is a Tenderer (either individually or as a JV member) shall not participate as a Tenderer or as JV member in more than one Tender except for permitted alternative Tenders. Such participation shall result in the disqualification of all Tenders in which the firm is involved. However, this does not limit the participation of a Tenderer as subcontractor in another Tender or of a firm as a subcontractor in more than one Tender.
- 4.6 A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT 4.9. A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed subcontractors or sub-consultants for any part of the Contract including related Services.
- 4.7 A Tenderer that has been debarred by the PPRA shall be ineligible to be prequalified for, initially selected for, tender for, propose for, financially or otherwise, during such period of time as the PPRA shall have determined. The list of debarred firms and individuals is available at PPRA Website www.ppra.go.ke.
- 4.8 Tenderers that are state-owned enterprises or institutions in Kenya may be eligible to compete and be awarded a Contract(s) only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not under supervision of the Procuring Entity.

- 4.9 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, Kenya prohibits commercial relations with that country; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country. Where the procurement is implemented across jurisdictional boundaries, then exclusion of a firm or individual on the basis of ITT 4.8 (a) above by any country may be applied to that procurement across other countries involved.
- 4.10 Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, subcontracts and labor) from national suppliers and contractors. To this end, a foreign tenderer shall provide in its tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided in for this purpose is be provided in “SECTION III - EVALUATION AND QUALIFICATION CRITERIA, Item 9”.
- 4.11 Pursuant to the eligibility requirements of ITT 4.10, a tender is considered a foreign tenderer, if it is registered in Kenya, has less than 51 percent ownership by nationals of Kenya and if it does not subcontract foreign contractors more than 10 percent of the contract price. JVs are considered as foreign tenderers if the individual member firms are registered in Kenya have less than 51 percent ownership by nationals of Kenya. The JV shall not subcontract to foreign firms more than 10 percent of the contract price.
- 4.12 The Competition Act 2010 requires that firms wishing to tender as Joint Venture undertakings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Act. JVs will be required to seek for exemption from the Competition Authority of Kenya. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. A JV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website www.cak.go.ke
- 4.13 A Kenyan tenderer shall provide evidence of having fulfilled his/her tax obligations by producing a valid tax clearance certificate or tax exemption certificate issued by the Kenya Revenue Authority.

5. Eligible goods, Plant and equipment for Installation Services

- 5.1 The Plant and equipment for Installation Services to be supplied under the Contract may have their origin in any eligible country.
- 5.2 For purposes of ITT 5.1 above, “origin” means the place where the plant, or component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.
- 5.3 Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.

B. Contents of Tendering Document

6. Sections of Tendering Document

- 6.1** The Tendering document consists of Parts 1, 2, and 3, which include all the sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITT 10.

PART 1 - Tendering Procedures

- i) Section I- Instructions to Tenderers (ITT)
- ii) Section II-Tender Data Sheet (TDS)
- iii) Section III- Evaluation and Qualification Criteria
- iv) Section IV-Tendering Forms
- v) Section V- Eligible Countries
- vi) Section VI- Fraud and Corruption

PART 2 - Procuring Entity's Requirements

- vii) Section VII-Procuring Entity's Requirements

PART 3 - Conditions of Contract and Contract Forms

- viii) Section VIII- General Conditions of Contract (GCC)
- ix) Section IX- Special Conditions of Contract (SCC)
- x) Section X- Contract Forms

- 6.2** The Invitation to Tender Notice issued by the Procuring Entity is not part of the Tendering document.
- 6.3** Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the document, responses to requests for clarification, the Minutes of the pre-Tender meeting (if any), or Addenda to the Tendering document in accordance with ITT 10. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.
- 6.4** The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tendering document and to furnish with its Tender all information or documentation as is required by the Tendering document.

7. Site Visit

- 7.1** The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Required Services and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for the Services. The costs of visiting the Site shall be at the Tenderer's own expense.

8. Pre-Tender Meeting and a pre-arranged pretender visit of the site of the works

- 8.1** The Procuring Entity shall specify in the **TDS** if a pre-tender conference will be held, when and where. The Procuring Entity shall also specify in the **TDS** if a pre-arranged pretender visit of the site of the works will be held and when. The Tenderer's designated representative is invited to attend a pre- arranged pretender visit of the site of the works. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

- 8.2 The Tenderer is requested to submit any questions in writing, to reach the Procuring Entity not later than the period specified in the **TDS** before the meeting.
- 8.3 Minutes of the pre-Tender meeting and the pre-arranged pretender visit of the site of the works, if applicable, including the text of the questions asked by Tenderers and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Tenderers who have acquired the Tender Documents in accordance with ITT6.3. Minutes shall not identify the source of the questions asked.
- 8.4 The Procuring Entity shall also promptly publish anonymized (no names) Minutes of the pre-Tender meeting and the pre-arranged pretender visit of the site of the works at the webpage identified in the **TDS**. Any modification to the Tender Documents that may become necessary as a result of the pre- Tender meeting shall be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT10 and not through the minutes of the pre-Tender meeting. Nonattendance at the pre- Tender meeting will not be a cause for disqualification of a Tenderer.

9. Clarification of Tender Documents

- 9.1 A Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address specified in the **TDS** or raise its enquiries during the pre- Tender meeting and the pre-arranged pretender visit of the site of the works if provided for in accordance with ITT8.4. The Procuring Entity will respond in writing to any request for clarification, provided that such request is received no later than the period specified in the **TDS** prior to the deadline for submission of tenders. The Procuring Entity shall forward copies of its response to all tenderers who have acquired the Tender Documents in accordance with ITT6.3, including a description of the inquiry but without identifying its source. If so specified in the **TDS**, the Procuring Entity shall also promptly publish its response at the webpage identified in the **TDS**. Should the clarification result in changes to the essential elements of the Tender Documents, the Procuring Entity shall amend the Tender Documents appropriately following the procedure under ITT10.

10. Amendment of Tendering Document

- 10.1 At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tendering document by issuing addenda.
- 10.2 Any addendum issued shall be part of the tendering document and shall be communicated in writing to all who have obtained the tendering document from the Procuring Entity in accordance with ITT6.3. The Procuring Entity shall also promptly publish the addendum on the Procuring Entity's webpage in accordance with ITT8.1.
- 10.3 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity shall extend, as necessary, the deadline for submission of Tenders, in accordance with ITT24.2 below.

C. Preparation of Tenders

11. Cost of Tendering

- 11.1 The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conductor outcome of the Tendering process.

12. Language of Tender

- 12.1 The Tender, as well as all correspondence and documents relating to the Tender exchanged by the Tenderer and the Procuring Entity, shall be written in the English language. Supporting documents and printed literature that are part of the Tender may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English Language, in which case, for purposes of interpretation of the

Tender, such translation shall govern.

13. Documents Comprising the Tender

13.1 The Tender shall comprise the following:

- a) **Form of Tender** prepared in accordance with ITT 14.1;
- b) **Price Schedules** completed in accordance with ITT 14 and ITT 19;
- c) **Tender Security or Tender Securing Declaration**, in accordance with ITT 22;
- d) **Alternative Tender**, if permissible, in accordance with ITT 15;
- e) **Authorization**: written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 23.3;
- f) **Eligibility of Plant and Installation Services**: documentary evidence established in accordance with ITT 16.1 that the Plant and Installation Services offered by the Tenderer in its Tender or in any alternative Tender, if permitted, are eligible;
- g) **Tenderer's Eligibility and Qualifications**: documentary evidence in accordance with ITT 17.1 establishing the Tenderer's eligibility and qualifications to perform the Contract if its Tender is accepted;
- h) **Conformity**: documentary evidence in accordance to ITT18 that the Plant and Installation Services offered by the Tenderer conform to the Tendering document;
- i) **Subcontractors**: list of subcontractors in accordance with ITT18.2; and
- j) Any other document required **in the TDS**.

13.1 In addition to the requirements under ITT 13.1, Tenders submitted by a JV shall include a copy of the Joint Venture Agreement entered in to by all members. Alternatively, a Form of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender, together with a copy of the proposed Agreement. The Tenderer shall serialize pages of all tender documents submitted.

13.2 The Tenderer shall furnish in the Form of Tender information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Tender

14. Form of Tender and Price Schedules

14.1 The Form of Tender and Price Schedules shall be prepared, using the relevant forms furnished in Section IV, Tendering Forms. The forms must be completed as instructed in each form without any alterations to the text, and no substitutes shall be accepted except as provided under ITT 21.3. All blank spaces shall be filled in with the information requested.

15. Alternative Tenders

15.1 Unless otherwise specified in the **TDS**, alternative Tenders shall not be considered.

15.2 When alternatives to the Time Schedule are explicitly invited, a statement to that effect will be included in the **TDS**, and the method of evaluating different time schedules will be described in Section III, Evaluation and Qualification Criteria.

15.3 Except as provided under ITT 15.4 below, Tenderers wishing to offer technical alternatives to the Procuring Entity's requirements as described in the Tendering document must also provide: (i) a price at which they are prepared to offer a Plant meeting the Procuring Entity's requirements; and (ii) all information necessary for a complete evaluation of the alternatives by the Procuring Entity, including drawings,

design calculations, technical specifications, breakdown of prices, and proposed installation methodology and other relevant details. Only the technical alternatives, if any, of the Tenderer with the Best Evaluated Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

- 15.4 When Tenderers are invited in the **TDS** to submit alternative technical solutions for specified parts of the facilities, such parts will be identified in the **TDS**, as will the method for their evaluation, and described in Section VII, Procuring Entity's Requirements.

16 Documents Establishing the Eligibility of the Plant and Installation Services

- 16.1 To establish the eligibility of the Plant and Installation Services in accordance with ITT 5, Tenderers shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Tendering Forms.

17 Documents Establishing the Eligibility and Qualifications of the Tenderer

- 17.1 To establish its eligibility and qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Tenderer shall provide the information requested in the corresponding information sheets included in Section IV, Tendering Forms.
- 17.2 Tenderers shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity a supplier or group of suppliers qualifies for a margin of preference. Further the information will enable the Procuring Entity identify any actual or potential conflict of interest in relation to the procurement and/or contract management processes, or a possibility of collusion between tenderers, and thereby help to prevent any corrupt influence in relation to the procurement process or contract management.
- 17.3 The purpose of the information described in ITT 15.1 above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.
- 17.4 The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which information on any changes to the information which was provided by the tenderer under ITT 15.1. The obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.
- 17.5 All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.
- 17.6 If a tenderer fails to submit the information required by these requirements, its tenderer will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.
- 17.7 If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:
- i) if the procurement process is still ongoing, the tenderer will be disqualified from the procurement process,

- ii) if the contract has been awarded to that tenderer, the contract award will be set aside,
- iii) the tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other persons have committed any criminal offence.

17.8 If a tenderer submits information pursuant to these requirements that is incomplete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences of ITT 6.7 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of the tenderer.

18 Documents Establishing the Conformity of the Plant and Installation Services

18.1 The Tenderer shall furnish the information stipulated in Section IV, Tendering Forms in sufficient detail to demonstrate substantial responsiveness of the Tenderers' proposal to the work requirements and the completion time.

18.2 For major items of Plant and Installation Services as listed by the Procuring Entity in Section III, Evaluation and Qualification Criteria, which the Tenderer intends to purchase or subcontract, the Tenderer shall give details of the name and nationality of the proposed Subcontractors, including manufacturers, for each of those items. In addition, the Tenderer shall include in its Tender information establishing compliance with the requirements specified by the Procuring Entity for these items. Quoted rates and prices will be deemed to apply to whichever Subcontractor is appointed, and no adjustment of the rates and prices will be permitted.

18.3 The Tenderer shall be responsible for ensuring that any Subcontractor proposed complies with the requirements of ITT 4, and that any plant, or services to be provided by the Subcontractor comply with the requirements of ITT 5 and ITT 15.1.

19 Tender Prices and Discounts

19.1 Unless otherwise specified in the **TDS**, Tenderers shall quote for the entire Plant and Installation Services on a "single responsibility" basis. The total Tender price shall include all the Contractor's obligations mentioned in or to be reasonably inferred from the Tendering document in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction, installation and completion of the Plant. This includes all requirements under the Contractor's responsibilities for testing, pre-commissioning and commissioning of the plant and, where so required by the Tendering document, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as specified in the Tendering document, all in accordance with the requirements of the General Conditions. Items against which no price is entered by the Tenderer will not be paid for by the Procuring Entity when executed and shall be deemed to be covered by the prices for other items.

19.2 Tenderers are required to quote the price for the commercial, contractual and technical obligations outlined in the Tendering document.

19.3 Tenderers shall give a breakdown of the prices in the manner and detail called for in the Price Schedules included in Section IV, Tendering Forms.

19.4 Depending on the scope of the Contract, the Price Schedules may comprise up to the six (6) schedules listed below. Separate numbered Schedules included in Section IV, Tendering Forms, from those numbered 1 to 4 below, shall be used for each of the elements of the Plant and Installation Services. The total amount from each Schedule corresponding to an element of the Plant and Installation Services shall be summarized in the schedule titled Grand Summary, (Schedule 5), giving the total Tender price (s) to be entered in the Form of Tender. Tenderers shall note that the plant and equipment included in Schedule

Nos. 1 and 2 below exclude materials used for civil, building and other construction works. All such materials shall be included and priced under Schedule No.4, Installation Services. The Schedules comprise:

Schedule No. 1: Plant (including Mandatory Spare Parts) Supplied from Abroad

Schedule No. 2: Plant (including Mandatory Spare Parts) Supplied from within Kenya

Schedule No. 3: Design Services

Schedule No. 4: Installation Services

Schedule No. 5: Grand Summary

(Schedule Nos.1to4) **Schedule No. 6:**

Recommended Spare Parts

19.5 In the Schedules, Tenderers shall give the required details and a breakdown of their prices as follows:

- a) Plant to be supplied from a broad (Schedule No.1):
The price of the Plant shall be quoted on CIP-named place of destination basis as specified **in the TDS**, including all taxes payable in Kenya.
- b) Plant manufactured within Kenya (Schedule No.2):
 - i) The price of the plant shall be quoted on an EXW Incoterm basis (such as “ex-works,” “ex- factory,” “ex-warehouse” or “off-the-shelf,” as applicable);
 - ii) Sales tax and all other taxes payable in Kenya on the plant if the contract is awarded to the Tenderer; and
 - iii) The total price for the item.
- c) Design Services (Schedule No.3);
- d) Installation Services shall be quoted separately (Schedule No.4) and shall include rates or prices for local transportation to named place of final destination as specified **in the TDS**, insurance and other services incidental to delivery of the plant, all labor, contractor's equipment, temporary works, materials, consumables and all matters and things of whatsoever nature, including operations and maintenance services, the provision of operations and maintenance manuals, training, etc., where identified in the Tendering document, as necessary for the proper execution of the installation and other services, including all taxes, duties, levies and charges payable in Kenya as of twenty-eight (28) days prior to the deadline for submission of Tenders;
- e) Recommended spare parts shall be quoted separately (Schedule 6) as specified in either subparagraph (a) or (b) above in accordance with the origin of the spare parts.

19.6 The terms EXW, CIP, and other similar terms shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, as specified in the **TDS**.

19.7 The prices shall be either fixed or adjustable as specified in the **TDS**.

19.8 In the case of Fixed Price, prices quoted by the Tenderer shall be fixed during the Tenderer's performance of the contract and not subject to variation on any account. A Tender submitted with an adjustable price quotation will be treated as non-responsive and rejected.

19.9 In the case of Adjustable Price, prices quoted by the Tenderer shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor, material, transport and contractor's equipment in accordance with the

procedures specified in the corresponding Appendix to the Contract Agreement. A Tender submitted with a fixed price quotation will not be rejected, but the price adjustment will be treated as zero. Tenderers are required to indicate the source of labor and material indices in the corresponding Form in Section IV, Tendering Forms.

19.10 If so indicated in ITT 1.1, Tenders are being invited for individual lots (contracts) or for any combination of lots (packages). Tenderers wishing to offer any price reduction (discount) for the award of more than one Contract shall specify in their Form of Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package, and the manner in which the price reductions will apply.

19.11 Tenderers wishing to offer any unconditional discount shall specify in their Form of Tender the offered discounts and the manner in which price discounts will apply.

20. Currencies of Tender and Payment

20.1 The currency(ies) of the Tender and the currency(ies) of payments shall be the same. The Tenderer shall quote in the currency of Kenya the portion of the Tender price that corresponds to expenditures incurred in the currency of Kenya, unless otherwise specified in the **TDS**.

20.2 The Tenderer may express the Tender price in any currency. If the Tenderer wishes to be paid in a combination of amounts in different currencies, it may quote its price accordingly but shall use no more than three foreign currencies in addition to the currency of Kenya.

21. Period of Validity of Tenders

21.1 Tenders shall remain valid for the Tender Validity period specified **in the TDS**. The Tender Validity period starts from the Tender submission deadline (as prescribed by the Procuring Entity in accordance with ITT 23.1). A Tender valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.

21.2 In exceptional circumstances, prior to the expiration of the Tender validity period, the Procuring Entity may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender Security is requested in accordance with ITT 20, the Tenderer granting the request shall also extend the Tender Security for twenty-eight (28) days beyond the deadline of the extended validity period. A Tenderer may refuse the request without forfeiting its Tender Security. A Tenderer granting the request shall not be required or permitted to modify its Tender, except as provided in ITT 19.3.

21.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial Tender validity period, the Contract price shall be determined as follows:

- a) In the case of **fixed price** contracts, the Contract price shall be the Tender price adjusted by the factor or factors specified **in the TDS**;
- b) In the case of **adjustable price** contracts, no adjustment shall be made; or
- c) in any case, Tender evaluation shall be based on the Tender price without taking into consideration the applicable correction from those indicated above.

22. Tender Security

22.1 The Tenderer shall furnish as part of its Tender, either a Tender-Securing Declaration or a Tender Security as specified **in the TDS**, in original form and, in the case of a Tender Security, in the amount and currency specified **in the TDS**.

22.2 A Tender-Securing Declaration shall use the form included in Section IV Tendering Forms.

- 22.3 If a Tender Security is specified pursuant to ITT 20.1, the Tender security shall be a demand guarantee in any of the following forms at the Tenderer's option:
- a) cash;
 - b) a bank guarantee;
 - c) a guarantee by an insurance company registered and licensed by the Insurance Regulatory Authority listed by the Authority; or
 - d) a guarantee issued by a financial institution approved and licensed by the Central Bank of Kenya,
- 22.4 If a Tender Security or a Tender-Securing Declaration is specified pursuant to ITT 20.1, any Tender not accompanied by a substantially responsive Tender Security or Tender-Securing Declaration shall be rejected by the Procuring Entity as non-responsive.
- 22.5 If a Tender Security is specified pursuant to ITT 20.1, the Tender Security of unsuccessful Tenderers shall be returned as promptly as possible upon the successful Tenderer's furnishing of the Performance Security pursuant to ITT 47.
- 22.6 The Tender Security of the successful Tenderer shall be returned as promptly as possible once the successful Tenderer has signed the Contract and furnished the required Performance Security.
- 22.7 The Tender Security may be forfeited or the Tender-Securing Declaration executed:
- a) If a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender; or
 - b) If the successful Tenderer fails to:
 - i) Sign the Contract in accordance with ITT 47; or
 - ii) Furnish a performance security in accordance with ITT 48.
- 22.8 Where the Tender-Securing Declaration is executed the Procuring Entity will recommend to the PPRA to debar the Tenderer from participating in public procurement as provided in the law.
- 22.9 The Tender Security or the Tender-Securing Declaration of a JV shall be in the name of the JV that submits the Tender. If the JV has not been legally constituted into a legally enforceable JV at the time of Tendering, the Tender Security or the Tender Securing Declaration shall be in the names of all future members as named in the Form of intent referred to in ITT 4.1 and ITT 11.2.

23. Format and Signing of Tender

- 23.1 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT 11 and clearly mark it "Original." Alternative Tenders, if permitted in accordance with ITT 13, shall be clearly marked "Alternative". In addition, the Tenderer shall submit copies of the Tender, in the number specified in the TDS and clearly mark them "Copy." In the event of any discrepancy between the original and the copies, the original shall prevail.
- 23.2 Tenderers shall mark as "CONFIDENTIAL" information in their Tenders which is confidential to their business. This may include proprietary information, trade secrets or commercial or financially sensitive information.
- 23.3 The original and all copies of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the **TDS** and shall be attached to the Tender. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Tender where entries or amendments have been made shall be signed or initialed by the person signing the Tender.

- 23.4 In the case that the Tenderer is a JV, the Tender shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.
- 23.5 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender.

D. Submission and Opening of Tenders

24. Submission, Sealing and Marking of Tenders

- 24.1 The Tenderer shall deliver the Tender in a single, sealed envelope (one (1) envelope process). The Tenderer shall place the following separate, sealed envelopes:

Inner Envelops:

- a) In an envelope marked “ORIGINAL”, all documents comprising the Tender, as described in ITT11; and
- b) In an envelope marked “COPIES”, all required copies of the Tender; and
- c) If alternative Tenders are permitted in accordance with ITT 13, and if relevant:
 - i) In an envelope marked “ORIGINAL–ALTERNATIVE TENDER” the alternative Tender; and
 - ii) in the envelope marked “COPIES – ALTERNATIVE TENDER” all required copies of the alternative Tender.

The inner envelopes shall:

- a) Bear the name and address of the Tenderer;
- b) Be addressed to the Procuring Entity in accordance with ITT 23.1;
- c) Bear the specific identification of this Tendering process indicated in accordance with ITT 1.1; and
- d) Bear a warning not to open before the time and date for Tender opening.

The outer envelope (s) in which the inner envelopes are enclosed shall:

- a) Be addressed to the Procuring Entity in accordance with ITT 23.1;
- b) Bear the specific identification of this Tendering process indicated in accordance with ITT 1.1; and
- c) Bear a warning not to open before the time and date for Tender opening.

- 24.2 If all envelopes are not sealed and marked as required, the Procuring Entity will assume no responsibility for the misplacement or premature opening of the Tender. Tenders that are misplaced or opened prematurely will not be accepted.

25. Deadline for Submission of Tenders

- 25.1 Tenders must be received by the Procuring Entity at the address and no later than the date and time indicated in the **TDS**. When so specified in the **TDS**, Tenderers shall have the option of submitting their Tenders electronically. Tenderers submitting Tenders electronically shall follow the electronic Tender submission procedures specified in the **TDS**.
- 25.2 The Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders by amending the Tendering document in accordance with ITT8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

26. Late Tenders

- 26.1 The Procuring Entity shall not consider any Tender that arrives after the deadline for submission of Tenders, in accordance with ITT 23. Any Tender received by the Procuring Entity after the deadline for submission of Tenders shall be declared late, rejected, and returned unopened to the Tenderer.

27. Withdrawal, Substitution, and Modification of Tenders

- 27.1 A Tenderer may withdraw, substitute, or modify its Tender after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITT 21.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Tender must accompany the respective written notice. All notices must be:
- a) prepared and submitted in accordance with ITT 21 and ITT 22 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked “Withdrawal,” “Substitution,” “Modification”; and
 - b) received by the Procuring Entity prior to the deadline prescribed for submission of Tenders, in accordance with ITT 23.
- 27.2 Tenders requested to be withdrawn in accordance with ITT25.1 shall be returned unopened to the Tenderers.
- 27.3 No Tender may be withdrawn, substituted, or modified in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity specified by the Tenderer on the Form of Tender or any extension thereof.

28. Tender Opening

- 28.1 Except as in the cases specified in ITT24 and ITT25.2, the Procuring Entity shall publicly open and read out in accordance with ITT26.5 all Tenders received by the deadline at the date, time and place specified **in the TDS** in the presence of Tenderers' designated representatives and anyone who choose to attend. Any specific electronic Tender opening procedures required if electronic Tendering is permitted in accordance with ITT 23.1, shall be as specified **in the TDS**.
- 28.2 First, the written notice of withdrawal in the envelopes marked “Withdrawal” shall be opened and read out and the envelope with the corresponding Tender shall not be opened, but returned to the Tenderer. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Tender opening.
- 28.3 Next, envelopes marked “Substitution” shall be opened and read out and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be opened, but returned to the Tenderer. No Tender substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Tender opening.
- 28.4 Next, envelopes marked “Modification” shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Tender opening.
- 28.5 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and the Tender Price(s), including any discounts and alternative Tenders, and indicating whether there is a modification; the presence or absence of a Tender Security or Tender-Securing Declaration, if required; and any other details as the Procuring Entity may consider appropriate.

- 28.6 Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further. The Form of Tender and the Price Schedules are to be initialed by representatives of the Procuring Entity attending Tender opening in the manner specified in the **TDS**.
- 28.7 The Procuring Entity shall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 24.1).
- 28.8 The Procuring Entity shall prepare a record of the Tender opening that shall include, as a minimum:
- a) The name of the Tenderer and whether there is a withdrawal, substitution, or modification;
 - b) The Tender Price, per lot if applicable, including any discounts;
 - c) Any alternative Tenders; and
 - d) The presence or absence of a Tender Security or a Tender-Securing Declaration.
 - e) Number of pages for each tender
- 28.9 The Tenderers' representatives who are present shall be requested to sign the record. The omission of a Tenderer's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Tenderers.

D. Evaluation and Comparison of Tenders

29. Confidentiality

- 29.1 Information relating to the evaluation of Tenders and recommendation of contract award, shall not be disclosed to Tenderers or any other persons not officially concerned with the Tendering process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 42.
- 29.2 Any effort by a Tenderer to influence the Procuring Entity in the evaluation of the Tenders or Contract award decisions may result in the rejection of its Tender.
- 29.3 Notwithstanding ITT 27.2, from the time of Tender opening to the time of Contract Award, if any Tenderer wishes to contact the Procuring Entity on any matter related to the Tendering process, it should do so in writing.

30. Clarification of Tenders

- 30.1 To assist in the examination, evaluation, and comparison of the Tenders, and qualification of the Tenderers, the Procuring Entity may, at its discretion, ask any Tenderer for a clarification of its Tender. Any clarification submitted by a Tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change in the prices or substance of the Tender shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the Tenders, in accordance with ITT32.
- 30.2 If a Tenderer does not provide clarifications of its Tender by the date and time set in the Procuring Entity's request for clarification, its Tender may be rejected.

31. Deviations, Reservations, and Omissions

- 31.1 During the evaluation of Tenders, the following definitions apply:
- a) "Deviation" is a departure from the requirements specified in the Tendering document;
 - b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Tendering document; and
 - c) "Omission" is the failure to submit part or all of the information or documentation required in the Tendering document.

32 Determination of Responsiveness

- 32.1 The Procuring Entity's determination of a Tender's responsiveness is to be based on the contents of the Tender itself, as defined in ITT 11.
- 32.2 A substantially responsive Tender is one that meets the requirements of the Tendering document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:
- a) If accepted, would:
 - i) Affect in any substantial way the scope, quality, or performance of the Plant and Installation Services specified in the Contract; or
 - ii) Limit in any substantial way, in consistent with the Tendering document, the Procuring Entity's rights or the Tenderer's obligations under the proposed Contract; or
 - b) If rectified, would unfairly affect the competitive position of other Tenderers presenting substantially responsive Tenders.
- 32.3 The Procuring Entity shall examine the technical aspects of the Tender in particular, to confirm that all requirements of Section VII, Procuring Entity's Requirements have been met without any material deviation, reservation, or omission.
- 32.4 If a Tender is not substantially responsive to the requirements of the Tendering document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

33 Nonmaterial Non-conformities

- 33.1 Provided that a Tender is substantially responsive, the Procuring Entity may waive any nonconformity in the Tender.
- 33.2 Provided that a Tender is substantially responsive, the Procuring Entity may request that the Tenderer submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial non-conformities in the Tender related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the price of the Tender. Failure of the Tenderer to comply with the request may result in the rejection of its Tender.
- 33.3 Provided that a Tender is substantially responsive, the Procuring Entity shall rectify quantifiable non material non-conformities related to the Tender Price. To this effect, the Tender Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified **in the TDS**.

34 Correction of Arithmetical Errors

- 34.1 Provided that the tender is substantially responsive, the Procuring Entity shall correct arithmetical errors on the following basis:
- i) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Procuring Entity there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
 - ii) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
 - iii) If there is a discrepancy between words and figures, the amount in words shall

prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

- 34.2 Any error detected if considered a major deviation that affects the substance of the tender, shall lead to disqualification of the tender as non-responsive. The method of determining the error as a major deviation shall be specified in the **TDS**.
- 34.3 Corrected tender prices shall not be used in the evaluation of tenders, comparison of tender prices.
- 34.4 The Procuring Entity shall calculate the difference between the corrected price and tender price and work out the percentage difference, which will be plus or minus tender price as the case may be; [i.e. (corrected tender price– tender price)/ tender price X100]. This percentage difference between corrected tender price and tender price may be used to determine if the error so detected is considered a major deviation that affects the substance of the tender.
- 34.5 On award of contract, all payment valuation certificates, variation orders on omissions and additions valued based on rates in the Bill of Quantities will be adjusted by such a percentage specified in ITT 31.4 to ensure contractor is not paid less or more relative to the contract price which would be the tender price.

35. Conversion to Single Currency

- 35.1 For evaluation and comparison purposes, the currency(ies) of the Tender shall be converted into a single currency as specified **in the TDS**.

36. Margin of Preference

- 36.1 A margin of preference may be allowed on locally manufactured goods (plant and equipment) only when the contract is open to international tendering, where the tender is likely to attract foreign goods and where the contract exceeds the threshold specified in the Regulations.
- 36.2 A margin of preference shall not be allowed unless it is specified so in the **TDS**.
- 36.3 Contracts procured on basis of international tendering and competition shall not be subject to reservations exclusive/ specific groups under women, youth and persons living with disability.
- 36.4 Where it is intended to reserve a contract to a specific group of businesses (these groups are Small and Medium Enterprises, Women Enterprises, Youth Enterprises and Enterprises of persons living with disability, as the case may be), and who are appropriately registered as such by a competent authority, a procuring entity shall ensure that the invitation to tender specifically indicates that only businesses or firms belonging to the specified group are eligible to tender. Tender shall be reserved to only one group. If not so stated in the Tender documents, the invitation to tender will be open to all interested tenderers.

37. Evaluation of Tenders

- 37.1 The Procuring Entity shall use the criteria and methodologies listed in this ITT and Section III, Evaluation and Qualification criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Procuring Entity shall determine the Best Evaluated Tender. This is the Tender of the Tenderer that meets the qualification criteria and that has been determined to be:
 - a) Most responsive to the Tendering document; and
 - b) The lowest evaluated cost.

37.2 **Technical Evaluation.** The Procuring Entity will carry out a detailed technical evaluation of the Tenders not previously rejected to determine whether the technical aspects are incompliance with the Tendering document. The Tender that does not meet minimum acceptable standards of completeness, consistency and detail, and the specified minimum (or maximum, as the case may be) requirements for specified functional guarantees, will be rejected for non-responsiveness. In order to reach its determination, the Procuring Entity will examine and compare the technical aspects of the Tenders on the basis of the information supplied by the Tenderers, taking into account the following:

- a) Overall completeness and compliance with the Procuring Entity's Requirements; conformity of the Plant and Installation Services offered with specified performance criteria, including conformity with the specified minimum (or maximum, as the case may be) requirement corresponding to each functional guarantee, as indicated in the Specification and in Section III, Evaluation and Qualification Criteria; suitability of the Plant and Installation Services offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function and operation of any process control concept included in the Tender;
- b) type, quantity and long-term availability of mandatory and recommended spare parts and maintenance services; and
- c) other relevant factors, if any, listed in Section III, Evaluation and Qualification Criteria.

37.3 Where alternative technical solutions have been allowed in accordance with ITT 13, and offered by the Tenderer, the Procuring Entity will make a similar evaluation of the alternatives. Where alternatives have not been allowed but have been offered, they shall be ignored.

37.4 **Economic Evaluation.** To evaluate a Tender, the Procuring Entity shall consider the following:

- a) the Tender price, excluding provisional sums and the provision, if any, for contingencies in the Price Schedules;
- b) price adjustment due to discounts offered in accordance with ITT 17.11;
- c) price adjustment due to quantifiable non material non-conformities in accordance with ITT 31.3;
- d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITT 33; and
- e) the evaluation factors specified **in the TDS** and in Section III, Evaluation and Qualification Criteria.

37.5 If price adjustment is allowed in accordance with ITT 17.7, the estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Tender evaluation.

37.6 In the case of multiple contracts or lots, Tenderers are allowed to tender for one or more lots and the methodology to determine the lowest evaluated cost of the lot (contract) and for combinations, including any discounts offered in the Form of Tender, is specified in Section III, Evaluation and Qualification Criteria.

38. Comparison of Tenders

38.1 The Procuring Entity shall compare the evaluated costs of all substantially responsive Tenders established in accordance with ITT 35.4 to determine the Tender that has the lowest evaluated cost.

39. Abnormally Low Tenders and Abnormally High Tenders

39.1 An Abnormally Low Tender is one where the Tender price, in combination with other

elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer to perform the Contract for the offered Tender Price or that genuine competition between Tenderers is compromised.

- 39.2 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in correlation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Tendering document.
- 39.3 After evaluation of the price analyses, in the event that the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to deliver the contract for the offered tender price, the Procuring Entity shall reject the Tender.
- 39.4 An abnormally high price is one where the tender price, in combination with other constituent elements of the Tender, appears unreasonably too high to the extent that the Procuring Entity is concerned that it (the Procuring Entity) may not be getting value for money or it may be paying too high a price for the contract compared with market prices or that genuine competition between Tenderers is compromised.
- 39.5 In case of an abnormally high tender price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:
- i) If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not accept the tender depending on the Procuring Entity's budget considerations.
 - ii) If specifications, scope of work and/or conditions of contract are contributory to the abnormally high tender prices, the Procuring Entity shall reject all tenders and may retender for the contract based on revised estimates, specifications, scope of work and conditions of contract, as the case may be.
- 39.6 If the Procuring Entity determines that the Tender Price is abnormally too high because genuine competition between tenderers is compromised (*often due to collusion, corruption or other manipulations*), the Procuring Entity shall reject all Tenders and shall institute or cause competent Government Agencies to institute an investigation on the cause of the compromise, before retendering.

40. Unbalanced or Front Loaded Tenders

- 40.1 If the Tender that is evaluated as the lowest evaluated cost is, in the Procuring Entity's opinion, seriously unbalanced or front loaded the Procuring Entity may require the Tenderer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Tender prices with the scope of works, proposed methodology, schedule and any other requirements of the Tendering document.
- 40.2 After the evaluation of the information and detailed price analyses presented by the Tenderer, the Procuring Entity may:
- a) Accept the Tender; or
 - b) If appropriate, require that the total amount of the Performance Security be increased, at the expense of the Tenderer, to a level not exceeding twenty percent (10%) of the Contract Price; or
 - c) Reject the Tender.

41. Eligibility and Qualification of the Tenderer

- 41.1 The Procuring Entity shall determine to its satisfaction whether the Tenderer that is selected as having submitted the lowest evaluated cost and substantially responsive Tender is eligible and meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.
- 41.2 The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 15.1. The determination shall not take into consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the Tendering document) or any other firm (s) different from the Tenderer.
- 41.3 An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the Tenderer who offers a substantially responsive Tender with the next lowest evaluated cost to make a similar determination of that Tenderer's qualifications to perform satisfactorily.
- 41.4 The capabilities of the manufacturers and subcontractors proposed in its Tender to be used by the Tenderer with the Lowest Evaluated Tender for identified major items of supply or services will also be evaluated for acceptability in accordance with Section III, Evaluation and Qualification Criteria. Their participation should be confirmed with a Form of intent between the parties, as needed. Should a manufacturer or subcontractor be determined to be unacceptable, the Tender will not be rejected, but the Tenderer will be required to substitute an acceptable manufacturer or subcontractor without any change to the Tender price. Prior to signing the Contract,

The corresponding Appendix to the Contract Agreement shall be completed, listing the approved manufacturers or subcontractors for each item concerned.

42. Procuring Entity's right to Accept Any Tender and to Reject Any or All Tenders

- 42.1 The Procuring Entity reserves the right to accept or reject any Tender, and to annul the Tendering process and reject all Tenders at any time prior to Contract Award, without there by incurring any liability to Tenderers. In case of annulment, all Tenders submitted and specifically, Tender securities shall be promptly returned to the Tenderers.

E. Award of Contract

43. Award Criteria

- 43.3 Subject to ITT 40, the Procuring Entity shall award the Contract to the successful Tenderer. This is the Tenderer whose Tender has been determined to be the Lowest Evaluated Tender. This is the Tender of the Tenderer that meets the qualification criteria and whose Tender has been determined to be:
- a) Substantially responsive to the Tendering Document; and
 - b) The lowest evaluated cost

44. Notice of Intention to Enter into a Contract/ Notification of Award

- 44.1 When a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Award the Contract to the successful Tenderer. The Notification of Intention to Award shall contain, at a minimum, the following information:
- a) The name and address of the Tenderer submitting the successful Tender;
 - b) The Contract price of the successful Tender;

- c) A statement of the reason (s) the Tender (of the unsuccessful Tenderer to whom the Form is addressed) was unsuccessful, unless the price information in c) above already reveals the reason;
- d) The expiry date of the Standstill Period; and
- e) Instructions on how to request a debriefing and/ or submit a complaint during the standstill period.

45. Standstill Period

- 45.1 The Contract shall not be signed earlier than the expiry of a Standstill Period of 14 days to allow any dissatisfied tender to launch a complaint. Where only one Tender is submitted, the Standstill Period shall not apply.
- 45.2 Where a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Enter in to a Contract with the successful Tenderer.

46. Debriefing by the Procuring Entity

- 46.1 On receipt of the Procuring Entity's Notification of Intention to Enter into a Contract referred to in ITT 43, an unsuccessful tenderer may make a written request to the Procuring Entity for a debriefing on specific issues or concerns regarding their tender. The Procuring Entity shall provide the debriefing within five days of receipt of the request.
- 46.2 Debriefings of unsuccessful Tenderers may be done in writing or verbally. The Tenderer shall bear its own costs of attending such a debriefing meeting.

47. Letter of Award

- 47.1 Prior to the expiry of the Tender Validity Period and upon expiry of the Standstill Period specified in ITT 43.1, upon addressing a complaint that has been filed within the Standstill Period, the Procuring Entity shall transmit the Letter of Award to the successful Tenderer. The letter of award shall request the successful tenderer to furnish the Performance Security within 21 days of the date of the letter.

48. Signing of Contract

- 48.1 Upon the expiry of the fourteen days of the Notification of Intention to enter into contract and upon the parties meeting their respective statutory requirements, the Procuring Entity shall send the successful Tenderer the Contract Agreement.
- 48.2 Within fourteen (14) days of receipt of the Contract Agreement, the successful Tenderer shall sign, date, and return it to the Procuring Entity.
- 48.3 The written contract shall be entered into within the period specified in the notification of award and before expiry of the tender validity period
- 48.4 Notwithstanding ITT 46.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Procuring Entity, to the country of the Procuring Entity, or to the use of the Plant and Installation Services to be supplied, where such export restrictions arise from trade regulations from a country supplying those Plant and Installation Services, the Tenderer shall not be bound by its Tender, always provided, however, that the Tenderer can demonstrate to the satisfaction of the Procuring Entity that signing of the Contract Agreement has not been prevented by any lack of diligence on the part of the Tenderer in completing any formalities, including applying for permits, authorizations and licenses necessary for the export of the Plant and Installation Services under the terms of the Contract.

49. Performance Security

- 49.1 Within twenty-one (21) days of the receipt of the Form of Acceptance from the Procuring Entity, the successful Tenderer shall furnish the Performance Security in accordance with the General Conditions GCC 13.3, subject to ITT 38, using for that purpose the Performance Security Form included in Section X, Contract Forms, or another form acceptable to the Procuring Entity. If the Performance Security furnished by the successful Tenderer is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Tenderer to be acceptable to the Procuring Entity. A foreign institution providing a bond shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent financial institution is not required.
- 49.2 Failure of the successful Tenderer to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the Tenderer offering the next Best Evaluated Tender.

50. Publication of Procurement Contract

- 50.1 Within fourteen days after signing the contract, the Procuring Entity shall publish the awarded contract at its notice boards and websites; and on the Website of the Authority. At the minimum, the notice shall contain the following information:
- a) Name and address of the Procuring Entity;
 - b) name and reference number of the contract being awarded, a summary of its scope and the selection method used;
 - c) the name of the successful Tenderer, the final total contract price, the contract duration.
 - d) Dates of signature, commencement and completion of contract;
 - e) Names of all Tenderers that submitted Tenders, and their Tender prices as read out at Tender opening.

51. Appointment of Adjudicator

- 51.1 The Procuring Entity proposes the person named **in the TDS** to be appointed as Adjudicator under the Contract, at the hourly fee specified **in the TDS**, plus reimbursable expenses. If the Tenderer disagrees with this proposal, the Tenderer should so state in his Tender. If, in the Letter of Acceptance, the Procuring Entity does not agree on the appointment of the Adjudicator, the Procuring Entity will request the Appointing Authority designated in the Special Conditions of Contract (SCC) pursuant to Clause 23.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator.

52. Procurement Related Complaint and Administrative Review

- 51.1 The procedures for making a Procurement-related Complaint are as specified in the **TDS**.
- 51.2 A request for administrative review shall be made in the form provided under contract forms.

SECTION II - TENDER DATA SHEET (TDS)

The following specific data shall complement, supplement, or amend the provisions in the Instructions to Tenderers (ITT). Whenever there is a conflict, the provisions herein shall prevail over those in ITT.

ITTReference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS				
	A. General				
ITT 1.1	<p>The reference number of the Contract: RFX 1000001485 Procuring Entity: Rural Electrification and Renewable Energy Corporation The name of the contract is: Supply, Installation, Testing, and Commissioning of Solar Mini- grid in Kibuogi Island, Homabay County</p> <table border="1"> <thead> <tr> <th>Lot</th><th>Description</th></tr> </thead> <tbody> <tr> <td>1</td><td>Supply, Installation, Testing, and Commissioning of Solar Mini-grid in Kibuogi Island, Homabay County-Retender.</td></tr> </tbody> </table>	Lot	Description	1	Supply, Installation, Testing, and Commissioning of Solar Mini-grid in Kibuogi Island, Homabay County-Retender.
Lot	Description				
1	Supply, Installation, Testing, and Commissioning of Solar Mini-grid in Kibuogi Island, Homabay County-Retender.				
ITT 2.1	<p>The name of the Project is: Supply, Installation, Testing, and Commissioning of Solar Mini- grid in Kibuogi Island, Homabay County.</p> <p>Electronic –Procurement System shall be used</p> <p>The Procuring Entity shall use the following electronic-procurement system to manage this Tendering process: SRM e-system via url https://suppliers.rea.co.ke:44300/irj/portal</p>				
ITT 3.3	The Information made available on competing firms is as follows: None				
ITT 3.3	The firms that provided consulting services for the contract being tendered for are: None				
ITT 4.1	Maximum number of members in the Joint Venture (JV) shall be: <i>two (2)</i>				
	B. Tendering Document				
ITT 8.1	<p>(A) Pre-Tender conference <i>will not</i> be held. (B) A pre-arranged pretender mandatory visit of the site of the works <i>will</i> be held on 19th January 2026 from 9.00am to 2.00pm at Kibuogi Primary School in Kibuogi Island, Homabay County.</p> <p><i>NB: The site visit is not mandatory for Bidders who had carried out site visit under RFX No.1000001430.Bidders to provide site visit forms.</i></p>				
ITT 8.2	Any questions in writing, shall reach the Procuring Entity not later than 21st January 2026				
ITT 8.4	Minutes of the pre-arranged pretender visit of the site of the works will be published at the website - www.rerec.co.ke .				
ITT 9.1	<p>The Procuring Entity shall publish its response at the website www.rerec.co.ke.</p> <p>For Clarification of Tender purposes and for obtaining further information the Procuring Entity's address is: 1) Name of Procuring Entity: Rural Electrification and Renewable Energy Corporation</p>				

	<p>2) Physical address for original bid security Delivery to our office or Tender Box: Nairobi, South C, Off Red Cross Road, Kawi Complex, Block C- Ground floor</p> <p>3) Postal Address: P.O. Box 34585-00100 Nairobi</p> <p>4) Telephone number and e-mail address of the officer to be contacted:</p> <p style="text-align: center;">Chief Executive Officer Kawi House, South C, P.O. Box 34585, 00100 Nairobi, Kenya +254 709 193 000 tenders@rerec.co.ke;</p> <p>Address where to send enquiries is tenders@rerec.co.ke to reach the Procuring Entity not later than 21st January 2026 latest 12:00 noon.</p> <p>The Procuring Entity shall publish its response at the website or via email on same day of the clarification.</p>
C. Preparation of Tenders	
ITP 13.1 (j)	<p>The Tenderer shall submit the following additional documents in its Tender: <i>The list of additional documents should include the following:</i></p> <ol style="list-style-type: none"> 1. Submission audited financial statements within the last three (3) completed financial years, signed by a certified public accountant and company director/s. Submit Valid ICPAK Practicing License of the certified public accountant under the year of each Audit. 2. The tenderer SHALL submit Manufacturers' Authorizations & Warranty forms on manufacturer's letterhead signed and stamped for all critical equipment – Solar PV Modules, Lithium Batteries, Inverters, Transformer, Switch Gear, Vacuum Circuit Breakers, Generator and other major equipment. 3. The tenderer SHALL submit Valid Manufacturer's contact details on manufacturer's letterhead signed and stamped including a valid official email address (Gmail or yahoo email address will not be accepted) and secure website for international companies. 4. The tenderer SHALL submit detailed drawings and cable schedules of the proposed system configuration, battery wiring diagram, layout and civil / structural designs signed and stamped by professional engineer. 5. Submission of details of experience and past performance on works of a similar nature within the past five years and details of current work on hand and other contractual commitments. The tenderer to attach at least 3 completion certificates from the owner of the works undertaken. Tenderer should have at least 5 years past experience in the relevant works. 6. Submission and verification of Professional Qualification and experience for key staff, which key staff shall be the Project Supervisor and two (2)

	<p>Technicians. At least one key staff shall be a holder of a valid EPRA Class T3 license and class A electrical.</p> <ol style="list-style-type: none"> 7. Confirmation of business Premise, workshops and service center with relevant tools and equipment whether owned or leased with evidence of valid lease agreements and OSHA registration of workplace certificate.(To be verified using scan codes) 8. Submission of valid EPRA License (Company's Valid EPRA license class C1- solar and Class A electrical) 9. Submission of proof of registration with the National Construction Authority (NCA) category 7 and above under Electrical or Mechanical services works registration with valid current annual contractor's practicing license. 10. Submission of Valid Manufacturer's ISO 14001:2015 certificate OR NEMA license for key equipment – Solar Pv Modules, Lithium Batteries, Inverters, Transformer, Switch Gear, Vacuum Circuit Breakers, Generator and other major equipment. 11. Submission of Manufacturer's ISO 9001:2015 certificate for quality management OR KEBS certification for the key equipment i.e. – Solar PV Modules, Lithium Batteries, Inverters, Transformer, Switch Gear, Vacuum Circuit Breakers, Generator and other major equipment. 12. Submission of evidence of an established up to date safety program, policies and work practices. Bidder to provide a written occupational health and safety policy. 13. Submission of duly filled Site Visit Form stamped and signed by The Contractor's and Procuring Entity's Representative in the format provided in the tender document.
ITT 15.1	Alternative Tenders <i>shall not be</i> considered.
ITT 15.2	Alternative times for completion <i>shall not be</i> permitted.
ITT 15.4	Alternative technical solutions shall be permitted for the following parts of the Works: None
ITT 19.1	<p>Tenderers shall quote for the following components or services on a single responsibility basis:</p> <p>Entire Plant and Installation Services.</p>
ITT 19.5 (a) and (d)	Place of destination: DDP Solar Mini- grid in Kibuogi Island, Homabay County.
ITT 19.6	The Incoterms edition is: DDP
ITT 19.7	The prices quoted by the Tenderer <i>shall not</i> be subject to adjustment during the performance of the Contract.
ITT 20.1	The Tenderer <i>is</i> required to quote in Kenya Currency the portion of the Tender price that corresponds to expenditures incurred in that

	currency.				
ITT 21.1	The Tender validity period shall be 147 days				
ITT 21.3 (a)	<p>(a) The delayed to exceeding thirty (30) days.</p> <p>(b) The Tender price shall be adjusted by the following percentages of the tender price:</p> <p>(i) By Zero (0) % of the local currency portion of the Contract price adjusted to reflect local inflation during the period of extension</p>				
ITT 22.1	<p>A Tender Security shall be required.</p> <p>The Tender Security (Bid Bond) to the procuring entity that is in the required format, amount, from a reputable bank or insurance company approved by PPRA and that is valid for at least 180 days from the date of tender opening.</p> <p>Original Bid security delivered to the tender Box (Kawi Complex, Block C, Ground floor, Off Popo Road.</p> <p>The amount and currency of the Tender Security shall be</p> <table border="1"> <tr> <th>Lot No.</th><th>Tender Security Amount</th></tr> <tr> <td>1</td><td>Kshs.1,900,000.00</td></tr> </table>	Lot No.	Tender Security Amount	1	Kshs.1,900,000.00
Lot No.	Tender Security Amount				
1	Kshs.1,900,000.00				
ITT 23.1	In addition to the original of the Tender, the number of copies is: <i>N/A</i>				
ITT 23.3	<p>The written confirmation of authorization to sign on behalf of the Tenderer shall consist of: _</p> <p>A written Power of Attorney, commissioned by commissioner of oaths, or a Magistrate of the Kenyan Judiciary signed and stamped by company directors including the specimen signature of the Authorized person.</p>				
D. Submission and Opening of Tenders					
ITT 25.1	<p>(A) For <u>Tender submission purposes</u> only, the Procuring Entity's address is:</p> <p>Attention:</p> <p>Chief Executive Officer Kawi House, South C, P.O. Box 34585, 00100 Nairobi, Kenya e-mail:info@rerec.co.ke; tenders@rerec.co.ke;</p> <p>TEL NO.254-20-2710955/2713921</p> <p>The deadline for Tender submission is: Date: 28th January 2026 Time: 10:00am</p> <p>Tenderers shall submit their Tenders electronically.</p>				
ITT 25.1	<p>If Tenderers are allowed to submit Tenders electronically, they shall follow the electronic tender submission procedures specified below:</p> <p>(a) Login to REREC portal via url https://suppliers.rea.co.ke:44300/irj/portal</p> <p>N/B: It is assumed that you have already completed the registration process and that your registration has been approved by REREC and you have created an employee user account to transact with REREC via url;</p> <p>https://suppliers.rea.co.ke:44200/supportal(bD11</p>				

	<p>biZjPTUwMCZkPW1pbG==)/bsp_daapplication.do#VIEW_ANCHOR-ROS_TOP</p> <p><i>For the purpose of bidding, each firm must ensure the following</i></p> <ul style="list-style-type: none"> • Each company must have two user accounts; Admin Account and Employee Account. Ensure that the following roles are NOT ASSIGNED to the employee; Employee Administrator and Supplier Master Data manager. • Ensure that the admin account and employee account does not share same email address • Ensure that the Employee user name is between 4 and 12 characters. • For the purpose of this tender bidding, the employee account shall be used to submit your RFX responses. <p>Choose RFX and Auction link in the navigation pane</p> <p>(b) Click on the RFX number to open it</p> <p>(c) Click Register and then Click Participate</p> <p>(d) Click Create response; You will get a unique number for your response for the RFX</p> <p>Navigate to the Notes and Attachments tab and click on Collaboration link at the bottom of the screen (the link will be in the format “RFX Response No: Company Name”. If under your notes and attachment no link is formed in the collaboration room, you are advised to delete the response and create a new one until the link is formed, in this link all the documents of the tender shall be uploaded.</p>
ITT 28.1	<p>The Tender opening shall take place at the time and the address for Opening of Tenders provided below:</p> <p>(1) As stated in ITT 25.1 above</p> <p>(2) Date: 28th January 2026 Time: 10:00am</p> <p>The electronic Tender opening procedures shall be:</p> <ol style="list-style-type: none"> a. Log in to the REREC’s SRM system. b. Navigate to Initiate RFX Opening tab and enter authorization Log on. c. Navigate to Initiate RFX Price Opening tab and enter authorization Log on. d. Navigate to Responses and Awards Tab and select Response Comparison. e. Read out the prices Aloud and download/export the responses.
ITT 28.6	<p>The number of representatives of the Procuring Entity conducting tender opening and to sign is Three (3)</p>
E. Evaluation, and Comparison of Tenders	
ITT 33.3	<p>The adjustment shall be based on the _____ [insert “average” or “highest”] price of the item or component as quoted in other substantially responsive Tenders. If the price of the item or component cannot be derived from the price of other substantially responsive Tenders, the Procuring</p>

	Entity shall use its best estimate. – N/A
ITT 34.2	Any error touching on the unit price and the total price shall lead to disqualification of the tender. The error shall be determined as a major deviation if it is more than 1%
ITT 35.1	The currency that shall be used for Tender evaluation and comparison purposes to convert (at the selling exchange rate) all Tender prices expressed in various currencies into a single currency is: Kshs. The source of exchange rate shall be: <i>the Central Bank in Kenya.</i> The date for the exchange rate shall be: 28th January 2026.
ITT 36.2	A margin of preference <u>shall not be</u> allowed.
ITT 36.4	The invitation to tender is extended to the following groups that qualify for Reservations: None
ITT 37.4 (e)	The adjustments shall be determined using the following criteria, from amongst those set out in Section III, Evaluation and Qualification Criteria: <i>[N/A]</i> (a) Deviation in Time for Completion: No. (b) Life cycle costs: the projected operating and maintenance costs during the life of the goods or equipment No. (c) Functional Guarantees of the Facilities No. (d) Work, services, facilities, etc., to be provided by the Procuring Entity No.
ITT 37.6	Tenderers shall be allowed to quote separate prices for different lots (contracts) and the methodology to determine the lowest tenderer is specified in Section III, Evaluation and Qualification Criteria. N/A
ITT 45 Standstill Period	The Standstill Period is 10 Business Days after the date the Procuring Entity has transmitted to all Tenderers that submitted a Tender, the Notification of its Intention to Award the Contract to the successful Tenderer.
ITT 51	The person named to be appointed as Adjudicator is an Adjudicator of Nairobi Center for International Arbitration at an hourly fee: As per First Schedule of NCIA Arbitration rules
ITT 52.1	The procedures for making a Procurement-related Complaints are detailed in the “Regulations” available from the PPRA Website www.ppra.go.ke or email complaints@ppra.go.ke . If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by hand delivery or email to: For the attention: Dr. Rose N. Mkalama Title/position: Chief Executive Officer Procuring Entity: Rural Electrification and Renewable Corporation Email address: info@rerec.co.ke and tenders@rerec.co.ke In summary, a Procurement-related Complaint may challenge any of the following: (i) the terms of the Tender Documents; and (ii) The Procuring Entity’s decision to award the contract.

SECTION III - EVALUATION AND QUALIFICATION CRITERIA

1. General Provision

- 1.2 Wherever a Tenderer is required to state a monetary amount, Tenderers should indicate the Kenya Shilling equivalent using the rate of exchange determined as follows:
- For construction turn over or financial data required for each year -Exchange rate prevailing on the last day of the respective calendar year (in which the amounts for that year is to be converted) was originally established.
 - Value of single contract -Exchange rate prevailing on the date of the contract signature.
 - Exchange rates shall be taken from the publicly available source identified in the ITT 33.1. Any error in determining the exchange rates in the Tender may be corrected by the Procuring Entity.
- 1.3 This section contains the criteria that the Procuring Entity shall use to evaluate tender and qualify tenderers. No other factors, methods or criteria shall be used other than specified in this tender document. The Tenderer shall provide all the information requested in the forms included in Section IV, Tendering Forms. The Procuring Entity should use **the Standard Tender Evaluation Report for Goods and Works** for evaluating Tenders.

1.4 EVALUATION AND CONTRACT AWARD CRITERIA

The Procuring Entity shall use the criteria and methodologies listed in this Section to evaluate tenders and arrive at the Lowest Evaluated Tender. The tender that (i) meets the qualification criteria, (ii) has been determined to be substantially responsive to the Tender Documents, and (iii) is determined to have the Lowest Evaluated Tender price shall be selected for award of contract.

2. PRELIMINARY EXAMINATION FOR DETERMINATION OF RESPONSIVENESS

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and other requirements in the ITT, and that the tender is complete in all aspects in meeting the requirements of “Part 2 – Procuring Entity's Works Requirements”, including checking for tenders with unacceptable errors, abnormally low tenders, abnormally high tenders and tenders that are front loaded. Tenders that do not pass the Preliminary Examination will be considered irresponsive and will not be considered further.

PRELIMINARY EVALUATION

The following are the **MANDATORY** Requirements that **SHALL** constitute the evaluation criteria at the Preliminary Evaluation Stage:

- Confirmation that the bidder's prices appear during tender opening. The entered prices in the Items Tab of the SRM Portal must be same as the prices in the Tender form/price schedules and the same prices are read out during opening. (Award shall be based on the read out prices)
- Bids **MUST** be submitted in the pdf format uploaded to the Collaboration folder of the SAP SRM System Portal before closing date and time.
- The Tender Security (Bid Bond) to the procuring entity that is in the required format, amount, from a reputable bank that is valid for at least 180 days from the date of tender opening.
- Submission of a Valid Copy of certificate of incorporation/ Registration from the Registrar of Companies/ Business Contractors.
- Submission of valid CR12/CR13 form showing the list of directors /shareholding (issued within the last 3months from the date of tender closing) certified by a

- commissioner for oaths or a magistrate of the Kenyan judiciary and submission of National Identity Card(s) for all the directors.
6. Submission of a Valid Current Tax Compliance Certificate & e-PIN certificate with both income and Vat obligations.
 7. Submission of a Valid, relevant Copy of Current Single Business permit/Trade License in the county of operation. (To be verified using scan codes).
 8. Submission of Power of attorney authorizing the signatory of the tender to commit the tenderer in accordance with the Tender requirements. The Power of attorney shall be commissioned by a Commissioner of Oaths or a Magistrate of the Kenyan Judiciary or notary public which shall accompany the tender if the tenderer/company is owned by more than one director or if the signatory to the tender is not a director of the company (provide name and attach proof of citizenship of the signatory to the tender)
 9. Submission and verification that the Tender Form on letterhead clearly showing tenderer's name and business address, duly completed, stamped and signed by the bidder in the format provided in the tender including tender validity period as specified in TDS.
 10. Submission of a duly filled Certificate of Independent Tender Determination commissioned by commissioner for oaths or a magistrate of the Kenyan Judiciary in the format provided in the tender document.
 11. Submission of a duly filled Self-declaration form that the person/tenderer is not debarred in the matter of the Public Procurement and Asset Disposal Act 2015, commissioned by commissioner for oaths or a magistrate of the Kenyan Judiciary in the format provided in the tender document - Form SD1.
 12. Submission of a duly filled Self-declaration that the person/tenderer will not engage in any corrupt or fraudulent practice commissioned by commissioner for oaths or a magistrate of the Kenyan Judiciary in the format provided in the tender document - Form SD2.
 13. Submission of a duly filled Declaration and Commitment to The Code of Ethics commissioned by commissioner for oaths or a magistrate of the Kenyan Judiciary in the format provided in the tender document.
 14. Submission of duly filled, stamp and signed confidential business questionnaire form commissioned by commissioner for oaths or a magistrate of the Kenyan Judiciary in the format provided in the tender document.
 15. Submission of a dully filled, signed and stamped BOQ/price schedule form.
 16. Submission of dully filled Qualification forms.
 - i. Form EQU
 - ii. Form Personnel
 - iii. Tenderer Information Form
 - iv. Form Con -2
 - v. Form CCC
 - vi. Form Fin 3.1, 3.2 and 3.3
 - vii. Form Exp 4.1, 4.2 (a) & 4.2 (b)
 17. Submission audited financial statements within the last three (3) completed financial years, signed by a certified public accountant and company director/s. Submit Valid ICPAK Practicing License of the certified public accountant under the year of each Audit.
 18. The tenderer SHALL submit Manufacturers' Authorizations & Warranty forms on manufacturer's letterhead signed and stamped for all critical equipment – Solar PV modules, Lithium Batteries, Inverters, Transformer, Switch gear, Vacuum Circuit breakers, Generator and other major equipment.
 19. The tenderer SHALL submit Valid Manufacturer's contact details on manufacturer's letterhead signed and stamped including a valid official email address (Gmail or yahoo email address will not be accepted) and secure website for international companies.

20. The tenderer SHALL submit detailed generation plant and step-up station drawings and design analysis, cable sizing calculations of the proposed system configuration, battery wiring diagram and design calculations, plant layout and civil / structural designs with calculations signed and stamped by the manufacturer or a professional engineer.
21. Submission of details of experience and past performance on works of a similar nature within the past five years and details of current work on hand and other contractual commitments. The tenderer to attach at least 3 completion certificates from the owner of the works undertaken. Tenderer should have at least 5 years past experience in the relevant works.
22. Submission and verification of Professional Qualification and experience for key staff, which key staff shall be the Project Supervisor and two (2) Technicians. At least one key staff shall be a holder of a valid EPRA Class T3 license and class A electrical.
23. Confirmation of business Premise, workshops and service center with relevant tools and equipment whether owned or leased with evidence of valid lease agreements and OSHA registration of workplace certificate. (To be verified using scan codes)
24. Submission of valid EPRA License (Company's Valid EPRA license class C1- solar and Class A electrical)
25. Submission of proof of registration with the National Construction Authority (NCA) category 7 and above under Electrical or Mechanical services works registration with valid current annual contractor's practicing license.
26. Submission of Valid Manufacturer's ISO 14001:2015 certificate OR NEMA license for key equipment – Solar PV modules, Lithium Batteries, Inverters, Transformer, Switch Gear, Vacuum Circuit Breakers, Generator and other major Equipment.
27. Submission of Manufacturer's ISO 9001:2015 certificate for quality management OR KEBS certification for the key equipment i.e. – Solar PV Modules, Lithium Batteries, Inverters, Transformer, Switch Gear, Vacuum Circuit Breakers, Generator and other major equipment.
28. Submission of evidence of an established up to date safety program, policies and work practices. Bidder to provide a written occupational health and safety policy.
29. Submission of duly filled Site Visit Form stamped and signed by The Contractor's and Procuring Entity's Representative in the format provided in the tender document.
30. Confirmation that the contractor has no REREC pending works beyond the project implementation period provided in the contract. This is a mandatory fulfillment and a bidder who fails on this parameter shall be deemed non responsive.
31. The tender document shall be paginated, serialized (each page of the tender submission must have a number and the numbers must be in chronological order).

NB: Tenders which do not satisfy any of the requirements set out above shall be rejected as per public procurement and disposal Act, 2015 and will not proceed to technical evaluation stage.

3. TECHNICAL EVALUATION

The following SHALL constitute the evaluation criteria at the Technical Evaluation stage:

1. Duly filled Guaranteed Technical Particulars (GTPs) forms on Manufacturer's Letter head stamped and signed by the manufacturer.
2. Full compliance to Technical specifications for Solar PV Modules, Lithium Batteries, Inverters, Transformer, Switch Gear, Vacuum Circuit Breakers, Generator and other major equipment. This is a mandatory fulfillment and a bidder who fails on any of the critical parameters shall be deemed non responsive. Only one brochure / technical specification per equipment should be offered, bids with more than one brochure / technical specifications per equipment will be considered non-responsive.
3. Verification of Professional Qualification and experience for key staff, which key staff shall be the Project Supervisor, two (2) Technicians. The Project Supervisor shall have at least a degree in

Electrical or mechanical Engineering and Registered with EBK as a graduate engineer and with at least five (5) years of experience. The technicians shall have at least a Diploma in Electrical or Mechanical Engineering with a minimum of two (2) years of experience. Signed CV's by the technicians and the owner/director and Certified copies of Certificates MUST be submitted. At least one staff member with EPRA license T3 solar and class A Electrical.

4. Confirmation of all requested Drawings, design calculations and Technical Data. The Drawings should be legible and the dimensions and ratings should be clearly marked accurate. All cable sizing designs and calculations to be provided.
5. Confirmation of complete design and expected performance of BESS Calculation, drawings, test reports and data.
6. Test Reports and Accreditation certificates for the major equipment- Solar PV modules, Lithium Batteries, inverters, transformer, switch gear, Vacuum Circuit breakers and Generator.
7. Detailed Mobilization Plan & Detailed Construction Schedule. This should be clear and demonstrate/indicate for each activity for period not exceeding 40 weeks.
8. Previous works undertaken. The tenderer to attach at least 3 completion certificates from the owner of the works undertaken one of which should be of a mini-grid or grid-tie solar system not less than 30kW.
9. Provision of the Lithium ion phosphate batteries IEC certification.
10. The tenderer **SHALL** submit catalogues and brochures containing technical data as provided in the technical specifications. The tenderer to clearly indicate the specific model offered where several product models are available in the same catalogue

NB: Tenders which do not satisfy any of the requirements set out above shall be rejected as per public procurement and disposal Act, 2015 and SHALL not proceed to financial evaluation stage.

4 FINANCIAL EVALUATION

The following constituted the evaluation criteria at the Financial Evaluation stage:-

1. The Bidder shall demonstrate adequate financial capacity to perform the Contract by submitting audited financial statements for the last three (3) completed financial years, which shall be used solely to verify that:
 - (i) the Bidder's average annual turnover meets or exceeds the minimum level specified in the bidding documents;
 - (ii) The Bidder maintains a satisfactory liquidity position, as evidenced by cash at hand, net working capital, or a current ratio not less than the minimum requirement;
 - (iii) The Bidder has access to sufficient financial resources, including confirmed lines of credit, to meet its obligations under the Contract.

Failure to meet any of these minimum financial thresholds shall result in disqualification
2. Confirmation of and considering BOQ/Price Schedule duly completed and signed.
3. Tenderer's conformance with REREC's delivery schedule in the tender document.
4. Compliance with the stated REREC's terms of payments.

NB: Tenders which do not satisfy any of the requirements set out above shall be rejected as per public procurement and disposal Act 2015

3.2 Economic Evaluation

Price evaluation: in addition to the criteria listed in ITT 35.4 (a) – (e) the following criteria shall apply:

- i) **Alternative Completion Times**, if permitted under ITT 13.2, will be evaluated as follows:N/A

.....

ii) **Alternative technical solutions for specified parts**

The acceptability of alternative technical solutions for parts of the facilities, if permitted under ITT 13.4, will be determined as follows:N/A

.....
.....

iii) **Life Cycle Costs**

Since the operating and maintenance costs of the facilities being procured form a major part of the **life cycle cost** of the facilities, these costs will be evaluated according to the principles given here after, including the cost of spare parts for the initial period of operation stated below and based on prices furnished by each Tenderer in Price Schedule Nos. 1 and 2, as well as on past experience of the Procuring Entity or other Procuring Entity's similarly placed. Such costs shall be added to the Tender price for evaluation. The operating and maintenance costs factors for calculation of the life cycle cost are:

- i) Number of years for lifecycle:_____ *[Insert number of years]*N/A
- ii) Operating costs *[state how they will be determined]*N/A
- iii) Maintenance costs, including the cost of spare parts for the initial period of operation *[state how they will be determined]*, and
- iv) Discount rate:_____ *[insert discount rate in percent]* to be used to discount to present value all annual future costs calculated under (ii) and (iii) above for the period specified in (i).N/A

The price of recommended spare parts quoted in Price Schedule No.6 shall not be considered for evaluation.

(v) **Functional Guarantees of the Facilities**

The minimum (or maximum) requirements stated in the Specification for functional guarantees required in the Specification are:

Functional Guarantee	Minimum (or Maximum, as appropriate) Requirement
1.	
2.	
3.	
...	

For the purposes of evaluation, for each percentage point that the functional guarantee of the proposed Plant and Installation Services is below the norm specified in the Specification and in the above table, but above the minimum acceptable levels also specified there in, an adjustment of

will be added to the Tender price. If the drop below the norm or the excess above the minimum acceptable levels is less than one percent, the adjustment will be appropriated accordingly.

- vi) Work, services, facilities, etc., to be provided by the Procuring Entity.

Where Tenders include the under taking of work or the provision of services or facilities by the Procuring Entity in excess of the provisions allowed for in the

Tendering document, the Procuring Entity shall assess the costs of such additional work, services and/or facilities during the duration of the contract. Such costs shall be added to the Tender price for evaluation.

- vii) Specific addition criteria The relevant evaluation method, if any, shall be as follows:

.....

Any adjustments in price that result from the above procedures shall be added, for purposes of comparative evaluation only, to arrive at an “Evaluated Tender Price.” Tender prices quoted by Tenderers shall remain unaltered.

4 Multiple Contracts (ITT 35.6)

- 4.1 Multiple contracts will be permitted in accordance with ITT 35.4. Tenderers are evaluated on basis of Lots and the lowest evaluated tenderer identified for each Lot. The Procuring Entity will select one Option of the two Options listed below for award of Contracts.

OPTION 1

- i) If a tenderer wins only one Lot, the tenderer will be awarded a contract for that Lot, provided the tenderer meets the Eligibility and Qualification Criteria for that Lot.
- ii) If a tenderer wins more than one Lot, the tender will be awarded contracts for all won Lots, provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the Lots. The tenderer will be awarded the combination of Lots for which the tenderer qualifies and the others will be considered for award to second lowest the tenderers.

OPTION 2

The Procuring Entity will consider all possible combinations of won Lots [contract(s)] and determine the combinations with the lowest evaluated price. Tenders will then be awarded to the Tenderer or Tenderers in the combinations provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the won Lots.

5 MARGIN OF PREFERENCE

- 5.1 If the **TDS** so specifies, the Procuring Entity will grant a margin of preference of 15% (fifteen percent) to Tenderers offering goods manufactured, mined, extracted, grown, assembled or semi-processed in Kenya. Goods assembled or semi-processed in Kenya shall have a local content of not less than 40%.
- 5.2 The margin of preference will be applied in accordance with, and subject to, the following provisions:
- a Tenderers applying for such preference on goods offered shall be asked to provide, as part of the data for qualification, such information, including details of the goods produced in Kenya, so as to determine whether, according to the classification established by the Procuring Entity, a particular category of goods or group of goods qualifies for a margin of preference.
 - b After Tenders have been received and reviewed by the Procuring Entity, goods offered in the responsive Tenders shall be assessed to ascertain they are manufactured, mined, extracted, grown, assembled or semi-processed in Kenya. Responsive tenders shall be classified in to the following groups:
 - i) **Group A:** Tenders offering goods manufactured in Kenya, for which (a) labor, raw materials, and components from within Kenya account for more than forty (40) percent of the Ex-Works price; and the production facility in which they

will be manufactured or assembled has been engaged in manufacturing or assembling such goods at least since the date of Tender submission date;

- ii) **Group B:** All other Tenders offering Goods manufactured in Kenya;
- iii) **Group C:** Tenders offering Goods manufactured outside Kenya that have been already imported or that will be imported.

- 5.3 To facilitate this classification by the Procuring Entity, the tenderer shall complete whichever version of the Price Schedule furnished in the Tendering document is appropriate, provided however, that the completion of an incorrect version of the Price Schedule by the Tenderer shall not result in rejection of its Tender, but merely in the Procuring Entity's reclassification of the Tender into its appropriate Tender group.
- 5.4 The Tenders in each group will then be compared to determine the Tender with the lowest evaluated cost in that group. The lowest evaluated cost Tender from each group shall then be compared with each other and if as a result of this comparison a Tender from Group A or Group B is the lowest, it shall be selected for the award.
- 5.5 If as a result of the preceding comparison, a Tender from Group C is the lowest evaluated cost, an amount equal to or 15% of the respective tender price, including unconditional discounts and excluding provisional sums, if any, shall be added to the evaluated price offered in each tender from Group C. If the tender from Group C is still the lowest tender, it shall be selected for award. If not, the lowest evaluated tender from Group A or B based on the first evaluation price shall be selected.

6 Alternative Tenders (ITT 13.1)

An alternative if permitted under ITT 13.1, will be evaluated as follows:

The Procuring Entity shall consider Tenders offered for alternatives as specified in Part 2- Procuring Entity's requirements. Only the technical alternatives, if any, of the Tenderer with the Best Evaluated Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

7 Post qualification and Contract award (ITT 39), more specifically,

- a) In case the tender was subject to post-qualification, the contract shall be awarded to the lowest evaluated tenderer, subject to confirmation of prequalification data, if so required.
- b) In case the tender was not subject to post-qualification, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.
 - i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow of Kenya Shillings: **32,865,000.00**
 - ii) Minimum average annual construction turnover of Kenya Shillings: **273,875,000.00** equivalent calculated as total certified payments received for contracts in progress and/ or completed within the last **5** years.
 - iii) At least **3** contracts of a similar nature executed within Kenya, or the East African Community or abroad, that have been satisfactorily and substantially completed as a prime contractor, or joint venture member or sub-contractor each of minimum value Kenya shillings: **87,640,000.00** equivalent.
 - iv) Contractor's Representative and Key Personnel, which are specified as **Project Supervisor and two (2) Technicians**
 - v) Contractors key equipment listed on the table "Contractor's Equipment" below and more specifically listed as :

1. Insulation resistance test set
2. Earth resistance test set (electronic)
3. Primary injection Kit
4. Secondary Injection kit
5. CMEs
6. Digital Multimeter
7. Digital clamp on meter
8. Polarity tester/ earth leakage meter
9. Battery Analyzer
10. Tool box (Solar PV technician tool box).
11. Loop impedance tester
12. Insulation resistance tester
13. Cordless drill
14. Electric hand air blower
15. PPE and safety gear for the commissioning team
16. Variable Dummy Load Tester (For testing Full Load and Surge Capability of the system)

iv) Other conditions depending on their seriousness.

a) *History of non-performing contracts:*

Tenderer and each member of JV in case the Tenderer is a JV, shall demonstrate that Non- performance of a contract did not occur because of the default of the Tenderer, or the member of a JV in the last **5 years** The required information shall be furnished in the appropriate form.

b) *Pending Litigation*

Financial position and prospective long-term profitability of the Single Tenderer, and in the case the Tenderer is a JV, of each member of the JV, shall remain sound according to criteria established with respect to Financial Capability under Paragraph (i) above i fall pending litigation will be resolved against the Tenderer. Tenderer shall provide information on pending litigations in the appropriate form.

c) *Litigation History*

There shall be no consistent history of court/ arbitral award decisions against the Tenderer, in the last **5 years**. All parties to the contract shall furnish the information in the appropriate form about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the years specified. A consistent history of awards against the Tenderer or any member of a JV may result in rejection of the tender

8. Qualification

Factor	1 Eligibility					
Sub-Factor	Criteria					Documentation Required
	Requirement	Tenderer				
		Single Entity	Joint Venture (existing or intended)			
			All members combined	Each Partner	At least one Partner	
1.1 Nationality	Nationality in accordance with ITT 4.6.	Must meet requirement	N/A	Must meet requirement	N / A	Form ELI –1.1 and 1.2, with attachments
1.2 Conflict of Interest	No- conflicts of interests as described in ITT 4.3	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Form of Tender
1.3 PPRA Ineligibility (if debarred/Sanctioned)	Not having been declared ineligible by the PPRA as described in 4.5.	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Form of Tender
1.4 State Owned Enterprise or Institution	Compliance with conditions of ITT 4.8	Must meet requirement	N/A	Must meet requirement	N / A	Form ELI –1.1 and 1.2, with attachments
1.5 Ineligibility based on a United Nations resolution or Kenya laws	Not having been excluded as a result of the Kenya laws or official regulations, or by an act of compliance with UN Security Council resolution, in accordance with ITT 4.9 and Section V.	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Form of Tender
1.6 Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by the Kenya Revenue Authority in accordance with ITT 4.13.	Must meet requirement	must meet requirement	Must meet requirement	N / A	Attach certificate

Factor	2. Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Tenderer				
		Single Entity	Joint Venture (existing or intended)			
			All members combined	Each member	At least one member	
2.1 History of non-performing contracts	Non-performance of a contract did not occur within the last (5) years prior to the deadline for application submission, based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the Tenderer have been exhausted.	Must meet requirement by itself or as member to past or existing JV	N / A	Must meet requirement	N / A	Form CON - 2
2.2 Suspension	Not under suspension based on execution of a Tender Securing Declaration or Proposal Securing Declaration pursuant to ITT 4.7 and ITT 20.9	Must meet requirement	Must meet requirement	Must meet requirement	Must meet requirement	Form of Tender
2.2 Pending Litigation	Tender’s financial position and prospective long-term profitability still sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Tenderer	Must meet requirement	N / A	Must meet requirement	N / A	Form CON – 2
2.3 Litigation History	No consistent history of court/arbitral award decisions against the Tenderer since 1 st January [2020]	Must meet requirement	N/A	Must meet requirement	N/A	Form CON – 2

Factor	3 Financial Situation					
Sub-Factor	Criteria	Tenderer				Documentation Required
	Requirement	Single Entity	Joint Venture (existing or intended)			
			All members combined	Each member	At least one member	
3.1 Financial Capabilities	Submission of audited balance sheets or if not required by the law of the Tenderer's Country, other financial statements acceptable to the Procuring Entity, for the last [3] years to demonstrate the current soundness of the Tenderers financial position and its prospective long-term profitability.	Must meet requirement	N / A	Must meet requirement	N / A	Form FIN – 3.1 with attachments
3.2 Average Annual Turnover	Minimum average annual turnover in construction of Kshs.273,875,000.00 , calculated as total certified payments received for contracts in progress or completed, within the last (5) years	Must meet requirement	Must meet requirement	Must meet percent (50%) of the requirement	Must meet percent (-) of the requirement	Form FIN –3.2
3.3 Financial Resources	The Tenderer must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet: (i) the following cash-flow requirement: 32,865,000.00 and (ii) The overall cash flow requirements for this contract and its current commitments.	Must meet requirement	Must meet requirement	Must meet percent (50%) of the requirement	Must meet percent (-) of the requirement	Form FIN –3.3

Factor	4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Tenderer	Joint Venture (existing or intended)			
		Single Entity	All members combined	Each member	At least one member	
4.1 General Experience	Experience in <i>[construction]</i> under contracts in the role of <i>contractor</i> , subcontractor, or management contractor for at least the last [5] years starting 1st January [2020] .	Must meet requirement	N / A	N/A	Must meet requirement	Form EXP-4.1
4.2(a) Specific Experience	(a) Participation as contractor, joint venture member, management contractor, or subcontractor, in at least (3) contracts within the last (5) years, each with a value of at least 87,640,000.00 that have been successfully and substantially completed and that are similar to the proposed Plant and Installation Services.	Must meet requirement	N/A	N / A	Must meet the following requirements for the key activities listed below [list key activities and the corresponding minimum requirements to be met by one member.	Form EXP 4.2(a)
4.2(b) Specific Experience	(b) For the above or other contracts executed during the period stipulated in 4.2(a) above, a minimum experience in the following key activities:	Must meet requirements	N/A	N / A	Must meet the following requirements for key activities listed below “	Form EXP-4.2(b)

Note: [For Multiple lots (contracts) specify financial and experience criteria for each lot under Sub-Factors 3.1, 3.2, 4.2(a) and 4.2(b)]

9 Personnel

The Tenderer must demonstrate that it will have the personnel for the key positions that meet the following requirements:

No.	Position	Total Work Similar Experience (years)	In Similar Works Experience (years)
1			
2			
3			
...			

The Tenderer shall provide details of the proposed personnel and their experience records in the relevant Forms included in Section IV, Tendering Forms.

10. Equipment

The Tenderer must demonstrate that it will have access to the key Contractor's equipment listed hereafter:

No.	Equipment Type and Characteristics	Minimum Number required
1		
2		
3		
...		

The Tenderer shall provide further details of proposed items of equipment using the relevant Form in Section IV.

11. Subcontractors

Subcontractors/ manufacturers for the following major items of supply or services ('Specialized Subcontractors') must meet the following minimum criteria, here in listed for that item:

Item No.	Description of Item	Minimum Criteria to be met
1		
2		
3		
...		

Failure to comply with this requirement will result in rejection of the subcontractor.

In the case of a Tenderer who offers to supply and install major items of supply under the contract that the Tenderer did not manufacture or otherwise produce, the Tenderer shall provide the manufacturer's authorization, using the form provided in Section IV, showing that the Tenderer has been duly authorized by the manufacturer or producer of the related plant and equipment or component to supply and install that item Kenya. The Tenderer is responsible for ensuring that the manufacturer or producer complies with the requirements of ITT 4 and 5 and meets the minimum criteria listed above for that item.

SECTION IV - TENDERING FORMS

1. FORM OF TENDER

(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)

INSTRUCTIONS TO TENDERERS

- i) All italicized text is to help the Tenderer in preparing this form.
- ii) The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address. Tenderers are reminded that this is a mandatory requirement.
- iii) Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION FORMS OF THE TENDERER as listed under (s) below.

Date of this Tender submission:.....[insert date (as day, month and year) of Tender submission] **Tender**

Name and **Identification:**.....[insert identification] **Alternative**

No.:.....[insert identification No if this is a Tender for an alternative]

To: [Insert complete name of Procuring Entity]

- a) **No reservations:** We have examined and have no reservations to the Tendering document, including Addenda issued in accordance with ITT 8;
- b) **Eligibility:** We meet the eligibility requirements and have no conflict of interest in accordance with ITT 4;
- c) **Tender-Securing Declaration:** We have not been suspended nor declared ineligible by the Procuring Entity based on execution of a Tender Securing Declaration or Proposal-Securing Declaration in Kenya in accordance with ITT 4.7;
- d) **Conformity:** We offer to provide design, supply and installation services in conformity with the Tendering document of the following: [insert a brief description of the Plant, Design, Supply and Installation Services];
- e) **Tender Price:** The total price of our Tender, excluding any discounts offered in item (f) below is: [Insert one of the options below as appropriate]

Option1, in case of one lot: Total price is: [insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies];

Or Option 2, in case of multiple lots: (a) Total price of each lot [insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]; and (b) Total price of all lots (sum of all lots) [insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies];

- f) **Discounts:** The discounts offered and the methodology for their application are:
- i) The discounts offered are: [Specify in detail each discount offered.]
- ii) The exact method of calculations to determine the net price after application of discounts is shown below: [Specify in detail the method that shall be used to apply the discounts];
- g) **Tender Validity Period:** Our Tender shall be valid for the period specified in TDS 19.1 (as amended if applicable) from the date fixed for the Tender submission deadline specified in TDS 23.1 (as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- h) **Performance Security:** If our Tender is accepted; we commit to obtain a Performance Security in accordance with the Tendering document;
- i) **One Tender Per Tenderer:** We are not submitting any other Tender (s) as an individual Tenderer, and we are not participating in any other Tender (s) as a Joint Venture member, and meet the requirements of ITT 4.3, other than alternative Tenders submitted in accordance with ITT 13;
- j) **Suspension and Debarment:** We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension. Further, we are not ineligible under the Kenya laws or official

regulations or pursuant to a decision of the United Nations Security Council;

- k) **State-owned enterprise or institution:** *[select the appropriate option and delete the other]* [We are not a state-owned enterprise or institution]/ [We are a state-owned enterprise or institution but meet the requirements of ITT 4.6];
- l) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the Tendering process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate “none.”)

- m) **Binding Contract:** We understand that this Tender, together with your written acceptance thereof included in your Form of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- n) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Tender, the Best Evaluated Tender or any other Tender that you may receive; and
- o) **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption.
- p) **Collusive practices:** We hereby certify and confirm that the tender is genuine, non-collusive and made with the intention of accepting the contract if awarded. To this effect we have signed the “Certificate of Independent tender Determination” attached below.
- q) **Code of Ethical Conduct:** We undertake to adhere by the Code of Ethical Conduct for Persons Participating in Public Procurement and Asset Disposal Activities in Kenya, copy available from www.pppra.go.ke during the procurement process and the execution of any resulting contract.
- r) **Beneficial Ownership Information:** We commit to provide to the procuring entity the Beneficial Ownership Information in conformity with the Beneficial Ownership Disclosure Form upon receipt of notification of intention to enter into a contract in the event we are the successful tenderer in this subject procurement proceeding.
- s) We, the Tenderer, have duly completed, signed and stamped the following Forms as part of our Tender:
- (i) Tenderer’s Eligibility; Confidential Business Questionnaire – to establish we are not in any conflict to interest.
 - (ii) Certificate of Independent Tender Determination – to declare that we completed the tender without colluding with other tenderers.
 - (iii) Self-Declaration of the Tenderer – to declare that we will, if awarded a contract, not engage in any form of fraud and corruption.
 - (iv) Declaration and commitment to the code of ethics for Persons Participating in Public Procurement and Asset Disposal Activities in Kenya,
- t) Further, we confirm that we have read and understood the full content and scope of fraud and corruption as informed in “**Appendix 1- Fraud and Corruption**” attached to the Form of Tender.

Name of the Tenderer: **[insert complete name of person signing the Tender]*

Name of the person duly authorized to sign the Tender on behalf of the Tenderer: ***[insert complete name of person duly authorized to sign the Tender]*

Title of the person signing the Tender: *[insert complete title of the person signing the Tender]*

Signature of the person named above: *[insert signature of person whose name and capacity are shown above]*

Date signed *[insert date of signing]***day of** *[insert month]*..... *[insert year]*.....

TENDERER'S ELIGIBILITY - CONFIDENTIAL BUSINESS QUESTIONNAIRE

Instruction to Tenderer

Tender is instructed to complete the particulars required in this Form, one form for each entity if Tender is a JV. Tenderer is further reminded that it is an offence to give false information on this Form.

a) Tenderer's details

	ITEM	DESCRIPTION
1	Name of the Procuring Entity	
2	Reference Number of the Tender	
3	Date and Time of Tender Opening	
4	Name of the Tenderer	
5	Full Address and Contact Details of the Tenderer.	1. Country 2. City 3. Location 4. Building 5. Floor 6. Postal Address 7. Name and email of contact person.
6	Current Trade License Registration Number and Expiring date	
7	Name, country and full address (<i>postal and physical addresses, email, and telephone number</i>) of Registering Body/Agency	
8	Description of Nature of Business	
9	Maximum value of business which the Tenderer handles.	
10	State if Tenders Company is listed in stock exchange, give name and full address (<i>postal and physical addresses, email, and telephone number</i>) of state which stock exchange	

General and Specific Details

b) Sole Proprietor, provide the following details.

Name in full _____ Age _____

Nationality _____ Country of Origin _____

Citizenship _____

c) Partnership, provide the following details.

	Names of Partners	Nationality	Citizenship	% Shares owned
1				
2				
3				

d) Registered Company, provide the following details.

i) Private or public Company_____

ii) State the nominal and issued capital of the Company: -

Nominal Kenya Shillings (Equivalent)_____

Issued Kenya Shillings (Equivalent)_____

iii) Give details of Directors as follows.

	Names of Director	Nationality	Citizenship	% Shares owned
1				
2				
3				

e) DISCLOSURE OF INTEREST-Interest of the Firm in the Procuring Entity.

i) Are there any person/ persons in..... (Name of Procuring Entity)
who has/ have an interest or relationship in this firm?

Yes/No..... If yes, provide details as follows.

	Names of Person	Designation in the Procuring Entity	Interest or Relationship with Tenderer
1			
2			
3			

ii) Conflict of interest disclosure

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
1	Tenderer is directly or indirectly controls, is controlled by or is under common control with another tenderer.		
2	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
3	Tenderer has the same legal representative as another tenderer		
4	Tender has a relationship with another tenderer, directly or through common third parties that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process.		
5	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		
6	Tenderer would be providing goods, works, non-consulting services or consulting services during implementation of the contract specified in this Tender Document.		
7	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who are directly or indirectly involved in the preparation		

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
	of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract.		
8	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who would be involved in the implementation or supervision of such Contract.		
9	Has the conflict stemming from such relationship stated in item 7 and 8 above been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.		

f) Certification

On behalf of the Tenderer, I certify that the information given above is complete, current and accurate as at the date of submission.

Full Name_____

Title or Designation_____

(Signature)

(Date)

CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the under signed, in submitting the accompanying Letter of Tender to the _____ [Name of Procuring Entity] for: _____ [Name and number of tender] in response to the request for tenders made by: _____ [Name of Tenderer] do here by make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of _____ [Name of Tenderer] that:

1. I have read and I understand the contents of this Certificate;
2. I understand that the Tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am the authorized representative of the Tenderer with authority to sign this Certificate, and to submit the Tender on behalf of the Tenderer;
4. For the purposes of this Certificate and the Tender, I understand that the word “competitor” shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:
 - a) Has been requested to submit a Tender in response to this request for tenders;
 - b) could potentially submit a tender in response to this request for tenders, based on their qualifications, abilities or experience;
5. The Tenderer discloses that [check one of the following, as applicable]:
 - a) The Tenderer has arrived at the Tender independently from, and without consultation, communication, agreement or arrangement with, any competitor;
 - b) The Tenderer has entered into consultations, communications, agreements or arrangements with one or more competitors regarding this request for tenders, and the Tenderer discloses, in the attached document(s), complete details thereof, including the names of the competitors and the nature of, and reasons for, such consultations, communications, agreements or arrangements;
6. In particular, without limiting the generality of paragraphs (5) (a) or (5) (b) above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - a) prices;
 - b) methods, factors or formulas used to calculate prices;
 - c) the intention or decision to submit, or not to submit, a tender; or
 - d) the submission of a tender which does not meet the specifications of the request for Tenders; except as specifically disclosed pursuant to paragraph (5) (b) above;
7. In addition, there has been no consultation, communication, agreement or arrangement with any competitor regarding the quality, quantity, specifications or delivery particulars of the works or services to which this request for tenders relates, except as specifically authorized by the procuring authority or as specifically disclosed pursuant to paragraph (5) (b) above;
8. The terms of the Tender have not been, and will not be, knowingly disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening, or of the awarding of the Contract, whichever comes first, unless otherwise required by law or as specifically disclosed pursuant to paragraph (5) (b) above.

Name _____

Title _____

Date _____

[Name, title and signature of authorized agent of Tenderer and Date]

SELF DECLARATION FORMS

FORM SD1

SELF DECLARATION THAT THE PERSON /TENDERER IS NOT DEBARRED IN THE MATTER OF THE PUBLIC PROCUREMENT AND ASSET DISPOSAL ACT 2015.

I,, of Post Office Box being a resident of in the Republic of do hereby make a statement as follows: -

1. THAT I am the Company Secretary/ Chief Executive/ Managing Director/ Principal Officer/ Director of (*insert name of the Company*) who is a Bidder in respect of Tender No. for (*insert tender title/description*) for (*insert name of the Procuring entity*) and duly authorized and competent to make this statement.
2. THAT the afore said Bidder, its Directors and subcontractors have not been debarred from participating in procurement proceeding under Part IV of the Act.
3. THAT what is deponed to here in above is true to the best of my knowledge, information and belief.

.....
(Title)

.....
(Signature)

.....
(Date)

Bidder's Official Stamp

FORM SD2

SELF DECLARATION THAT THE PERSON/TENDERER WILL NOT ENGAGE IN ANY CORRUPT OR FRAUDULENT PRACTICE.

I,of P. O. Box.....being a resident of
.....in the Republic of..... do hereby make a statement as follows: -

1. THAT I am the Chief Executive/ Managing Director/ Principal Officer/ Director of.....
..... (*insert name of the Company*) who is a Bidder in respect of Tender No.
..... for (*insert tender title/description*) for (*insert name of the Procuring entity*) and duly authorized and competent to make this statement.
2. THAT the afore said Bidder, its servants and/ or agents/ subcontractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of (*insert name of the Procuring entity*) which is the procuring entity.
3. THAT the aforesaid Bidder, its servants and/ or agents/ subcontractor shave not offered any inducement to any member of the Board, Management, Staff and/ or employees and/ or agents of
..... (name of the procuring entity).
4. THAT the aforesaid Bidder will not engage/ has not engaged in any corrosive practice with other bidders participating in the subject tender.
5. THAT what is deponed to here in above is true to the best of my knowledge information and belief.

.....
(Title)

.....
(Signature)

.....
(Date)

Bidder's Official Stamp

DECLARATION AND COMMITMENT TO THE CODE OF ETHICS

I,(*person*) on behalf of
(*Name of the Business/ Company/ Firm*) declare that I have read
and fully understood the contents of the Public Procurement & Asset Disposal Act, 2015, Regulations and the Code
of Ethics for persons participating in Public Procurement and Asset Disposal and my responsibilities under the Code.

I do hereby commit to abide by the provisions of the Code of Ethics for persons participating in Public Procurement
and Asset Disposal.

Name of Authorized signatory.....

Sign.....

Position.....

Office address.....Telephone.....

E-mail.....

Name of the Firm/Company.....

Date.....

(Company Seal/ Rubber Stamp where applicable)

Witness

Name.....

Sign.....

Date.....

SCHEDULE OF RATES AND PRICES

Schedule No. 1. Plant and Mandatory Spare Parts Supplied from Abroad

Item	Description	Code ₁		Qty.		Unit Price ²		Total Price ²
							<i>CIP</i>	
				(1)		(2)	(3)	(1) x (3)
	TOTAL (to Schedule No. 5. Grand Summary)							

Country of Origin Declaration Form

Item	Description	Code	Country

Schedule No. 2. Plant and Mandatory Spare Parts Supplied from Within Kenya

Item	Description	Qty.	EXW Unit Price	EXW Total Price
		(1)	(2)	(1) x (2)
TOTAL (to Schedule No. 5. Grand Summary)				
Name of Tenderer _____ Signature _____ Specify currency in accordance with ITT 18				

Schedule No. 3. Design Services

Item	Description	Qty.	Unit Price		Total Price
			Local Currency Portion	Foreign Currency Portion	
		(1)	(2)	(optional)	(1) x (2)
TOTAL (to Schedule No. 5. Grand Summary)					

Name of Tenderer _____ Signature _____

Schedule No. 4. Installation and Other Services

Item	Description	Qty.	Unit Price		Total Price	
			Foreign Currency Portion	Local Currency Portion	Foreign	Local
		(1)	(2)	(3)	(1) x (2)	(1) x (3)
TOTAL (to Schedule No. 5. Grand Summary)						

Name of Tenderer _____ Signature _____
Specify currency in accordance with ITT 18

Schedule No. 5. Grand Summary

Item	Description	Total Price	
		Foreign	Local
	Total Schedule No. 1. Plant, and Mandatory Spare Parts Supplied from Abroad		
	Total Schedule No. 2. Plant, and Mandatory Spare Parts Supplied from Within Kenya		
	Total Schedule No. 3. Design Services		
	Total Schedule No. 4. Installation and Other Services		
TOTAL (to Tender Form)			

Name of Tenderer _____ Signature _____

Specify currency in accordance with ITT 18. Create and use as many columns for Foreign Currency requirement as there are foreign currencies

Schedule No. 6. Recommended Spare Parts

Item	Description	Qty.	Unit Price		Total Price
			CIF or CIP (foreign parts)	EXW (local parts)	
		(1)	(2)	(3)	(1) x (2) or (3)

Name of Tenderer _____ Signature _____

Price Adjustment

Where the Contract Period (excluding the Defects Liability Period) exceeds eighteen (18) months, it is normal procedure that prices payable to the Contractor shall be subject to adjustment during the performance of the Contract to reflect changes occurring in the cost of labor and material components. In such cases the Tendering document shall include in this form a formula of the following general type, pursuant to SCC Sub-Clause 11.2.

Where Contracts are of a shorter duration than eighteen (18) months or in cases where there is to be no Price Adjustment, the following provision shall not be included. Instead, it shall be indicated under this form that the prices are to remain firm and fixed for the duration of the Contract.

Sample Price Adjustment Formula

If in accordance with GCC 11.2, prices shall be adjustable, the following method shall be used to calculate the price adjustment:

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components, in accordance with the following formula:

$$P_1 = P_0 \left(a + b \frac{L_1}{L_0} + c \frac{M_1}{M_0} \right)$$

P_1 = adjustment amount payable to the Contractor

P_0 = Contract price (base price)

a = percentage of fixed element in Contract price ($a=\%$)

b = percentage of labor component in Contract price ($b=\%$)

c = percentage of material and equipment component in Contract price ($c=\%$)

L_0, L_1 = labor indices applicable to the appropriate industry in the country of origin on the base date and the date for adjustment, respectively

M_0, M_1 = material and equipment indices in the country of origin on the base date and the date for adjustment, respectively

N.B. $a+b+c=100\%$.

Conditions Applicable to Price Adjustment

The Tenderer shall indicate the source of labor, source of exchange rate and materials indices and the base date indices in its Tender.

Item Source of Indices Used Base Date Indices.

The base date shall be the date thirty (30) days prior to the Tender closing date.

The date of adjustment shall be the mid-point of the period of manufacture or installation of component or Plant. The following conditions shall apply:

- (a) No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Procuring Entity under the terms of the Contract. No price increase will be allowed for periods of delay for which the Contractor is responsible. The Procuring Entity will, however, be entitled to any price decrease occurring during such periods of delay.
- (b) If the currency in which the Contract price, P_0 , is expressed is different from the currency of the country of origin of the labor and/or materials indices, a correction factor will be applied to avoid incorrect adjustments of the Contract price. The correction factor shall be: Z_0/Z_1 , where,
 Z_0 =the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Base date, and
 Z_1 =the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Date of Adjustment.
- (c) No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.

TECHNICAL PROPOSAL

- Site Organization
- Method Statement
- Mobilization Schedule
- Construction Schedule
- Plant
- Contractor's Equipment
- Personnel
- Proposed Subcontractors for Major Items of Plant and Installation Services
- Others

SITE ORGANIZATION

METHOD STATEMENT

MOBILIZATION SCHEDULE

CONSTRUCTION SCHEDULE

Contractor's Equipment

Form EQU

The Tenderer shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key Contractor's equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Tenderer.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Omit the following information for equipment owned by the Tenderer.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

Functional Guarantees

The Tenderer shall copy in the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Procuring Entity in para.1.2 (c) of Section III, Evaluation and Qualification Criteria, and in the right column, provide the corresponding value for each functional guarantee of the proposed plant and equipment.

Required Functional Guarantee	Value of Functional Guarantee of the Proposed Plant and Equipment
1.	
2.	
3.	
...	

Personnel

Form PER -1- Proposed Personnel

Tenderers should provide the names of suitably qualified personnel to meet the specified requirements stated in Section III. The data on their experience should be supplied using the Form below for each candidate.

1.	Title of position*
	Name
2.	Title of position*
	Name
3.	Title of position*
	Name
4.	Title of position*
	Name

*As listed in Section III.

Form PER-2

Resume of Proposed Personnel

Name of Tenderer_____

Position		
Personnel information	Name	Date of birth
	Professional qualifications	
Present employment	Name of Procuring Entity	
	Address of Procuring Entity	
	Telephone	Contact (manager / personnel officer)
	Fax	E-mail
	Job title	Years with present Procuring Entity

Summarize professional experience over the last 20 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From	To	Company / Project / Position / Relevant technical and management experience

Proposed Subcontractors for Major Items of Plant and Installation Services

A list of major items of Plant and Installation Services is provided below.

The following Subcontractors and/or manufacturers are proposed for carrying out the item of the facilities indicated. Tenderers are free to propose more than one for each item

Major Items of Plant and Installation Services	Proposed Subcontractors/Manufacturers	Nationality

Others - Time Schedule

(To be used by Tenderer when alternative Time for Completion is invited in ITT 13.2)

Tenderers Qualification without prequalification

To establish its qualifications to perform the contract in accordance with Section III, Evaluation and Qualification Criteria the Tenderer shall provide the information requested in the corresponding Information Sheets included here under.

Form ELI 1.1

Tenderer Information Sheet

Date: _____

ITT No.: _____

1. Tenderer's Legal Name
2. In case of JV, legal name of each party:
3. Tenderer's actual or intended Country of Registration:
4. Tenderer's Year of Registration:
5. Tenderer's Legal Address in Country of Registration:
6. Tenderer's Authorized Representative Information Name: Address: Telephone/Fax numbers: Email Address:
7. Attached are copies of original documents of: Articles of Incorporation or Registration of firm named in 1, above, in accordance with ITT 4.1 and ITT 4.4. In case of JV, Form of intent to form JV including a draft agreement, or JV agreement, in accordance with ITT 4.1 and ITT 11.2. In case of state-owned enterprise or institution from Kenya, documents establishing legal and financial autonomy and compliance with the principles of commercial law, and is not under the supervision of the Procuring Entity in accordance with ITT 4.6.

Please note that a written authorization needs to be attached to this sheet as required by ITT 21.3

Form ELI 1.2**Party to JV Information Sheet**

Date: _____

ITT No.: _____

1. Tenderer's Legal Name:
2. JV's Party legal name:
3. JV's Party Country of Registration:
4. JV's Party Year of Registration:
5. JV's Party Legal Address in Country of Registration:
6. JV's Party Authorized Representative Information Name: Address: Telephone/Fax numbers: Email Address:
7. Attached are copies of original documents of: Articles of Incorporation or Registration of firm named in 1, above, in accordance with ITT 4.1 and ITT 4.4. In case of state-owned enterprise or institution from Kenya, documents establishing legal and financial autonomy and compliance with the principles of commercial law and is not under the supervision of the Procuring Entity, in accordance with ITT 4.6.

Form CON – 2

Historical Contract Non-Performance

Tenderer's Legal Name: _____

Date: _____

JV Member Legal Name: _____

ITT No.: _____

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> Contract non-performance did not occur since 1 st January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.			
<input type="checkbox"/> Contract(s) not performed since 1 st January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, requirement 2.1			
Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and K Shilling equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Procuring Entity: <i>[insert full name]</i> Address of Procuring Entity: <i>[insert City/ street/building/floor number/room number/country]</i> Reason(s) for nonperformance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3.			
<input type="checkbox"/> Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.			

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), K Shilling Equivalent (exchange rate)
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor			

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), K Shilling Equivalent (exchange rate)
2.4. <input type="checkbox"/> Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.			
<i>[insert year]</i>	<i>[insert percentage]</i>	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Entity: <i>[insert full name]</i> Address of Procuring Entity: <i>[insert City/ street/building/floor number/room number/country]</i> Matter in dispute: <i>[indicate main issues in dispute]</i> Party who initiated the dispute: <i>[indicate "Procuring Entity" or "Contractor"]</i> Reason(s) for Litigation and award decision <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Form CCC

Current Contract Commitments / Works in Progress

Tenderers and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a Form of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Name of contract	Procuring Entity, contact address/tel	Value of outstanding work (current K Shilling equivalent)	Estimated completion date	Average monthly invoicing over last six months (K Shilling /month)
1.				
2.				
3.				
4.				
5.				
etc.				

Form FIN – 3.1**Financial Situation****Historical Financial Performance**

Tenderer's Legal Name: _____

Date: _____

JV Member Legal Name: _____

ITT No.: _____

To be completed by the Tenderer and, if JV, by each member

Financial information in KShilling equivalent	Historic information for previous _____ () years (KShilling equivalent in 000s)						
	Year 1	Year 2	Year 3	Year ...	Year n	Avg.	Avg. Ratio
Information from Balance Sheet							
Total Assets (TA)							
Total Liabilities (TL)							
Net Worth (NW)							
Current Assets (CA)							
Current Liabilities (CL)							
Information from Income Statement							
Total Revenue (TR)							
Profits Before Taxes (PBT)							

Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following conditions:

- Must reflect the financial situation of the Tenderer or member to a JV, and not sister or parent companies.
- Historic financial statements must be audited by a certified accountant.
- Historic financial statements must be complete, including all notes to the financial statements.
- Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Form FIN - 3.2**Average Annual Turnover**

Tenderer's Legal Name: _____ Date: _____

JV Member Legal Name: _____ ITT No.: _____

Annual turnover data		
Year	Amount and Currency	KSHILLING equivalent
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
*Average Annual Turnover	_____	_____

*Average annual turnover calculated as total certified payments received for work in progress or completed, divided by the number of years specified in Section III, Evaluation Criteria, Sub-Factor 2.3.2.

Form FIN3.3***Financial Resources***

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total cash flow demands of the subject contractor contracts as indicated in Section III, Evaluation and Qualification Criteria.

Source of financing	Amount (KShilling equivalent)
1.	
2.	
3.	
4.	

Form EXP 4.1***General Experience***

Tenderer's Legal Name: _____

JV Member Legal Name: _____

ITT No.: _____

Date: _____

Starting Month / Year	Ending Month / Year	Years*	Contract Identification	Role of Tenderer
_____	_____		Contract name: Brief Description of the Works performed by the Tenderer: Name of Procuring Entity: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Tenderer: Name of Procuring Entity: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Tenderer: Name of Procuring Entity: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Tenderer: Name of Procuring Entity: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Tenderer: Name of Procuring Entity: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Tenderer: Name of Procuring Entity: Address:	_____

*List calendar year for years with contracts with at least nine (9) months activity per year starting with the earliest year

Form EXP –4.2(a)**Specific Experience**

Tenderer's Legal Name: _____

JV Member Legal Name: _____

Similar Contract No. __ [insert specific number] of [total number of contracts] __ required	Information
Description of the similarity in accordance with Sub-Factor 4.2a) of Section III:	
Amount	_____ —
Physical size	_____ —
Complexity	_____ —
Methods/Technology	_____ —
Physical Production Rate	_____ —

Form EXP –4.2(b)**Specific Experience in Key Activities**

Tenderer's Legal Name: _____

Date: _____

JV Member Legal Name: _____

ITT No.: _____

Subcontractor's Legal Name: _____

	Information		
Contract Identification	_____		
Award date	_____		
Completion date	_____		
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Total contract amount	_____		KSHILLING _____
If member in a JV or subcontractor, specify participation of total contract amount	_____ %	_____	KSHILLING _____
Procuring Entity's Name:	_____		
Address:	_____ _____ _____		
Telephone/fax number:	_____ _____		
E-mail:	_____		

FORM OF TENDER SECURITY-[Option 1-Demand Bank Guarantee]

Beneficiary: _____

Request for Tenders No: _____

Date: _____

TENDER GUARANTEE No.: _____

Guarantor: _____

1. We have been informed that _____ (here inafter called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here inafter called" the Tender") for the execution of _____ under Request for Tenders No. _____ ("the ITT").
2. Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.
3. At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:
 - (a) has withdrawn its Tender during the period of Tender validity set forth in the Applicant's Letter of Tender ("the Tender Validity Period"), or any extension thereto provided by the Applicant; or
 - b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance.
4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) thirty days after the end of the Tender Validity Period.
5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

[signature(s)]

FORMAT OF TENDER SECURITY [Option 2–Insurance Guarantee]

TENDER GUARANTEE No.: _____

1. Whereas [Name of the tenderer] (hereinafter called “the tenderer”) has submitted its tender dated [Date of submission of tender] for the [Name and/or description of the tender] (hereinafter called “the Tender”) for the execution of _____ under Request for Tenders No. _____ (“the ITT”).
2. KNOW ALL PEOPLE by these presents that WE of [Name of Insurance Company] having our registered office at (hereinafter called “the Guarantor”), are bound unto [Name of Procuring Entity] (hereinafter called “the Procuring Entity”) in the sum of (Currency and guarantee amount) for which payment well and truly to be made to the said Procuring Entity, the Guarantor binds itself, its successors and assigns, jointly and severally, firmly by these presents.

Sealed with the Common Seal of the said Guarantor this ____ day of _____ 20 ____.

3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Applicant:
 - a) has withdrawn its Tender during the period of Tender validity set forth in the Principal's Letter of Tender (“the Tender Validity Period”), or any extension thereto provided by the Principal; or
 - b) having been notified of the acceptance of its Tender by the Procuring Entity during the Tender Validity Period or any extension thereto provided by the Principal; (i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to tenderers (“ITT”) of the Procuring Entity's Tendering document.

then the guarantee undertakes to immediately pay to the Procuring Entity up to the above amount upon receipt of the Procuring Entity's first written demand, without the Procuring Entity having to substantiate its demand, provided that in its demand the Procuring Entity shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) twenty-eight days after the end of the Tender Validity Period.
5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

[Date]

[Witness]

[Signature of the Guarantor]

[Seal]

TENDER-SECURING DECLARATION FORM {r 46 and 155(2)}

[The Bidder shall complete this Form in accordance with the instructions indicated]

Date: _____ *[insert date (as day, month and year) of Tender*

Submission] Tender No.: _____ *[insert number of tendering process]*

To: _____ *[insert complete name of*

Purchaser] I/We, the under signed, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Tender-Securing Declaration.
2. I/We accept that I/ we will automatically be suspended from being eligible for tendering in any contract with the Purchaser for the period of time of [insert number of months or years] starting on [insert date], if we are in breach of our obligation (s) under the bid conditions, because we—(a) have withdrawn our tender during the period of tender validity specified by us in the Tendering Data Sheet; or (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the instructions to tenders.
3. I/ We understand that this Tender Securing Declaration shall expire if we are not the successful Tenderer (s), upon the earlier of:
 - a) Our receipt of a copy of your notification of the name of the successful Tenderer; or
 - b) Thirty days after the expiration of our Tender.
4. I/ We understand that if I am/ we are/ in a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed:

Capacity/title (director or partner or sole proprietor, etc.)

..... Name:

.....

Duly authorized to sign the bid for and on behalf of: *[insert complete name of Tenderer]*

Dated on.....day of..... *[Insert date of signing]*

Seal or stamp

MANUFACTURER'S AUTHORIZATION FORM

Date: _____

ITT No.: _____

To: _____

WHEREAS

We _____, who are official manufacturers of _____, having factories at _____, do hereby authorize _____ to submit a Tender the purpose of which is to provide the following goods, manufactured by us _____, and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the General Conditions, with respect to the goods offered by the above firm.

Signed: _____

Name: _____

Title: _____

Duly authorized to sign this Authorization on behalf of: _____

Dated on _____ day of _____, _____

MANUFACTURER'S WARRANTY FORM

[The tenderer shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer.]

Date:.....*[insert date (as day, month and year) of Tender submission]*

ITT No.:.....*[insert number of ITT process]* Alternative

No.:.....*[insert identification No if this is a Tender for an alternative]*

To: *[Insert complete name of Procuring] Entity* WHEREAS

WE HEREBY WARRANT THAT:

- a) The goods to be supplied under the contract are new, unused, of the most recent or current specification and incorporate all recent improvements in design and materials unless provided otherwise in the Tender.
- b) The goods in the Tenderer's bid have no defect arising from manufacture, materials or workmanship or from any act or omission of the Tenderer that may develop under normal use of the goods under the conditions obtaining in Kenya.

The Warranty will remain valid for _ *[Insert no. years]* year after the goods, or any portion thereof as the case may be, have been delivered to the final destination indicated in the contract.

Signed:..... *[Insert signature(s) of authorized representative(s) of the Manufacturer]*

Name:.....*[Insert complete name(s) of authorized representative(s) of the Manufacturer]*

Title:..... *[Insert title]*

Dated on__day of_____,_____ *[insert date of signing]*

MANUFACTURER'S CONTACT DETAILS FORM

(To Be Submitted on Manufacturer's Letterhead)

To:

Rural Electrification and Renewable Energy Corporation

Ground Floor: Kawi House, South C

P.O. 34585 – 00100

NAIROBI,

KENYA

Manufacturer Details:

Company Legal Name

Company Trading

Name_____

(Write the names in full)

Manufacturer Contacts:

Telephone No._____ Postal

Address_____

Email _____Website_____

Physical address_____

Main Contact:

Full Name_____Email_____

Position_____

Telephone_____cellular_____

Describe your field of specialization._____

—

Signed (Authorized Signatory) _____

Name:_____

Stamp/Seal here



SITE VISIT FORM

REF NO:

DATE:

RE: SITE VIST FORM

This is to confirm that (Name of Representative)
of (Company Name)
P.O. BOX.....

did a site visit for **Supply, Installation, Testing, and Commissioning of Solar Mini- Grid in Kibuogi Island Homabay County.**

Name of Representative:

Name of Site visited

Company Name:-.....

Company Seal/Stamp

REREC REPRESENTATIVE

Name:

Sign.....

Company Stamp

PART 2 - PROCURING ENTITY'S REQUIREMENTS

TERMS OF REFERENCE

KIBUOGI ISLAND SOLAR MINI-GRID

SECTION IV: TECHNICAL SPECIFICATIONS OF KIBUOGI ISLAND SOLAR MINI-GRID

PART I: Power Plant Specifications

General Description

Rural Electrification and Renewable Energy Corporation (REREC) invites eligible bidders for the design, supply, installation, testing and commissioning of 1No. 100Kw solar PV-Diesel hybrid mini-grid in Kibuogi Island in Homabay County.

Project Location

The off-grid solar Photovoltaic (PV) Power Plant to be supplied and set to work under this contract shall have an output of not less than 100 kW at the point of the Inverter Output. The proposed plant location coordinates are X-621389.4 / Y-9941714.21 in Kibuogi Island, Homabay County.

Annex 1.

The document has tender for design, supply, testing and commissioning of a 1no. 100Kw solar PV-Diesel hybrid generation plants complete with their solar modules, Hybrid inverters with a capacity not less than 100Kw, Lithium ion Phosphate batteries for back-up with a capacity not less than 371KWh, intelligent controller/manager, mounting support, electrical controls, protection and instrumentation, a diesel generator backup of not less than 50KVA and Step up substation (0.415/11KV) complete with all associated accessories and civil works.

System Description

During the daytime, the Solar Power Generation Plant should supply power directly to the Loads in online mode, along with charging of the batteries in continuous mode. On most non-cloudy days during the year (“regular day”), batteries should get fully charged during the day time. In evening or morning battery should support the Solar Power Generation Plant to meet the load, if required

The solar PV hybrid power plant shall consist of the following main components:

- Solar PV modules
- Solar PV modules structures
- Hybrid inverters
- Lithium ion batteries
- Diesel thermal generator for reserve power
- Switchgear
- Step up substation (0.415/11 KV)
- Outdoor sub-station equipment
- Equipment building and support infrastructure
- Associated civil works

The solar PV power plant is also equipped with a Diesel Generator, which shall be used normally as reserve power. The diesel generator should switch on automatically whenever the state of charge of the battery reaches a set depth of discharge. This will be defined at commissioning stage. The diesel generator shall be sized to charge the lithium ion batteries so that the power plant is operating at its optimum power rate. The diesel generator shall comprise a 50kVA unit in three-phase operation and has to be equipped with automatic startup function controlled by a robust energy management system (EMS). The priority

has to be given to use the solar energy and the diesel generator will meet the energy deficit. In case of a power outage of the inverter, the critical loads have to be bypassed to the diesel generator by manual switch over.

The battery bank shall be charged by solar power during the day and its capacity shall be determined with 1C capacity rate.

Description of Electrical Components and Requirements

Solar PV Modules

1.1 Bi-facial SPV Mono crystalline modules of minimum 104-cells; and minimum 22% module efficiency.

1.2 Solar modules offered shall be;

- i. Tier-1 Manufacturer
- ii. Certified as per IEC 61215
- iii. Qualify IEC 61730- Part -1: PV Module Safety Qualification Part -1 Requirement for Construction.
- iv. Qualify IEC 61730- Part -2: PV Module Safety Qualification Part -2 Requirements for Testing.

1.3 As SPV modules shall be used in highly corrosive atmosphere throughout their life time so they must qualify IEC 61701.

1.4 Solar PV Module design shall conform to following requirement:

- i. Weather proof, DC rated MC4 connector and a lead cable coming out as a part of the module, making connections easier and secure, not allowing any loose connections.
- ii. Resistant to water ingress, abrasion, hail impact, humidity, sea water & other harsh environmental factors for the worst situation at site.

1.5 Module rating is considered under standard test conditions; however Solar Modules shall be designed to operate and perform under site conditions including high temperature, dusty conditions, high humidity and corrosive atmosphere.

1.6 Identification and Traceability:

Each PV module shall have Radio Frequency Identification (RFID) Tag. The following information must be mentioned in the RFID used on each module. This can be inside or outside the laminate but must be able to withstand harsh environmental conditions.

- i) Name of the manufacturer of SPV module.
- ii) Name of the manufacturer of Solar cells.
- iii) Month and year of the manufacturer (separately for solar cell and module).
- iv) Country of origin (separately for solar cell and module).
- v) I-V curve for the module.
- vi) Peak wattage, I_m , V_m and PF for the module.
- vii) Unique Serial No and Model No of the module.
- viii) Date and year of obtaining IEC SPV module qualification certificate
- ix) Name of the test lab issuing IEC certificate other relevant information on traceability of solar cell and module as per ISO 9001 and ISO14001.

1.7 Any other markings as required in the specifications shall also be made on the modules.

1.8 Warranties for Modules:

Product Warranty The manufacturer should warrant the solar module(s) to be free from the defects and/or failures specified below for a period not less than ten (10) years from the date of sale to the original customer ("Employer")

- i) Defects and /or failures due to manufacturing.
- ii) Defects and/or failures due to quality of materials.
- iii) Non-conformity to specifications due to faulty manufacturing and/ or inspection processes.

1.9 Performance Warranty

- i) A 25-year long-term performance warranty with a maximum linear decrease in peak power at STC of 2.5% in the first year, 0.6%/year in subsequent years. At year 25, the peak power shall be not less than 83%.
- ii) Bidder shall provide data sheet for solar PV module (under standard testing condition) along with their offer as per Guaranteed Technical Particular.

Module Mounting Structure (MMS)

2.1 The MMS to be used for mounting the SPV modules shall be as under:

- i) Fixed-tilt type.
- ii) Azimuth: 0° True South/North.
- iii) Tilt angle: 10° -15° tilt angle shall provide for all sites with adequate spacing to prevent inter row shading.
- iv) Structure shall comply with IEC 61215/61646.

2.2 The mounting steel structure and its galvanizing shall be as per the required standards.

2.3 The mounting structure shall be suitably designed for mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads along with applicable wind loads to the base properly.

2.4 While designing of MMS additional care is needed to ensure that the material size used is capable to withstand the wind forces generated on account of heavy wind speed of respective sea wind zone. MMS with documented results of wind tunnel testing and resonant frequency dampening is preferred.

2.5 To reduce the pressure on structure and foundation, clear spacing between two adjacent modules shall be sufficient to allow wind passage.

2.6 The minimum clearance between the lower edge of the modules and developed ground level shall be adequately elevated above relevant flood plain. Minimum 1000 mm or higher and to employer's approval.

2.7 Contractor has to choose suitable foundation design(s) depending on soil conditions, geographical condition, regional wind speed, bearing capacity, slope stability etc.

2.8 The structure shall be designed to allow easy replacement of any module.

2.9 Spacing between rows shall be so designed that shadow of one row of modules to next is avoided.

2.10 The Contractor (successful bidder) shall furnish detailed design calculation.

2.11 Nut & bolts, supporting structures including module mounting structures shall have to be adequately protected against all climatic conditions prevailing in the area.

2.12 All fasteners shall be of stainless steel of grade SS 304 or suitable equivalent.

2.13 The mounting structure shall be grounded properly using maintenance free earthing kit.

- 2.14 The mounting structure & foundation shall be designed to withstand applicable speed of wind zone of the applicable site as given in relevant International/Kenya wind load codes / standards. Suitable fastening arrangement such as grouting and clamping should be provided to secure the installation against the specific wind speed. The contractor shall ensure that the design has been certified by a recognized lab/ institution in this regard and submit the same to the Employer.

Array Junction Boxes (AJB)/String Monitoring Box (SMB)

- 3.1 To receive the DC output from field array, junction box / string monitor Box (SMB) as per design requirement shall be provided in between solar array and DCDB/PV Inverters. They shall be rated for 600/1000V and comply with IEC61439-2, UL1741 and standards.
- 3.2 AJB can also be integrated into Inverter for space saving.
- 3.3 AJB having polycarbonate enclosure of dust & vermin proof shall conform to IP 65 protection.
- 3.4 Array junction box allows several PV strings to be connected in parallel.
- 3.5 Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the inverter along with necessary surge arrestors.
- 3.6 A DC dis-connector switch must isolate the array DC circuit as per requirement

DC Distribution Board/DC combiner box

- 4.1 To receive the DC output from junction box /string monitor box (SMB) as per approved design requirement DCB to be provided in between JCB/SMB and PV inverter. They shall be rated for 600/1000V and comply with IEC61439-2, UL1741 and standards.
- 4.2 Sufficient no. of switchboards / DC DB wherever required shall be provided.
- 4.3 DCDB should be equipped with appropriate functionality, safety (including fuses, grounding, etc.) and protection.
- 4.4 The terminals will be connected to bus-bar arrangement of proper sizes to be provided. The panels/ boxes will have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables.
- 4.5 DC DB enclosure of dust & vermin proof shall conform to IP 65 protection if out door.
- 4.6 DC DB allows requisite connections from JB/SMB to be connected in parallel.
- 4.7 Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PV inverter along with necessary surge arrestors.
- 4.8 DC DB shall be provided with the purpose of providing option for isolating the battery bank.
- 4.9 There shall be copper bus bars of desired size/rating and can either be independent or integrated in PSU.
- 4.10 A DC dis-connector switch in DCDB must isolate the array DC circuit as per requirement

Hybrid Inverter integrated with MPPT Charge Controller

The hybrid Inverter Unit shall be hybrid Inverter with power exporting facility to the Grid.

- 5.1 All the Inverters should contain the following clear and indelible Marking Label & Warning Label as per IS16221 Part II, clause 5. The equipment shall, as a minimum, be permanently marked with:
- The name or trademark of the manufacturer or supplier.
 - A model number, name or other means to identify the equipment.
 - A serial number, code or other markings allowing identification of manufacturing location and the manufacturing batch or date within a three-month time period.

- d. Input voltage, type of voltage (A.C. or D.C.), frequency, and maximum continuous current for each input.
 - e. Output voltage, type of voltage (A.C. or D.C.), frequency, maximum continuous current, and for A.C. outputs, either the power or power factor for each output.
 - f. The Ingress Protection (IP) rating
- 5.2 The Hybrid inverter output shall be 415 VAC, 50 Hz, 3 phase.
- 5.3 The Hybrid inverter should have all the technical requirements for connecting to the Grid and provision of Intentional Islanding with facility for connecting to a battery bank
- 5.4 The Hybrid inverter shall include appropriate self-protective and self-diagnostic feature to protect itself and the PV array from damage in the event of inverter component failure or from parameters beyond the inverter's safe operating range due to internal or external causes.
- 5.5 Maximum Power Point Tracker (MPPT) shall be integrated into the inverter to maximize energy drawn from the solar PV array. MPPT shall be microprocessor/micro controller based to minimize power losses and maximize energy utilization. The details of working mechanism of MPPT shall be mentioned by the Bidder in its proposal. The MPPT unit shall conform to IEC 62093 for design qualification.
- 5.6 The Inverter shall always give preference to Solar power, and will use BESS power only when the solar power is unable to meet the loads requirement
- 5.7 Inverter should comply with IEC 61683 for efficiency and measurements and should comply with IEC 60068-2 for environmental testing.
- 5.8 The efficiency of the inverter shall be more than 95% at full load. The inverter shall have high overload capacity. The Bidder should specify the overload capacity in the bid.

Battery Energy Storage System (BESS)

- 6.1 Supply of Battery Energy Storage System (BESS) with Lithium-ion Battery pack, conforming to IEC62619 standards with warranty of 5 years, 6,000 cycle's minimum. Complete in all respects as under and conforming to Employer's Requirement & technical specification, consisting of;
- i) Lithium-ion Battery Power Packs for required energy capacity, or equivalent as per approved design, minimum 90% Depth of Discharge (DOD). Batteries should be capable of at least 0.5C charge and discharge rate.
 - ii) Enclosures conforming to IP35 for Indoor /IP65, or better for outdoor.
 - iii) All accessories for correct installation, foundation, connection, controls, and operation of BESS.
- 6.2 The battery storage shall be Lithium Iron Phosphate (LFP) type and shall be installed in a well-insulated and air-conditioned room or container.
- 6.3 Warranted number of cycles for the BESS at the supplier recommended depth of discharge should not be less than 6,000 cycles at full DOD indicated by the battery manufacturer specifications.
- 6.4 The battery warranty should be 5 years minimum. If due to any reason battery is required replacement, then the Contractor is to replace the same in warranty period without any extra cost to the Employer.
- 6.5 The solar PV system shall be designed and configured to operate at a system voltage above 48V to ensure higher efficiency, reduced current losses, and compatibility with standard inverter and battery technologies.
- 6.6 Suitable number of corrosion resistant and acid-proof storage racks shall be supplied to accommodate the cells, testers and other accessories. The rack design shall be such that minimum space is required, without any way obstructing the maintenance requirements. For metallic racks, standards specified for control panel enclosures and other metallic shall govern.
- 6.7 There shall be no environmental hazards caused due to:

- i) Improper use and maintenance of the battery bank.
 - ii) Improper disposal of batteries at the time of replacement.
 - iii) Any manufacturing defects.
- 6.8 All technical and other details pertaining to the storage cells shall be supplied including but not limited to the following:
- i) Rated voltage and ampere-hour capacity of each storage cell as the rated discharge rate,
 - ii) Permitted maximum DOD,
 - iii) Self-discharge rate
 - iv) Cycle life of the storage cell and the anticipated life (in years) of the battery bank.
 - v) Total number of storage cells in use.
 - vi) Details on cell interconnections, if any
 - vii) Charging system used for battery
- 6.9 The system should allow for the load current to be supplied at the same time as the battery charging current.
- 6.10 The contractor shall submit complete design and expected performance of BESS Calculation, drawings, reports and data together with the tender.
- 6.11 The design of BESS with critical parameters such as response time discharge duration, Depth of Discharge, frequency of discharge, cycle life, round trip cycle efficiency performance degradation, self-discharge characteristics, short time discharge rating, transient response characteristics, auxiliary system requirement etc shall be included in the detailed engineering.
- 6.12 Suitable Fire protection and suppression system shall be designed for BESS in line with IEC or international requirements/specifications regulation as applicable and system requirement considering project site. BESS to be housed in one room in the control room/building. The battery room shall have an automated fire detection, prevention and suppression system fitted with a dry aerosol agent to put out Lithium-Ion battery fires. The system shall include smoke detectors, horn strobes and other components required to enable it function properly and suppress fires while preventing unintended release.
- 6.13 BESS conforming to International Safety and Electrical Standards shall be Complete in all respect consisting of:
- i) Complete with programmable control and regulation parameters, protection system, control system, surge protection system etc.
 - ii) Requisite numbers of battery pack, the combination of which shall equal or exceed the estimated capacity shown in design characteristics in this document, with Minimum. 80 % DOD,
 - iii) Enclosures conforming to IP35 for Indoor.
 - iv) All accessories and connection for correct installation and operation of BESS.
 - v) All cables for inter connection with main AC distribution board.
 - vi) Support structure to keep batteries at a suitable clearance level from ground to take care of water flooding etc. The design shall be submitted to the employer before its implementation.
 - vii) Test certificate and test reports as per IEC62619 standard applicable to battery technology shall be submitted for approval of the Employer. All other test certificate and test reports as per international standards and requirements/specifications for large scale BESS shall be submitted for approval of the Employer during submission of detailed engineering.
- 6.14 Suitable protection/isolation for the battery system should be provided with proper rating of 40 fuses and isolators for DC application. This should be connected between battery bank and battery inverter/charger.

Diesel Generator

The Diesel Generator shall have a 3-phase 50KVA power output with 415 V at 50 Hz. It should include a highly corrosion resistant enclosure, control panel and monitoring, fuel tank and circuit breaker protection. The diesel generator shall be suitable for outdoor installation and perform accordingly with the battery inverter and the system design. The diesel generator shall work in a fully automated manner with the above stated component. A concrete plinth to be constructed for the generator placement plus a shed of steel hollow sections and IT 4 sheets to engineer's approval to house the generator.

Data Monitoring

In order to achieve a high performance of the solar PV hybrid power plant, the incorporation of automatic data acquisition and monitoring technology is essential. This allows that the yield of the PV plant can be monitored easily and compared with calculations made from solar irradiation data to raise warnings on a daily basis in case of a shortfall. Important information on for example State of Charge of the battery storage and other relevant energy and power value from the system including time stamps of diesel generator operation can be detected and rectified before they have an appreciable effect on system performance. A data monitoring system shall be installed to meet the requirements above and has to give the opportunity to receive the system data via GSM and to allow remote access to the solar PV hybrid power plant. The electrical power supply of the data monitoring system shall be from DC power of the battery. Corresponding electrical adaption of the monitoring to the DC power supply level shall be installed. Remote monitoring and data acquisition through Remote Monitoring System Software at the REREC location with latest software/hardware configuration and service connectivity for online / real time data monitoring complete to be supplied by the supplier. Provision for interfacing these data on REREC server and portal in future shall be kept. Reliable sensors for solar radiation, temperature & other electrical parameters are to be supplied with the data logger unit. Communication interface the entire system can be operated and monitored via various interface viz (RS232, RS485, MPI, Profit-bus, Telephone modem), in addition to the information indicated on the operator panel. Remote Monitoring may be achieved directly via inverter interface or via third party data acquisition system. Remote monitoring system should allow for rudimentary parameter adjustment.

Lightning & Over Voltage Protection

- The Solar plant shall be provided with lightning and over voltage protection connected to proper earth pits. Earthing pits shall be measured to have an earthing resistance of 1Ω or less at the time of installation. If this level cannot be obtained with the soil at the facility, then soil conditioning (engineered backfill) shall be implemented to improve the earthing resistance within acceptable levels.
- The main aim of over voltage protection is to reduce the over voltage to a tolerable level before it reaches the PV or other sub-system components as per NFC 17-102. The source of over voltage can be lightning or other atmospheric disturbance.
- Lightning mast/conductor, placed at strategic locations, shall be used to protect the arrays against lightning protection. The bidder shall give detailed design showing location of lightning conductor/masts and the protection coverage on array without causing any shadow on the modules to the Employer.
- All design shall be submitted to the Employer before its implementation.
- Necessary concrete foundation for holding the lightning conductor in position to be made after giving due consideration to maximum wind speed and maintenance requirement at site in future.
- The lightning conductor shall be earthed through GI flats and connected to with earth pits per applicable International Standards. Three earth pits shall be provided for each lightning arrestor. Each lightning conductor shall be fitted with individual earth pit as per required Standards including accessories, and providing masonry enclosure with cast iron cover plate having locking arrangement, watering pipe using charcoal or coke and salt as required as per provisions of IS.

- Design calculations, technical specification and requisite test reports of lightning mast conforming to international standards along with detailed write up in 4 sets shall be provided for approval to the Employer.

Earthing Protection

- Earthing system shall be in strict accordance with IEC specified and applicable Electricity Rules / Acts and Guidelines for connections.
- Earthing system network / earth mat shall be of interconnected mesh of GI flats buried in ground in the plant. The interconnections shall be done with GI flats of suitable sizes. The earth conductors shall be free from pitting, laminations, rust, scale and other electrical, mechanical defects.
- Metallic frame of all electrical equipment shall be earthed by two/three separate (as per KPLC norms) and distinct connections to earthing system, each of 100% capacity, with the exception of solar panels, for which alternate means of code-compliant earthing shall be admissible if integrated with racking design.
- Metallic sheaths / screens, and armor of multi-core cables shall be earthed at both ends. Metallic sheaths and armor of single core cables shall be earthed at switchgear end only unless otherwise approved.
- Each continuous laid lengths of cable tray shall be earthed at minimum two places by G.S. flats to earthing system, the distance between earthing points shall not exceed 30 meter/ KPLC norms. Wherever earth mat is not available, necessary connections shall be done by driving an earth electrode in the ground.
- Neutral connections and metallic conduits/pipes shall not be used for the equipment earthing.
- Lightning protection system down conductors shall be terminated to separate earth electrodes & not be connected to other earthing conductors.
- Connections between earth leads and equipment shall normally be of bolted type. Contact surfaces shall be thoroughly cleaned before connections. Equipment bolted connections after being tested and checked shall be painted with anti-corrosive paint / compound.
- Back filling material to be placed over buried conductors shall be free from stones and harmful mixtures. Back filling shall be placed in layers of 150 mm.
- Earth pit shall be constructed as per IEC standard specified, Minimum spacing between electrodes shall be 2000 mm. Earth pits shall be treated with salt and charcoal/chemical Powder Earthing.
- Earth resistance at earth terminations shall be measured and recorded. All equipment required for testing shall be furnished by successful bidder.
- Each array structure of the SPGP yard/shed shall be grounded properly as per standard.
- The Array Structure is to be connected to earth pits as per standards. Junction boxes shall be connected to the main earthing conductor/electrode.
- The arrays shall be in protected zone of lightning arrester/spheres by installation of suitable lightning surge diverters/arrestors. The earth electrodes for the same shall have to be completely separate from the plant/array earthing.
- All metal casing/shielding of the plant shall be thoroughly grounded in accordance with applicable electricity act/rules/guidelines. Total earthing system installation shall be in strict accordance with the latest editions of Electricity Rules, relevant Standards and code of practices and the local statutory authority regulations.
- Necessary test point provision shall be made for bolted isolating joints of each earthing pit for periodic checking of earth resistance.

- All non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earth electrode.
- Earthing Design and Layout.
- i) The successful bidder shall submit Design along with drawings showing the location of lightning arresters and protection zones to cover all arrays against lightning for approval from Employer.
- ii) The earth mesh system design consisting of G.I Flat shall be submitted for approval of Employer.
- iii) Total plant earthing system shall be designed to give an earth resistance of less than 1 ohm all along the earth mesh.
- iv) Earthing conductors in outdoor areas shall be buried 1.5 to 2M below finished graded level and these buried conductors shall be brought 500 mm above ground level for making tap connections to the equipment.
- v) All the electrodes shall be 50 mm diameter GI pipe, 3.0 m long and shall strictly be as per IS: 3043/IEC of latest revision.
- Each phase of lightning arrestor shall be earthed through GI flat (considering salty weather) connected to an individual earth electrode.
- If present, air break switches and DO fuses shall also be earthed GI flat to the main earthing flat.
- Metallic conduits and pipes shall not be used as earth continuity conductor.
- GI conductors shall be provided for earthing the lighting fixtures, receptacles, junction boxes, lighting conduits and this conductor in turn shall be connected to the main earthing conductor / electrode.

Equipment Housing

Power House

The Multi-Mode Inverter (hybrid), battery storage, data monitoring equipment, and all monitoring equipment shall be installed indoors with equipped Air conditioner and fire suppressing Unit according to the equipment manufacturer's recommendations. All electrical boards and LV protections will also be installed indoors. All recommendation and regulations for installing the selected batteries in has to be taken into account. The Diesel Generator shall be installed outdoors.

The Power House shall also be equipped with safety and protective elements required for operations, maintenance and emergencies. This will include fire extinguisher, water source, protective goggles and clothing, etc.

- Air Conditioner is a must for all rooms / compartments in the Power House.
- "Double Layer Roof" to reduce heating room from direct sunlight.
- Outer roof layer must be big enough to avoid direct sunlight heating technical rooms / compartments, over the course of the year.
- 100% Insulated walls to engineers' approval to reduce outside heat energy flow.

Housing Solution

The inverters and all monitoring equipment shall be installed with Air conditioner according to the equipment manufacturer's recommendations in a standard structure and the tenderer to submit with the bid document detailed design of the structure which will house all the equipment and present for approval.

Thermal insulation inside the structure is advised. Proper wall mounting support for Inverter and AC distributions is advised. Pre-installed Inverter and other equipment is not recommendable. Preinstalled equipment will lead to loss of manufacturer warranty as damage may occur due to transport (shaking). Pre-installed battery is not possible due to safety regulations.

Electrical Protection

The solar PV hybrid system shall contain all necessary electrical protection to ensure the safety of persons and goods. At the LV distribution boards, thermomagnetic circuit breakers with C trip curve shall be

included meeting IEC 60947-2 requirements. It shall also be included differential residual current circuit breaker for the person protection (RCD).

It is also important to implement a lighting protection system, ensuring the coverage of the whole PV plant, Power House, Container and Diesel Generator. Installation & Commissioning by approved / certified / licensed company.

Sub-station

The solar PV hybrid system shall contain an 11 kV step-up substation to collect power generated at low voltage (415 V from solar inverters) and step it up to 11 kV for distribution

The substation consists of:

- 11KV Step-up transformer
- 415 V switchgear for protection, switching, and isolation.
- Busbars to combine multiple inverter outputs.
- Protection and metering systems (overcurrent, earth fault, differential, energy meters, CTs & PTs).
- Earthing and lightning protection to ensure safety and reliability.
- Auxiliary systems such as control panels, battery banks/UPS, and communication links for remote monitoring.

Transmission and Distribution Line

The electricity distribution from the generation plant to the end consumers will be done by means of a distribution line formed by a Medium voltages (MV) line at 3-phase 11 KV/ 50 Hz. This will be done in a separate scope from this tender.

The power from the solar plant shall be connected to the electrical system of REREC through a 500 amps breaker and isolator of the same capacity to be provided by the tenderer. The tenderer shall also provide and install an energy tariff meter complete with current transformers (CTs) for measuring energy generated by the solar PV hybrid power plant.

Balance of System

The Balance of System (BOS) encompasses all components of a solar PV hybrid power plant that includes wiring, switches, a mounting system, and one or many inverter battery bank. BOS refers to all components of a PV system other than the modules. In addition to inverters and racking, this includes

General Rating

The solar PV hybrid power plant has to be capable of producing the maximum output under the continuous ambient temperatures, altitude and relative humidity given below:

Temperature: Max. 45 degrees Celsius

Min. 18 degrees Celsius

Average 32 degrees Celsius

Relative humidity: 90 – 100 %

Cables & Wiring

All instruments and panel wiring shall be of heat resisting and self-extinguishing type in compliance with IS. Plastic or porcelain cleats of the limited compression type shall be used for holding wiring runs. All wires shall be suitable for bending to meet the terminal studs at right angles. Metal cases of all apparatus mounted on panels shall be separately earthed by means of copper wire or strips.

The following color scheme of the wiring shall be used as per standard for three phase systems.

- a) AC three phase circuits:
 - i. No.1 Phase : Red.
 - No.2 Phase : Yellow.
 - No.3 Phase : Blue
 - ii. Neutral conductor : Black
 - iii. Connection to earth : Green
- b) D.C. circuits
 - i. Positive :Red
 - ii. Negative :Black

Cables and Accessories

Cables of appropriate size to be used in the system shall have the following characteristics:

- i) Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- ii) Temp. Range: –100C to +800C
- iii) Excellent resistance to heat, cold, water, oil, abrasion, UV radiation.
- iv) Flexible.
- v) Sizes of cables between array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.

All the cables shall conform to the requirements of the related standards and codes for:

- i) DC cable for photovoltaic system
- ii) XLPE / PVC insulated (heavy duty) electric cables for working voltages up to and including 1100V.
- iii) Recommended current ratings
- iv) Low carbon galvanized steel wires, formed wires and tapes for armoring of cables
- v) VC insulation and sheath
- vi) Cross linked polyethylene insulated PVC sheathed cables
- vii) Conductors for insulated electrical cables and flexible cords.
- viii) Standard test method for density of smoke from the burning or decomposition of plastics.
- ix) Tests on gases evolved during combustion of electric cables.
- x) Tests on electric cables under fire conditions.

Main Technical Specification of Solar PV Hybrid Power Plant

Table 1 summarizes the required main technical specification of the solar PV hybrid power plant.

Pos 1	General Specification	
1.1	Name of project site	Kibuogi Island solar mini grid
1.2	Coordinates	-0.529982,34.091623
1.3	Site altitude	259M
1.4	Daily load demand	500 kWh/day
1.5	Annual yearly demand rising for the next 5 years	3 %
1.6	Renewable Energy fraction	90 %
Pos 2	Solar PV Generator	
2.1	Solar PV Generator Capacity (Minimum)	100Kwp
2.2	Module type	Silicon monocrystalline (Mono PERC) /by-facial
2.3	Module nominal power	>500 W
2.4	Inverter type	Hybrid inverter
Pos 3	Battery Storage	
3.1	Battery type	Lithium-Ion type
3.2	Battery String Voltage	=> 500 V DC
3.3	Min. Battery Usable Capacity	70% of the plant daily generation (provide design calculations)
3.4	Battery cycles	6000 at 80% DOD @25°C
Pos 4	Diesel Generator	
4.1	Fuel type	Diesel
4.2	Generator type	Synchronous generator
4.3	Generator power output	3-phase
4.4	Number of generators	1
4.5	Rated power	50 kVA
4.6	Start behavior	Automatic-startup
Pos 5	AC distribution line (To be done by REREC)	
5.1	Distribution type	Medium voltage 11KV/50 Hz
5.2	Number of LV transformer	None
Pos 6	Data Monitoring system	
6.1	Energy and power values from solar PV power plant	1No.
6.2	Data from battery management	1No.
6.3	Digital energy tariff meter for the Trading Centre Out Put	2No.
6.4	Control Panel for Energy and power values from Diesel Generator)	1No.
6.5	GPRS/ GSM Modem for remote assess	1No.

6.6	Meteorological sensors (solar radiation, ambient temperature, wind speed)	1No.
-----	---------------------------------------------------------------------------	------

NB: Consider a peak sunshine hours of 4.5 in all design calculations

Documentation

All work steps will be documented in detail throughout the construction phase. The documentation will include as build plans, datasheets, technical specifications, and installation and operation manuals for each component of the installed system.

Operation & Maintenance Manuals

One (1) original and two (2) copy sets (hard and soft copies) of comprehensive operating and maintenance manuals bound in hard covers shall be supplied prior to handing over the plant to the employer. The manuals shall detail out the operating regimes and critical settings and tolerance to be maintained during inspection of the plant. The O & M manuals will be provided after completion of the installation.

Drawings

The tenderer shall submit together with the tender document drawings and parts identification lists for every item of the plant together with a full list of all sub-contractor's addresses fax numbers, emails, etc. The drawings shall contain exploded views/diagrams of the main assemblies comprising the plant together with a means of identifying each component including its part number, reference and description as per the manufacturer's coding system. The contractor's coding system shall not be acceptable.

The tenderer shall submit with original and two copies of his tender general arrangement drawings and typical details of the essential items of the plant offered which will be used in during the erection period.

All drawings shall be submitted folded to A4 size with the drawings box visible on the outside. After commissioning the plant, two sets of as built drawings will be handed over to the Employer, which shall include but not limited to:

- General arrangement drawings, assembly drawings, pipe work layouts, terminal point details, foundation and erection drawings.
- Single line logic diagrams for all control systems and main electrical systems
- Wiring and pipe work diagrams, interconnection diagrams and schematic diagrams for equipment modules and systems.

After award of the tender, discussions will be held with the employer on the drawings submitted with the tender that will lead to final approval of the drawings by the employer. Before the final approval, the drawings shall be modified as necessary if requested by the employer.

The taking over certificate will not be issued until the built drawings, O&M manuals and catalogues have been submitted and accepted by the employer.

Site Preparation

The tenderer or the local contractor has to prepare the site. The services will include all deliverables as mentioned below.

The site preparation will include:

- Trenching for underground cables, preparation of ways and pipes for wiring are not part of site preparation. The installation contractor has to prepare and use a container as power-house in respect with the individual components manufacturer installation notices if container solution is required

The tenderer will execute the following work in regards to the site set-up:

- Clearing of scrubs and leveling of grounds

- Erection of brick buildings to host the batteries, inverters and Generator if required □
- The preparation of an adequate space where the container shall be placed if required
- Installation of a steel mounting structure on which the panels will be mounted.
- Storm water drainage works as may be necessary based on the topography of site provided

The installation company is to note that the steel mounting structure will be prepared according to the dimensions of the quoted solar panels. The steel structure will be including the aluminum frames, which are to be supplied by contractor.

Installation Phase

The installation phase will include the following steps depending on the solar PV hybrid power plant design and specification:

- Mounting of modules on pre-installed mounting structures
- Installation of PV grid tied inverters and cabling with the AC distribution
- Installation of battery inverter charger and cabling with the battery and AC distribution
- Installation of battery bank and cabling with the system
- Installation of the Generator and cabling with the system
- Cabling of solar array, array to grid powerhouse or container
- Installation of auxiliaries and remote monitoring devices
- Labeling of the completed system
- System DC and AC wiring
- Installation of 0.415/11KV substation and associated protection systems
- Further necessary installation work

Commissioning Test

Complete commissioning of the power plant, function tests, and trial service of the power plant. All installations and equipment will be inspected and their functionality will be tested. All components, electrical works and civil works will be visually checked for compliance with the technical specification, Guidelines/Manuals of delivered equipment, build plans, state of the art engineering works.

Commissioning tests will be carried out to demonstrate that the solar PV hybrid power plant is operated according to the technical specifications and under all available operating conditions. The contractor will sign a final acceptance certificate.

The tenderer shall submit with the bid document a schedule of commissioning test to be contacted during testing and commissioning and the expected output values where applicable

Operator Training

The technical commissioning of the solar plant will include training on the operation of the power plant components. The training will include the maintenance of the batteries, the remote monitoring and operation of the Generator both on manual and automatic mode. It will be verified that the operating personnel are adequately trained.

Information for Installer Companies

The contractor is obliged to adhere to the Energy (Solar Photovoltaic Systems) Regulations from 2012, which state “A person shall not import, distribute, promote, sell or install any solar PV system unless he is licensed by the Commission as a vendor.

System Layout

The solar PV hybrid power plant shall consist of following main equipment's/components following the design specifications of the contractor:

- Solar module array

- Mounting structure and civil foundation
- Hybrid inverters
- Battery bank
- Battery mounting rack
- Diesel generator and diesel tank
- 415V Control Panel set with 1 No incomer and 1 No Feeder panels.
- 0.415/11KV substation
- DC and AC-Cabling
- Control panel with switcher, disconnectors and safety elements
- Sub-station outdoor equipment – CTs, VTs, Isolators
- Earthing and lightening protections.
- Data monitoring system
- Housing of equipment

Schematic Diagram

The design of the solar PV hybrid power plant has to follow DC coupled architecture operation. The system has to be modular expandable for future development. The installer has to provide the schematic drawings for approval by the employer before installation.

Notice Board

A notice board 1.5m by 1m made of a continuous sheet metal with steel angle line supports 2” by 2” by 3mm and 1.5m high shall be erected at the gate of the beneficiary institutions and shall read as thus:

THIS SOLAR PV HYBRID SYSTEM AT

(FULL NAME OF THE TRADING CENTRE)

HAS BEEN IMPLEMENTED BY THE NATIONAL GOVERNMENT THROUGH

THE RURAL ELECTRIFICATION AND RENEWABLE ENERGY COPORATION

This writing should cover over 80% space of the notice board (65mm Text Height). Any other writings should strictly not be included.

CIVIL AND STRUCTURAL WORKS

Types of works

- a. The civil and structural works to be constructed under this Contract include the following:
 - Work for access and SPGP internal road.
 - Earthworks for SPGP platform and associated works.
 - 100mm layer of ballast aggregates to solar field platform.
 - Water harvesting and Storage.
 - Storm water drainage.
 - Perimeter fence, solar field fence substation fence, gate, guard house
 - Concrete foundation bases and Mounting works.
 - Genset Plinth foundation, its shed and fencing off of the genset.
 - Cable trenches.
 - Masonry Control room to accommodate all indoor equipment including BESS.

- Office building fitted with furniture (cabinets, chairs and office table) to accommodate two to three operators.
 - 2 Door VIP Pit latrine.
 - Lightning protection system.
 - Fire protection system. (Fire extinguishers, fire detection and fire suppression)
 - Any other works necessary for full completeness of SPGP.
- b. The contractor shall be responsible for designs of all the civil and structural components and implementation of approved designs. Detailed Geotechnical investigation and Topographical survey at required locations for the purposes of foundation design will be done. The required locations for the geotechnical survey shall be agreed with the employer. The details of beacons and benchmarks shall be provided in the topographical drawings.

Control Room

14.2.1 The control room shall be Masonry. The control room design shall be subject to employer's approval.

- 14.2.2 The Control room shall accommodate the following:
- The Battery Energy Storage System (BESS)
- The inverters.
- AC/DC distribution Boards.
- Remote/local monitoring equipment.
- All other indoor electrical equipment/switchgear

14.2.3 The control room shall be fitted with Fire extinguishers to be mounted both indoor and Outdoor on positions approved by the employer.

14.2.4 The control room shall be fitted with Air Conditioners as specified in this document. The sizes of all ACs shall be optimized design based on the room spaces, temperature and equipment type (including Lithium Ion batteries as per manufacturer's specifications) and subject to employer's approval.

14.2.5 An emergency door exit to be provided in the control room, subject to approval by the employer.
Note: The control room design shall be subject to employer's approval.

Office Building.

14.3.1 The office building shall be Masonry. The office building design shall be subject to employer's approval.

14.3.2 Office furniture (cabinets, chairs and office table) to employer's approval shall be supplied and fixed to accommodate a minimum of three operators.

14.3.3 Fire extinguishers shall be mounted on positions approved by the employer.

14.3.4 Sufficient windows and ventilation to be provided for lighting and cooling taking into account the expected high temperatures in the proposed project areas.

Guard House

14.4.1 A guard house located at the main gate shall be constructed. The guard house shall be of Masonry. The guard house design shall be subject to employer's approval.

Pit Latrine

14.5.1 A twin VIP masonry pit latrine to design, shall be constructed. The walling and floor to be tiled and doors to be made of steel. A ventilation pipe of minimum 150mm to be installed and the roof sheeting shall be hot dip galvanized troughed mild steel sheeting and shall be of minimum thickness 0.5 mm. A security light shall be provided for purpose of lighting at night.

Sequence of Construction

- 14.6.1 The Contractor must complete all the civil and structural works in time to provide a clean and complete site for the mechanical and electrical erection.
- 14.6.2 The Contractor shall be responsible for timely delivery of materials to site and for compliance with the specified or agreed construction Programme.
- 14.6.3 The office building, control room, guard house and pit latrine shall be constructed away from the solar field to avoid shading effect.

Drawings

- 14.7.1 Any Drawings issued with these documents are for tendering purposes only. Drawings for this project shall be made by the Contractor or his civil consultant, and shall be to the approval of the Employer.

Plan of Operations and Temporary Works

- 14.8.1 The Contractor shall, submit to the Employer a fully detailed programme showing the order of procedure and method by which he proposes to carry out the construction and completion of the Civil Engineering works, and particulars of the organization and staff proposed to direct and administer the performance of the Works.
- 14.8.2 The information to be supplied to the Employer shall include Drawings showing the general arrangements of his temporary offices, camps, storage sheds, buildings and access roads, and details of Constructional Plant and Temporary Works proposed.

Water Supplies, Storage and Reticulation

- 14.9.1 The Contractor shall make his own arrangements for the supply of palatable water for his staff on site and water for construction works and all the mini-grids water needs for the O&M period including soft water for regular cleaning of solar panels as per specifications.
- 14.9.2 The Contractor shall obtain the Employer's or the Project Manager's prior approval before utilizing any water source for the Works.
- 14.9.3 The quality of water shall be safe for drinking and washing of panels, and should be tested to meet the requirements. Important to Note is that, washing of solar panels does not require salty water and also the quality of drinking water should be within acceptable standards as guided by relevant authorities, otherwise it should be treated and purified if it does not meet the threshold. Storage tanks and distribution tank shall be provided, with one 10,000 liters water tank and one 5000 liters water tank for water harvesting, both ground mounted to supply water in the mini-grids.
- 14.9.4 The cleaning of the panels shall be done using soft water or any other suitable alternative method subject to employers' approval.
- 14.9.5 The Contractor must make all arrangements to abstract water and must pay royalty to the owners. These costs shall be included in his prices.

Employer's Approval of Finished Works

- 14.10.1 The Contractor shall obtain the approval of the Employer for each section and each stage of construction. The Contractor shall not proceed with any subsequent stage, until all tests required by the Employer have been carried out, and the results have shown that the section complies with the Specification. Any works rejected by the Employer as not complying with the Specification and quality standards, shall be replaced by the Contractor at his own expense.

Basic Survey and Setting Out

- 14.11.1 The Contractor will survey the sites in detail, and the exact locations shall be agreed with the Employer.

- 14.11.2 The details of beacons and benchmarks shall be provided in the topographical drawing.
- 14.11.3 The Works shall be located on the drawings and the Contractor shall appoint a suitably qualified Surveyor to set out the Works from the beacons and shall plot cross sections at 20 m intervals and submit to the Employer for approval.
- 14.11.4 No separate payment will be made for any work in connection with the setting out of the Works, nor any other Works required by the Contractor to ensure the accurate location and construction of the Works

Earthworks

- 14.12.1 Earthworks shall be under the contractors' scope and considered fully priced by the contractor. The turnkey contractor is responsible for making the site ready by clearing of bushes, removal of trees (if required), leveling of ground (wherever required) etc. for commencing the SPGP.
- 14.12.2 The contractor is also responsible for any necessary earthworks (cut and fill) to modify the site to suitable profiles. Slope protection and landscaping shall also be carried out on any areas with steep Cuts or fills.
- 14.12.3 All earthworks up to formation shall be formed and completed to the correct lines, slopes, widths and levels shown on the Drawings and with the sub grade parallel to and at the correct depth below the profile, camber, cross fall or super elevation shown for the finished level, unless otherwise directed by the Employer.
- 14.12.4 Embankments and fills shall be constructed only of suitable material obtained from the excavation of cuttings. If the Contractor encounters material which he considers unsuitable for earthworks, then he shall forthwith inform the Employer, who shall instruct the method of use or disposal of such material. If insufficient material can be obtained from the cuttings, additional material may be borrowed from approved borrow pits.
- 14.12.5 The Employer may direct that certain soils be excluded from certain layers and other soils set apart or obtained from borrow and used only for these layers, in which case the Contractor shall comply with the Employer's or the Employer's directions and shall allow in his price for such selection of materials.
- 14.12.6 Where, in the opinion of the Employer, unsuitable material occurs in cuttings, the Contractor shall excavate it to the depths and widths specified in the Geotechnical report and replace it with selected fill material to form an improved formation.

Order of Work

- 14.13.1 The construction of cuttings, side drains and embankments shall proceed in a methodical and orderly manner. It shall be solely the Contractor's responsibility to arrange his methods and programme of work so as to ensure that the earthworks are carried out by the most efficient and economical method possible with the type of plant employed on the Works.
- 14.13.2 All trimming of cuttings and embankments, drains and shoulders to the specified slopes and shapes, shall be carried out concurrently with the earthworks that are being carried out at that particular site and level.

Fill Material

- 14.14.1 "Fill-material" shall mean material deposited in accordance with these specifications from any of the classes specified in order to build up an earthworks construction to formation level as shown on the Drawings or as ordered by the Employer. The Contractor shall obtain the fill material from a source approved by the Employer.
- 14.14.2 After doing the necessary earthworks (cut and fill) to modify the SPGP site to suitable approved design profiles, the contractor shall fill the finished ground level (FGL) of the solar field with

Murram and compact to the designed FGL formation. In addition to the murram layer at the solar field, a ballast surfacing of minimum thickness of 100mm will be done.

14.14.3. Fill materials will generally be obtained from cuttings. If the material obtained from this source is insufficient or unsuitable, extra material shall be obtained from borrow areas. All fill material (other than rock fill in lower layers) shall pass 75mm BS sieve size. The aggregates for the solar field ballast surfacing will be obtained from the nearest quarry, subject to employer's approval.

14.14.4. The following materials are generally unsuitable for construction of fills.

- All materials containing more than 5% by weight of organic matter (such as top soil, materials from swamps, plants and vegetable matter)
- All expansive soils such as black cotton soils with swells of more than 3% as measured in the CBR test.
- All clay soils with plasticity index exceeding 50.
- All materials having a moisture content of 105% of the optimum moisture content (standard compaction).

14.14.5. Rock fill can be used provided that boulders greater than 0.2 M3 in volume or 600 mm in size are not used and that this material is not placed within the top 600 mm to formation level. The best materials from cuttings or borrow areas should be reserved for the upper layers of the fill.

Compaction of fill

14.15.1. Embankments and fills shall be laid out and compacted to achieve a stable platform with sufficient bearing capacity and stability.

14.15.2. Materials other than rock fill shall be placed in layers of compacted thickness not exceeding 300 mm. Thicker layers can only be permitted where very heavy compacting equipment is available and trial sections have proved that the required compaction will be readily achieved over the layer depth. The minimum layer thickness shall be twice the maximum particle size of the compacted material.

14.15.3. Fill material shall be compacted throughout to a dry density of at least 95% MDD at OMC (standard Compaction AASHTOT99) except the top 300 mm of the fill which shall be compacted to 100% MDD (AASHTO T99).

14.15.4. Where rock fill is used it should be placed in the bottom of the embankment. The largest sizes shall be placed in layers of 1.0 meter thick. The interstices shall then be filled with smaller rocks and approved filler material. The whole layer shall then be compacted until the interstices are completely filled or until the required settlement is obtained. Heavy vibratory rollers are generally the most suitable machines for compacting rock fill.

14.15.5. The specified compaction shall be achieved over the full width of the embankment.

Any area inaccessible to the roller shall be consolidated and compacted using approved mechanical tampers.

Compaction of in situ Sub grades

14.16.1 After removing the top soil and/or 600 mm of unsuitable /expansive soils or as directed in the geotechnical report and before placing fill, improved sub grade or gravel wearing course, the upper 300 mm of in situ sub grade will be compacted to 100% MDD standard compaction. Compaction in cuts without improved sub grade will likewise be compacted to 100% MDD standard compaction.

Spoil Material

14.17.1 "Spoil-material" shall mean material excavated in accordance with these specifications from any of the classes specified, and which, being obtained from the excavation of side drains, cuttings or below the road, embankment is unsuitable for the requirements of the Works. Spoil material shall

be removed from the Site to a spoil tip which should be to an approved site acceptable by respective local authorities and shall be approved by the Employer.

Expansive Material

14.18.1 When expansive material is encountered, it shall be removed to a depth 600 mm below the formation or the existing ground level, whichever is greater. Material removed shall be stockpiled for later use in slope protection or spoiled to a tip as instructed by the Employer.

Surplus Material

14.19.1 "Surplus-material" shall mean material excavated in accordance with these specifications from any of the classes specified and which is temporarily surplus to the fill requirements and shall be carted to a designated stockpile for re-use later elsewhere in the Works, or to an approved spoil tip.

Excavation in "Rock"

Excavation Level

Unless otherwise directed, the formation of the platform can be founded on rock. However, rock shall be excavated to an average level 150 mm below the formation and in no place less than 100 mm below the formation.

Backfilling for Surfaces

Any excess excavation in rock below the formation shall be backfilled and compacted. Excess excavation in the invert of drains shall not be backfilled, but the rock surfaces shall be trimmed, and all loose particles removed, to allow free drainage of water.

Excess Excavation of Slopes

Where side slopes are over-excavated, no backfilling will be required but the slopes shall be trimmed to a neat shape and safe angle as is acceptable to the Employer. The sloping sides of all cuttings shall be cleared of all rock fragments, which move when prized with a crowbar.

Hard Material

The provisions of this Clause do not apply to hard and common materials, which materials shall be excavated to the lines and levels shown on the Drawings or as instructed, within the permitted tolerances.

Drainage of Earthworks

14.21.1. All cuttings, embankments and borrow pits shall be kept free of standing water and drained during the whole of the construction.

14.21.2. Should water accumulate on any part of the earthworks, either during construction or after construction, until the end of the maintenance period, giving rise to soaking or eroding conditions in the earthworks, the Employer may order the Contractor to remove and replace at the Contractor's expense any material which has been so affected.

14.21.3. All drains shall be maintained throughout the Contract in proper working order.

14.21.4. The Contractor must allow in his price for draining the earthworks satisfactorily at all stages during the construction and arrange his methods and order of working accordingly.

14.21.5. The entire platform shall be adequately drained and all buildings; control room and office should be well drained.

Removal of Top Soil

14.22.1. The top soil within the areas of the development of SPGP shall be stripped to an approximate depth of 200 mm and stockpiled at locations agreed with the Employer for later use on embankment slopes or dumbered in approved areas.

14.22.2. Overburden in the borrow pit shall also be stripped to a depth specified by the Employer and stockpiled for later use in rehabilitation.

Access and Internal Road

14.23.1 Suitable approach road and internal access road in all mini-grids within the complex boundary of SPGP as per approved design shall be made to ensure safe and easy transportation of equipment and material.

14.23.2 Where necessary access roads to the SPGP sites shall be constructed to gravelling / murrum standard. In general, for gravel access, gravel wearing course materials should comply with the following:

- They should have sufficient cohesion to bind the particles together and prevent the surface from raveling and becoming corrugated in the dry season.
- The amount of fines and plasticity should be limited so as to avoid the occurrence of dusty and slippery conditions during the dry and wet weather respectively.

14.23.3. Gravel materials are excessively coarse in their “as dug” state. Appropriate processing is therefore necessary to bring them to the required gradation. This is normally done on the road by using grid, cleat or sheep’s foot rollers. Oversized particles which cannot be broken down to the required size shall be removed.

14.23.4. The minimum thickness of a compacted layer shall not be less than 125 mm.

14.23.5. Internal SPGP road and walk paths shall be compacted to 100% MDD after grading. The road shall have a well-done gravel finish. The road shall be constructed to a fall that will allow proper drainage of the road. The road shall have adequate drainage provided. The design shall be to road design manuals. The road shall have minimum width of Four (4) meters.

14.23.6. For the gravel finish internal SPGP road, the single gravel layer should consist of a minimum thickness necessary to avoid excessive compressive strain in the sub grade and to compensate for the expected gravel loss under traffic during the period between re-gravelling.

14.23.7. Where the top 300 mm layer of the formation level embankment or natural ground sub grade has a CBR greater than 5%, the following thicknesses shall be provided:

- Roads not subjected to heavy commercial vehicles– The minimum compacted thickness of 125mm.
- Access roads outside the SPGP plant and roads within the site likely to be subjected to heavy commercial vehicles during construction and during periodic maintenance. – Provide a 250 mm thick compacted layer.

In addition to the above, where the in-situ sub grade or the embankment material has CBR strength of less than 5% then:

- Top 300 mm layer of the fill / embankment shall be made with selected imported material with CBR (after 4 days soak) of between 7 and 13%.
- Where in situ sub grade, an improved sub grade 300 mm thick of imported materials with CBR (4 days Soak) of between 7 and 13% shall be laid.

The above thickness shall extend to cover the shoulders. A cross fall of 4% shall be provided.

14.23.8. Compaction will be in layers not thicker than 200 mm and will achieve compacted densities of 95% MDD (Modified AASHTO T180) at compaction moisture contents of between 80% and 105% OMC.

Grading Requirements

14.24.1 Grading curve of the gravel should be within the class 1 envelope (initial daily number of commercial vehicles less than 150) to guarantee good stability. The grading to consider is that obtained after processing and compaction.

Table 14.24.2: Gravel Grading Requirements

Grading after compaction		
Sieve Size (mm)	% Passing by weight	
	Class 1	Class 2
37.5	-	100
28	100	95 – 100
20	95 – 100	85 – 100
14	80 – 100	65 – 100
10	65 – 100	55 – 100
5	45 – 85	35 – 92
2	30 – 68	23 – 77
1	25 – 56	18 – 62
0.425	18 – 44	14 - 50
0.075	12 – 32	10 - 50

Plasticity Requirements

14.25.1 Plasticity index of the gravel should not exceed 15 and shall not be less than 5 in wet areas (annual rainfall greater than 500 mm per year). In dry areas (annual rainfall less than 500 mm per year) maximum plasticity index shall be 30 but subject to a minimum of 10.

Bearing Strength Requirements

14.26.1 A minimum CBR (after 4 days soak) of 20% at 95% MDD and OMC (Modified AASTO T180) is required.

Quality Control

14.27.1. Tests shall be performed by the contractor on soils and gravels undergoing compaction under the supervision of and at frequencies determined by the Employer and shall include:

- Determination of the Atterberg Limits in accordance with BS 1377.
- Determination of particle size distribution in accordance with BS 1377.
- Determination of dry density / moisture content relationship in accordance with BS standard compaction and modified AASHTO T180 as appropriate.
- California Bearing ratio (CBR) in accordance with AASHTO T193.
- Field dry density as set out in BS 1377.

Tolerances

14.28.1 The following tolerances will be permitted in the finish of the formation to roads and platform:

- a) The level of the formation should be within +/- 100 mm of that specified.
- b) On the final trimmed slope of earthworks, a variation of + or - one fifth of the specified slope will be allowed.
- c) The tolerances permitted in the overall width of the bottom of cuttings shall be plus or minus 150 mm in the distance between center lines and the toe of cuttings slopes, and plus 150 mm in the case of embankments.

Materials for the Works

General

- 14.29.1.1 All materials shall comply with appropriate local or regional standards unless otherwise required hereinafter. Such standards shall be to the approval of the Employer.
- 14.29.1.2 The Contractor shall before placing any order for materials or manufactured articles for incorporation in the Civil and structural Works, submit for the approval of the Employer the names of the firms from whom he proposes to obtain such materials, etc., together with a list of the materials and manufactured articles giving the origin, quality, weight, strength, description, etc., which he proposes that the firms should supply. No materials or manufactured articles shall be ordered or obtained from any firm of which the Employer shall not have previously approved.
- 14.29.1.3 All materials shall be delivered to the site within sufficient period of time before they are required for use in the Works to enable the Employer to take such samples as he may wish for testing and approval. Any materials condemned as unsuitable for Works shall be removed from the Site at the Contractor's expense. Contractors price to include these testing of materials.
- 14.29.1.4 The Contractor may propose alternative materials to those specified, provided that they are of equivalent quality and, subject to the Employer's or the Employer's approval such materials may be used in the Works.

Standards

Concrete pipes, porous concrete pipes, cast iron manhole covers and gratings, bricks, concrete kerbs, bituminous surfacing, cement, steel and aggregates shall comply with local or regional standards as per specified standards in the document.

Stone for Pitching

Stone for pitching to drains, inlets and outlets of culverts, to embankments and around structures shall consist of sound un-decomposed rock. Precast concrete tiles may also be used.

Stone for Solar Field Platform Surfacing

- 14.29.4.1 The stone shall be hard and durable crushed rock with a maximum particle size of 60 mm and not more than 15% shall pass a 9.5 mm sieve.
- 14.29.4.2 The stone layer to be spread uniformly over the finished surface of the platform shall have a thickness of 100 mm.

Drainage and Storm Water

- 14.30.1. The contractor shall construct the SPGP station to a fall that will allow proper self-drainage of the site. This shall be done in conjunction with the earthworks design to ensure no flooding shall be experienced within the site. The drainage designs shall refer to data acquired from the Kenya Meteorological department with site specific criteria over a period of minimum 50 years and shall provide for the worst-case scenarios. The number of runs and outfalls and pipe sizing must be sufficient to cope with the severest precipitation, with a factor of safety of 1:2 within the SPGP site and other areas in the site. The drainage must allow uninterrupted access.

- 14.30.2. Drainage shall be in accordance with relevant Codes for Practice published by authoritative Standards organization such as the British Institution, e.g., BS 8301, BS 6031 and Eurocodes.
- 14.30.3. Embankments and cuttings are to have drainage facilities at their top or bottom. The formation level of the site is to be formed with uniform cross-falls of about 1 in 300 in the same direction as the natural drainage path of the surrounding environment. Drainage minimum slope shall be 1 in 200.
- 14.30.4. Surface water from roofs of buildings shall be drained to down pipes, which connect with the general site drainage system. Surface water from the control room building and office roof shall be drained to the main storage reservoir tank.
- 14.30.5. In areas where there is a risk of water runoff the SPGP Plant shall be protected from failure by means of gabions, retaining walls, and stone pitching or otherwise to the employer's approval.

Boundary Fencing and Additional Security Measures

- 14.31.1. **Fencing:** The contractor shall fence the entire perimeter of the acquired land, to secure the developed area (Solar Field, Office, Control room etc.). There shall be a second fence to barricade the solar field, located at a sufficient distance from the solar panels, to avoid shading effect. The third fence shall be for the substation area. The Contractor shall construct all the three fences including gates where necessary and shall comply with the requirements of the following Clauses. The design of the fences shall be subject to employer's approval.
 - 14.31.1.1. All the perimeter fences shall be of minimum seven feet chain link with concrete posts. The fencing shall have barbed wire on top of the perimeter fence. Perimeter lighting shall be provided to employer's approval.
 - 14.31.1.2. The Solar Field fence shall be of chain Link with steel sections of optimized design, with a minimum height of 5 feet, to barricade unauthorized persons from accessing the Solar plant area.
- 14.31.2. **Dimensions:** Height of chain link fabric for the perimeter fence: 7 feet Height of chain link fabric for the Solar Field: 5 feet
- 14.31.3. **Barbed wire:** 3 wires above fabric, height of 300 mm, on supporting arms facing outwards from Site at 45° angles for the perimeter fence.
Maximum distance between posts or columns: 4 000 mm, except where interrupted by gate.
- 14.31.4. **Tension bars and bands:** located at terminal posts to fix fabric, bottom wire and barbed wire.
- 14.31.5. **Top rail:** "extra-strong" pipe, 43 mm outside diameter.
- 14.31.6. **Braces:** "extra-strong" pipe, 43 mm outside diameter for attaching end and gate posts to adjoining posts. Use two braces at corner and restraining posts.
- 14.31.7. **Gate width:** free distance between 2 gate posts, 1 500 mm for single gate, 5 000 mm double gates.
- 14.31.8. **Double gates:** one leaf for normal traffic, other leaf to remain closed by means of drop bolt locking into center rest, inoperable from exterior.
- 14.31.9. **Gates:** able to open in either direction to 90°.
- 14.31.10. **Gate hardware:** three hinges, latch with padlock accessible from either side of gate, latch catch.

14.31.11. **Top of posts and uprights:** weatherproof tops.

14.31.12. **Materials**

14.31.12.1. Fabric: ASTM A 392, 2 000 mm high, 3.8 mm diameter (No. 9 gauge) steel wire, 50 mm diamond pattern, twisted and barbed finish at top, knuckled wires at bottom, zinc coated.

14.31.12.2. Pipes: ASTM A 120, steel pile, hot-dipped zinc coated after welding, diameter and weight size as shown on drawings, unthreaded ends, free from burrs.

14.31.12.3. Fence fittings: ASTM F 626, hot-dipped zinc coated according to ASTM A 123.

14.31.12.4. Barbed wire: ASTM A 121, 2.51 mm diameter wire in strand (No.12-1/2 gauge), 3 strands with 4-point barbs spaced at 125 mm, Class 3 zinc coating.

14.31.12.5. Bottom wires: 5 mm (No. 6 gauge) steel wire, 500 g/m² zinc coating. This shall be surrounded by a concrete beam (C20), to hold down the fabric.

14.31.12.6. Fence fittings: ASTM F 626, steel tension bars and bands, nuts and bolts, weather proof tops of commercial aluminium alloy, malleable cast iron, or rolled or pressed steel, cast iron and steel fittings hot-dipped galvanized with 500 g/m² according to ASTM A123.

14.31.12.7. Concrete: 20MPa at 28 days

14.31.13. **Installation**

14.31.13.1. Install fencing and gates according to ASTM F 567 unless otherwise indicated, and to drawings and this Specification.

14.31.13.2. Level ground surface so that space between finished ground surface elevation and bottom of fabric does not exceed 50 mm.

14.31.13.3. Plumb and align posts to within 10 mm.

14.31.13.4. Install posts of the gate at same elevation regardless of difference in ground level.

14.31.13.5. Set posts in concrete footings in form of truncated cone, according to ASTM F 567, and as follows:

Table 14.31.5.1: Chain Link Concrete Post Footings Guidelines.

FOUNDATIONS (Dimensions)	ORDINARY SOIL		SOLID ROCK	
	Line Posts	Terminal Posts	Line Posts	Terminal Posts
Depth	1000 mm	1600 mm	300 mm	500 mm
Diameter at top	250 mm	300 mm	150 mm	150 mm
Diameter at bottom	350 mm	400 mm	150 mm	150 mm

Make joints in fabric at terminal posts.

14.31.13.6. Fasten as follows:

- Every 450 mm along top rail, braces and bottom wire;
- Every 300 mm on line posts.

Secure barbed wire to terminal and gate posts with tension bands, and to gate uprights with hooks.

14.31.13.7. Install bottom wire in middle of last line of mesh

Additional Security Measures

The contractor shall provide the following additional security measures;

- 14.32.1. Warning plates/danger plates etc. shall be provided in sufficient numbers all around the fencing as per safety requirements.

Concrete Works

Soil Investigations

The contractor shall collect all data he deems necessary for preparation of his bid. The foundation design shall be based on the bearing strength data, obtained from the geotechnical survey.

The Contractor shall be required to perform sub-soil tests within the area of the SPGP to the depth and by the method of test specified by the Employer. The details of performing the test, tools and equipment to be used for, shall be submitted to the Employer for approval.

The sub-soil tests shall be carried out by any method as stated hereafter under the supervision of a qualified person, who shall be subject to approval of the Employer.

Excavation

Excavation for concrete foundations shall be carried out in strict accordance with the requirements of the Employer and to fit in with the program of construction.

Shoring and Timbering of Excavation

The Contractor shall be entirely responsible for the safety of all excavations, for the prevention of injury to workmen and for the stability of the faces of the excavation.

The adjacent road surfaces must remain trafficable, and cracking or cave-ins must be avoided. All shoring and timbering shall be done to the approval of the Employer, who may order such shoring or timbering to be strengthened or altered if he considers this necessary in the interests of the work or to safeguard against accidents to workmen or cave-ins. For the purpose of measurement, the following categories of shoring shall apply:

Dewatering

The whole Works shall be constructed in dry conditions and the Contractor shall be held responsible for keeping all excavations free from water, whatever the source or cause may be, and shall properly deal with and dispose of water by use of sufficient temporary works, plant and appliances so as to ensure that the whole Works is executed in a satisfactory dry and safe manner, and costs for all dewatering operations shall be included in the price for civil works.

Excavation to be approved

In no case shall broke stone for under drainage or concrete be placed in an excavation until the surface on which such materials are to be placed has been approved by the Employer.

The Contractor shall advise the Employer whenever the bottom of any excavation is ready for inspection or whenever it is necessary to cover up the work. In default of such notice the foundation shall on the order of the Employer be uncovered by the Contractor and reinstated without extra charge.

Disposal of Excavated Material

All material excavated under this Contract shall be disposed of in accordance with the instructions

issued by the Employer. Selected material required for back-filling shall be removed to a tip found by the Contractor and the Contractor shall be responsible for ensuring that the required amount of spoil is set aside.

Other Services

Where trenches pass near or across other services, the Contractor shall take every precaution against damaging such services. These services shall be properly supported in the trench until back-filling is complete and the back-filling shall be thoroughly compacted under and around such services.

Backfilling

Back-filling shall be carried out either with selected spoil as set aside, or with imported selected spoil, or other material to the approval of the Employer. No back-filling shall be done until all the formwork has been removed together with pieces of timber, cement bags, vegetation and or other rubbish. All back-filling shall be compacted in layers not exceeding 150 mm thick and shall be sprayed with water to bring the moisture content to the optimum for dense compaction. Compaction shall be to approved standard.

Concrete, Formwork and Reinforcement

Material

14.34.1.1. Aggregates:

- a) Shall conform to BS 882.
- b) Shall be heaped separately on hard, self-draining surfaces.
- c) Normal size of coarse aggregate shall be 20 mm.

14.34.1.2. Water Shall be fit to drink

14.34.1.3. Reinforcement Shall conform to BS 4449.

14.34.1.4. Reinforced Concrete Shall be designed to BS 8110, Foundation BS 8004

14.34.1.5. Steel Shall be designed to BS 5950

14.34.1.6. Cement Shall:

- a) Conform to BS 12.
- b) Be either normal Portland or P.C. 15.
- c) Be used within 6 weeks of manufacture.
- d) Be stored in a manner to exclude any moisture.
- e) Be stored in a manner to ensure use of the earliest consignment.
- f) Different types of cement from different manufacturers shall not be mixed for a single cast or structural element.
- g) Additives shall not be used.

Before concreting

14.34.2.1. Design Mixes

Not less than 2 weeks before the start of concrete work, the Contractor shall submit to the Employer for his approval a statement of proposed mix proportions for the various grades required in the project. (Note: the grade is the characteristic strength or the cube strength below which not more than 5% of the result may be expected to fall when tested at 28 days).

The statement shall include proportions of cement, fine and coarse aggregate, and water, the maximum and minimum slump and the target strength for each grade.

A certificate by recognized laboratory that the proposed mix will meet the requirements must accompany the statement.

The proportions stated may not later be altered without the written approval of the Employer. Cost of mix designs to be borne by the Contractor.

14.34.2.2. Formwork

Formwork shall be sufficient to leave the concrete finishes specified on drawings and to be within the tolerances specified in the following table and to provide an acceptable surface for applied finished, where required.

Line and Level	1 mm per meter not exceeding 5 mm
Pockets, Sleeves etc.	+/- 5 mm

The concrete shall have a smooth finish free of projections, voids, etc. The type of ties to be used shall be such that the required finish is achieved and does not become marred by subsequent corrosion. Ties to be set out to definite pattern to the Employer's or the Employer's approval. Rubbing down is allowed only after the Employer's approval of the surface to be treated.

14.34.2.3. **Reinforcement**

Shall not be heated or re-bent without the Employer's permission.

Shall be free from any material likely to impair bond or initiate corrosion.

Shall be bent and fixed according to the Employer's approved bending schedules. Shall be tied with soft iron wire.

Shall be supported to maintain the following minimum cover during concreting.

- a) The greater of the diameter of the bar or 40 mm for external un-plastered face.
- b) The greater diameter of the bar or 15 mm for internal face. Shall be inspected by the Employer.

14.34.2.4. **Construction Joints**

Shall be avoided, if possible, but if inevitable shall be pre-planned in consultation with the Employer and temporary stop ends inserted. Before placing of concrete against a construction joint, the formed face shall be hacked down to expose the coarse aggregate, kept continuously wet for 24 hours. Vertical faces should be covered with cement/water slurry and horizontal faces should be covered with 15 mm layer of cement/sand grout. New concrete should then be placed immediately.

14.34.2.5. **Camber**

To formwork shall not be at the expense of the overall depth of the concrete.

14.34.2.6. **Weather**

The expected temperatures in Homabay Region are more than 30 degrees Celsius. The contractor shall adopt use of membranes for curing, to manage the desired moisture and temperature conditions and hydrate the cement to avoid concrete cracking.

14.34.2.7. **Batching Shall**

- a) Be by mass in accurately calibrated scales or be volume in soundly constructed gauge boxes making due allowance for bulking of the fine aggregate.
- b) Be in proportion to whole sacks of cement.

14.34.2.8. **Mixing Shall**

- a) Be in a machine in good condition, large enough to carry the whole mix, controlled by a competent experienced operator.
- b) Be for sufficient time to ensure complete mixing of the ingredients.

14.34.2.9. **Placing Shall**

- a) Be under the control of a competent, experienced overseer.
- b) Be in a manner to prevent separation of the ingredients.
- c) Be a continuous process until the pour is complete.

14.34.2.10. **Compaction**

- a) Shall be by immersion (poker) vibrator in the hands of experienced operators.
- b) Concrete shall not be moved by vibrator.

Shall be sufficient to remove all air pockets and honey-combing and to ensure complete dense concrete cover to all reinforcement.

14.34.2.11. **Testing**

a) Making of concrete cubes by Contractor under Employer's supervision. Contractor shall arrange for transport of cubes to approved testing laboratories. Cubes to be in sets of 3.

14.34.2.12. **Curing**

- a) Shall commence early on the morning following the placing of the concrete.
- b) Shall be effected by keeping the concrete in a permanently wet state.
- c) Membranes shall be used due to expected high temperatures.
- d) Shall continue for a minimum of fourteen (14) days or such longer time as may be required by the Employer.

14.34.2.13. **Stripping of Formwork**

- a) To soffits shall not be struck until 7 days after placing of concrete (but see below for (props).
- b) To vertical faces shall not be struck until 14 days after placing concrete.
- c) Props to soffits shall not be struck until 14 days after placing concrete.
- d) Shall not be stripped without the Employer's approval who has the power to vary the above items.

14.34.2.14. **Patching**

- a) To defective work shall not be undertaken before the item has been shown to the Employer.
- b) Is a sign of poor workmanship. The Employer shall have the right to reject the complete element if an unreasonable amount of patching has to be done, or if patching will spoil the appearance of the finished concrete.

14.34.2.15 **Records**

Are to be kept by the Contractor, showing date and time of each concrete pour, the weather conditions, the temperature, the number of the cubes which represent the concrete, the slump and any other items which the Contractor and/or the Employer consider relevant. These records are to be made available for the Employer's inspection when required.

Foundations

The contractor shall construct reinforced concrete structural foundations for the Equipment Enclosure as well as for the Solar Equipment as required. These shall be designed to relevant standards and reviewed by the Employer before implementation.

Cable Ducts and Conduits.

- 14.36.1. The Contractor is responsible for all civil engineering works required for the cable runs between the Solar field site and the control room and/buildings, in buried heavy gauge installation ducts of minimum 150mm to connect cables from the solar panels and equipment to the Control room and/office as required. Manholes for inspections shall be provided at approved intervals.
- 14.36.2. Where the cable trench is crossing roads, the ducts shall be constructed in such way that they will be able to withstand the weight imposed on them.
- 14.36.3. The contractor shall appropriately mark the cable route.
- 14.36.4. Cable entries into buildings/control room and road crossings shall be through 150 mm diameter heavy gauge ducts.
- 14.36.5. Two (2) lines of 150 mm diameter heavy gauge of spare ducts shall be provided.
- 14.36.6. After installation of cables the ducts shall be sealed with duct sealing compound where required. Cable entries into building/control room shall be sealed to prevent the entry of dust, vermin water, etc., using suitable materials
- 14.36.7. The cable system design including manholes shall be subject to employer's approval.

Builder's Work

Setting out Walling

The Contractor shall provide proper setting out rods and set out all work on the same for courses, openings, heights, etc. and shall build the walls and piers, etc. to the widths, depths and heights indicated on the drawings and as directed and approved by the Employer.

Materials

14.37.2.1. Cement

Cement shall be as described in concrete Works, Part 5.34.1.6

14.37.2.2. Fine Aggregates

Fine aggregates for concrete blocks shall be as described for fine aggregate in Concrete Works.

14.37.2.3. Coarse Aggregate

Coarse aggregate for concrete blocks shall be good, hard, clean aggregates from an approved quarry. It shall be free from all de-composed materials and shall be graded up to 7 mm, and all as described for coarse aggregate, Concrete Works.

14.37.2.4. Machine cut stone

This shall be to approval of employer and meet minimum required specifications.

14.37.2.5. Concrete Blocks

Concrete blocks for walling shall be provided by the Contractor complying with B.S. 6073, and made in approved block manufacturing machines.

Minimum thickness of blocks in external walls shall be 150 mm, and in internal walls the thickness shall be minimum 100 mm.

Samples of the proposed block types shall be approved by the Employer before any walling work is commenced.

Blocks shall be cast under sheds in suitable block manufacturing machines either power driven or hand operated. The form shall be of steel, and accurately made to size to give the required shape and squareness of block. The concrete shall be vibrated during casting to achieve a dense and uniform concrete. The material shall contain only sufficient water to obtain full chemical reaction of the cement and to give proper workability of the constituents.

The ratio of combined aggregate to cement shall not exceed 3:1. The Contractor shall present his proposal for mix recipe supported by test results for the Employer's approval.

Concrete shall have minimum 28 days strength of 20 N/mm² in accordance with B.S. 1881. Mixing shall take place in mechanical mixers so as to thoroughly mix the constituents to a uniform consistency before casting.

On removal from the machine the blocks shall be carefully deposited on edge on boarding or a clean concrete floor under sheds so as to prevent drying out by the sun for 3 days. During this time blocks shall be kept constantly damp. The blocks may then be laid on edge in the open and kept damp by spraying or covering with wet hessian or by other means for a further 5 days. The blocks may then be stacked if required, but not more than one meter high, and in such a way as to prevent damage to the edges and corners.

No blocks may be used in building or be transported to site before having reached required 28 days strength criterion. All concrete blocks shall be of even texture and properly mixed ingredients and all portions of the block shall be properly set and hardened concrete.

Blocks shall be free from cracks or blemishes and shall be true to shape and size with clean sharp edges and corners and with corners truly square. Damaged blocks shall immediately be removed from the site.

No dimension of a block shall deviate individually by more than 3 mm from the correct size. The average length, width and height of a sample of 15 blocks should neither be longer nor less than 2 mm than the correct size.

Dressed natural/foundation stone blocks at least 200mm width may be used as alternative to the concrete blocks.

14.37.2.6. Cement Mortar

The cement mortar is to be mixed in the proportions of 1 Cement, 4 Sand, and thoroughly incorporated with a sufficiency of water. Any cement mortar which has been left for more than one hour shall not be used in the Works.

14.37.2.7. Building Walling

All blockwork shall be laid in raking stretcher bond solidly bedded, jointed and flushed up in mortar.

Where wall faces are to be plastered the joints shall be raked out to form a key. The blocks shall be thoroughly wetted for at least 24 hours before laying. Walls shall be carried up evenly course by course. During laying an open joint not less than 15 mm wide shall be left between the ends of all concrete lintels, whether pre-cast or cast in-situ and the blocks adjacent to these ends. These open joints shall be left as long as possible during construction and not filled until plastering or other works render such filling necessary. All such joints shall be properly filled in before the completion of the work. External walls shall be reinforced with two 8 mm high yield steel bars in every third horizontal mortar joint. The building shall be designed as a framed structure.

Blockwork which is not to be rendered or plastered shall be finished with a fair face and the blocks shall be selected for even texture and unmarked faces, regular shape and square unbroken arises. The blockwork shall be pointed as the work proceeds with a neat joint. Where blockwork is to be rendered or plastered the joint shall be raked out 10 mm deep as the work proceeds to form an adequate key. Galvanized steel ties with fishtailed end cast into the concrete spaced at alternate courses and extending not less than 150 mm into the block joints. All mortar joints are not to exceed 15 mm or less than 12 mm.

14.37.2.8. Lintels

Concrete lintels shall be used for all openings and shall be reinforced and constructed as per approved structural designs for the gourd house.

Structural Steelworks

- 14.38.1. Structural steelwork shall be shop-fabricated from structural shapes of medium grade carbon steel in suitable lengths for easy transport and erection. The structural members shall be jointed or fixed on site by bolting or welding. Site welds should be minimized. Design shall comply with BS 5950.
- 14.38.2. All workmanship and fabrication shall be in accordance with the best practice and shall generally comply with the requirements of B.S.4449. The greatest accuracy shall be observed to ensure that all parts fit together correctly on erection within the tolerances stated in this section. Steelworks shall include all materials, bolts and attachments, cleats, brackets, gussets, etc.
- 14.38.3. Where required in the Contract, the Contractor shall design the steelwork to comply with the information given on the Contract Drawings. Loading and factors of safety shall comply with relevant codes and regulations. Shop drawings shall be prepared using welding symbols to B.S. 499 where appropriate. Design calculations and shop drawings must be submitted to the Employer for his approval prior to fabrication of members. The approval of shop drawings and calculations by the Employer shall not relieve the Contractor of the full responsibility for any discrepancies, errors, omissions or failure arising therefrom.

- 14.38.4. All steelwork shall be transported, handled, stored on Site and erected so that members are not damaged or subjected to excessive stresses. Fabrication and erection shall comply with B.S. 5950 Part 2.
- 14.38.5. The contractor shall provide steel support structures to support all equipment and solar panels at a minimum of 1m clearance from the finished ground level, on the lower side of the elevated panels.
- 14.38.6. The structures shall be galvanized to the required specification, with a minimum coating of 614mg/m².
- 14.38.7. The Mounting of the Solar panels shall be done on steel rails and frames and shall be designed to carry all the loadings and in accordance to provision of B.S 5950 and any other relevant BSI standards.

Roofing-Control Room, Office Building Guard House and VIP Latrine

- 14.39.1. Materials, accessories and fixings shall be ordered from an approved supplier and the Contractor shall as and when required by the Employer, submit and deliver samples of all materials for inspection and testing. Roof trusses shall be in steel.
- 14.39.2. Roof sheeting shall be hot dip galvanized troughed mild steel sheeting and shall be of minimum thickness 0.5 mm. The sheeting shall have approved plastic coating on face side. Type and brand of such sheeting shall be proposed by the Contractor with his Tender together with supporting specifications.
- 14.39.3. The sheets shall be laid with 200 mm end laps and double corrugation side laps away from the prevailing wind. The sheets shall be fixed to light gauge steel purlins with galvanized coach screws and seating washers.
- 14.39.4. Holes for screws shall be carefully drilled in the ridges of the corrugations. Great care shall be exercised to avoid damage and disfiguration to the surface coating of the sheets. Maximum load acting on the building shall be in accordance with local or regional standards.

Roof Drainage

- 14.40.1. Gutters and down pipes shall, unless otherwise shown on the drawings, be approved plastic coated steel or heavy gauge PVC of diameters 200 mm and 150 mm respectively.
- 14.40.2. Joints shall be lapped 150 mm in the direction of the flow and soldered. Slip joints shall be provided to allow for expansion. All hangers, brackets, and fastenings should be of the same metal as the gutter or of compatible materials. Gutters and down pipes including supports shall be designed for a concentrated load of 100 kg. Screens or strainers shall be provided to prevent debris from clogging the down pipes.

Metalwork

- 14.41.1. Unless otherwise specified, metalwork shall be carried out in accordance with the provision of B.S. 5950 and other relevant BSI standards.
- 14.41.2. All steel shall unless otherwise specified, be hot dip galvanized. The minimum galvanized coating shall be 614mg/m².
- 14.41.3. For the case of containerized control room, the material shall be in good condition, Durable and environmentally friendly. The containers shall be fitted with insulations for temperature regulations, as an addition to Air conditioners installed for temperature control to specification, due to sensitivity of the equipment to high temperature conditions. Rejected containers due to poor Quality, shall be replaced at the contractor's expense. The container shall be painted with the first coat of red Oxide primer and then consequently

painted with Zinc Chromate, anti-rust primer to approved layers and the final coat of paint shall be in accordance to the employer's approved company color codes.

- 14.41.4. Prior to fabrication the Contractor shall submit shop drawings for the Employer's approval.

Metal Doors

General

Metal doors shall be supplied by approved manufacturers.

All doors shall be painted as specified under Painting and Decorating. All locks shall be master-keyed with three master keys supplied in addition to three regular keys for each door or gate.

Doors shall be measured by the number of doors of specified dimensions. The rate shall include all supplies, site works, painting and hardware.

Doors

Door frames shall be pressed steel frames made from minimum 2 mm thick steel sheeting and reinforced where door closers are fixed.

Thresholds shall be made from rolled steel sheeting approximately 100 mm wide and 12 mm high. Placing of doors in accordance with control room and office building drawing.

Internal door frames are to be built to walls truly vertical and square with three ties per frame. External door frames are to be built in to walls truly vertical and square with six ties per frame.

All door frames are to be from an approved manufacturer and illustrated in the Manufacturer's Catalogue.

Door frames are to be complete with 100 mm, loose pin steel hinges welded in position and adjustable striking plate.

Door frames and similar components shall be fixed with countersunk screws or bolts with heads set into the frames.

Doors wider than 800 mm shall have three 100 mm hinges. Other doors may have two hinges except where specified or detailed otherwise.

Door stops shall be fitted by screwed fixings where necessary.

Aluminium or Steel Windows

Unless otherwise indicated windows shall consist of aluminium sub frame with clear glass. Windows shall be from an approved supplier and the details thereof shall be approved by the Employer. Windows shall be operable and provided with corrosion resistant metal insect screens or as directed by the Employer.

Frames shall generally be built-in during construction of the walls and securely fixed.

Placing of windows in accordance with approved control room and office building drawings. Windows are to be built in to walls truly vertical square with six ties per frame.

All aluminium or steel windows are to be from an approved manufacturer and illustrated in the Manufacturer's Catalogue.

Windows are to be fitted complete with casement fastening, stays etc.

All windows shall have approved burglar bars, and approved means of opening/locking.

Door and Window Furniture

Ironmongery shall be strongly made, well finished and of good quality. Ironmongery for windows and doors shall be galvanized or other approved manufacture for external use. Samples of all items shall be submitted to the Employer for approval before they are used for the Works.

All doors shall be lockable. External doors shall have approved security locks.

Three keys for each lock, clearly labelled, shall be placed in a key cabinet in the control room and all ironmongery shall be cleaned, oiled, adjusted and left in perfect working order.

Emergency doors shall be provided accordingly as per the safety requirements.

Control room, Guard House, VIP Latrine and office building

The specifications of the finishing should be read in conjunction to section 5.2 and 5.3 for the containerized control room and office.

Table 14.45.1: Schedule of Materials and Finish

ROOM	FLOOR	WALLS	CEILING	REMARKS/NOTES
Control room/ Office building	Wood tiles/ Ceramic tiles/steel chequered plate	Cladding with Approved material	Cladding with Approved material	Subject to employer's approval

NOTES:

Sheets for ceilings: prefabricated/manufactured color and type in according to approval of the employer.

Control room and office building: External/internal color in accordance with approval of the employer.

Plaster and Floor Coverings Materials

Cement and water to be as before described. The sand to be screened through a sieve of 10 to 15 and meshes to 1 cm and to be washed if directed.

Mixing

All materials for mixing are to be used in proper gauge boxes and they are to be strike measured and not tamped down in boxes. Proper non-absorbent stages are to be used for mixing and storing mortar. No foreign matter must be mixed with the mortar.

The materials are to be mixed dry before adding water through a fine hose spray. No cement mortar which has taken its initial set will be allowed to be used.

Plaster Thickness

Unless otherwise specified all wall plasters should not be less than 13 mm thick and not more than 19 mm thick.

Cement Plaster

Cement plaster for external use to be composed of one part cement to four parts sand and for internal use to be one part cement to five parts sand.

Form Key

Rake out joints and roughen if necessary to form key for plaster.

For concrete surfaces, hack and apply 1:1 cement sand slush to form key. Continuously wet for 7 days and then apply plaster.

All brickwork and concrete works should be brushed down to remove dust and any other loose material.

Wetting

All internal and external brick or concrete surfaces are to be wetted well before plastering. All cement plaster must be kept wet for at least 7 days.

Repairing Defects

All defective plaster, cracks, hollows, etc., are to be cut out to a rectangular shape, the edges undercut to form a dovetail key and to be made good to finish flush with the edge of the surrounding

Plaster work. All patches will be to the approval of the Employer and if the defects cannot be made good satisfactorily then the whole surface is to be removed and re-plastered at the Contractor's expense.

Glazing and Painting

14.45.1. Glass

All glass is to be of approved manufacture, free from bubbles, waviness, scratches or other imperfections and is to be well bedded, puttied and back puttied and secured with glazing pins or clips in steel sashes or with sprigs in wood sashes.

All glass shall be carefully cut to the required sizes so that all panes of figured or textured glass are uniform in appearance with the pattern parallel to the edges and wired glass shall be so cut that the wires are parallel to the edges.

The window glass for control room shall be shatterproof type.

14.45.2. Putty

Putty for glazing to steel sashes is to be of approved proprietary brand. Rebates are to be thoroughly back puttied before glazing and all putty is to be carefully trimmed and cleaned off so that back putty finishes level with the top of sections internally, external putty covers sight lines exactly and finished straight and true. Rough surfaces to putty will not be allowed and any defective putty will be cut out and replaced at the Contractor's expense.

Rebates of wood sashes are to be given one coat of priming immediately before glazing.

14.45.3. Mirrors

Glass mirrors are to be of the thickness specified, of selected quality glass, silvered on back, with protective sealing coat and arrised edges, unless otherwise described.

Generally, allow for removing and replacing all cracked, broken or defective glass and leave thoroughly clean and perfect at completion.

Materials for Decoration

All paints, primers, varnishes, emulsions, stopping, etc., to be of approved manufacture. The contractor is to use proprietary ready mixed paints obtained from an approved supplier.

When a coat of proprietary paint is applied, the manufacturer's priming and previous coats suitable for the particular type are to be used.

All materials must be brought on to the site in unopened tins, and no dilution or adulteration will be permitted, unless approved by the Employer.

Emulsion Paint

Emulsion paint shall be PVA (Polyvinyl Acetate) alkali-resisting formulated with high washability

and capable of resisting a 8000 scrub test. The first coat to be specially formulated base coat for direct application to the specified surface.

Fillers

Higher grade cellulose fillers are to be used internally and premixed filler to be used externally.

High Gloss Paints

Primers for application to bare metal to be red oxide primer for iron and steel. For galvanized metal to be an approved zinc chromate or galvanized iron primer. For application on wood or plaster etc., to be an approved alkali primer.

Finish enamels

Finish enamels to be synthetic enamel high-capacity paint with high coverage and high gloss finish unless otherwise described.

Workmanship

All surfaces are to be free from moisture, dust, grease and dirt and rubbed down smooth according to approved practice.

All plaster to be free from efflorescence and treated with one coat of petrifying liquid, approved sealer or alkali primer if required. Hard wall plaster to be glass papered before decorating.

Rectifying defects to decorated surfaces due to dampness, efflorescence, chemical reaction, etc., will be to the Contractor's account, as these surfaces must be checked and the appropriate precautions taken before applying the decoration.

Metalwork must be scraped free of rust, primed as described and finished as later specified. Galvanized sheet iron, pipes, etc., are to be cleaned down to remove manufacturer's ammoniated dichromate protective covering, primed as described and finished as later specified.

Coated pipes are to be cleaned down, stopped and primed with one coat of aluminium primer and finished as later specified.

All metal to have the specified number of coats in addition to the priming coat.

Every coat of paint must be a good covering coat and must dry hard and be well rubbed down to a smooth surface before the next coat is applied, otherwise the Contractor will be required to apply extra coats at his own expense.

Each coat of paint to be of a distinctive color: sample colors are to be prepared for the final coat which is to be an approved color scheme and must not be applied without the permission of the Employer. After undercoats are on, the painter shall check all work and grain fill as necessary with filler as described.

NOTE:

- a) All paints specified are to be obtained from an approved manufacturer and used in strict accordance with their instructions. Their representative will check the paints being used and the method of application and will advise accordingly.
- b) This section of the work to be carried out by an approved firm of decorators who must allow for the very best finish possible and of the highest quality obtainable.
- c) The prices must allow for the removal and refitting of all beads, fittings, fastenings, ironmongery, etc., removed for decoration purposes to be carried out by skilled tradesmen of the appropriate trade.

Control Room and Office Building Sizes.

The sizes are as specified in clause 5.2 and 5.3 of this document.

Ironmongery and Metalwork

General

All ironmongery shall be of the best respective types required and no alternative articles will be accepted unless approved. Articles described as brass must be solid brass and not brass finish. Chromium plated articles must be plated satin finish on solid brass or other approved metal.

Where items for ironmongery are required to be fitted to steel door frames, etc., the Contractor must ensure that the Manufacture makes provisions for the correct fitting or lock striking plates, hinges, cleat holes, bolt keeps, etc.

Locks and Keys

Locks are to be two levers unless otherwise described. All locks are to be provided with two keys which must be handed over to the owner on completion of the Works with identification labels attached.

Steel

Steelwork for general building construction is to be of approved manufacture complying generally with the appropriate British Standards and free from all defects, oil, dirt, loose rust, scale or other deleterious matter.

Electrical Installation

- 14.48.1. The contractor shall supply, install, test and commission the complete electrical services within the Control room both outdoor and indoor, office building both outdoor and indoor, Guard house, VIP latrine and SPGP outdoor security lighting/perimeter lighting.
- 14.48.2. The complete electrical installation shall comply with all local standards and rates and shall be as per KPLC requirements/specifications.
- 14.48.3. Lighting
 - a) Luminaries shall be fluorescent lamps except for the toilets and outdoor lighting. SPGP and/Perimeter Outdoor lighting to use flood lights subject to employer's approval.
 - b) All luminaries shall be supplied, installed and tested by the electrical sub-contractor.
 - c) Outdoor lighting shall be controlled from an automatic photo cell.
 - d) Lighting control switches shall be flush pattern with white finished plates.
- 14.48.4. The outdoor SPGP flood lights/perimeter security lighting to be achieve the recommended luminaries and mounted on concrete poles.
- 14.48.5. Socket outlets to be mounted at 300 mm above floor level in the office, guard house and control room.
- 14.48.6. Conduit cast into the building structure shall be of the heavy-duty PVC type. PVC conduits shall not be fixed to the surface of the structure.

AC Installation

The contractor to supply the ACs in the control room. The Contractor shall supply and install a minimum of two number AC units, including wiring and all necessary accessories. The number of ACs and its capacity shall be determined by calculations and design will be based on the equipment manufacturers ratings adopted and the rooms requirement (Including Lithium-Ion Batteries) and subject to approval by the employer.

Fire Safety Facilities

- 14.50.1. Portable fire extinguishers shall be provided under this Contract. Portable, wall mounted, hand held extinguishers shall be 6kg pressurized control discharge Bromochlorodifluoromethane (BCF) units in the office and control room. The number of units within the Control room and office shall be a minimum of 3 Number.
- 14.50.2. A minimum of 1 No. 13 kg pressurized control discharge BCF units shall be provided in the SPGP area.
- 14.50.3. The body of the extinguisher shall be seamless, welded and brazed as appropriate.
- 14.50.4. The extinguisher shall be capable of being released by means of a lever-operated valve provided with a safety pin.
- 14.50.5. Extinguishers shall be capable of controlled partial discharge.
- 14.50.6. The type shall be of that recharge unit that is locally available.

- 14.50.7. The extinguishers shall be wall mounted and attached and located in a manner affording quick release from the supporting bracket. They shall be installed so that the top of the extinguisher is not more than 1.5meters above the floor. In no case shall the clearance between the bottom of the extinguisher and the floor be less than 0.1 meter. The extinguishers shall be positioned so that the instructions for operation face outwards.
- 14.50.8. BESS to be housed in one room in the control room. The battery room shall have an automated fire detection, prevention and suppression system fitted with a suitable dry aerosol agent to put-out Lithium-Ion battery fires. The system shall include smoke detectors, horn strobes and other components required to enable it function properly and suppress fires while preventing unintended release. Suitable Fire protection and suppression system shall be designed for BESS in line with IEC or international requirements/specifications regulation as applicable and system requirement considering project site.
- 14.50.9. The fire safety design shall be subject to approval by the employer. The contractor shall train the local staff on use of the installed system.

TECHNICAL SPECIFICATIONS FOR MATERIALS AND EQUIPMENT

All materials shall comply with appropriate local or regional standards unless otherwise required hereinafter. Such standards shall be to the approval of the Employer.

All materials shall be delivered to the site within sufficient period of time before they are required for use in the Works to enable the Employer to take such samples as he may wish for testing and approval. Any materials condemned as unsuitable for Works shall be removed from the Site at the Contractor's expense.

Contractors price to include these testing of materials. The Contractor may propose alternative materials to those specified, provided that they are of equivalent quality and, subject to the Employer's or the Employer's approval such materials may be used in the Works.

Standards for materials shall comply with local or regional standards as per specified standards in the table below.

NO.	REREC Materials Requirement		Tenderer's offer
1.	Hardcore	300mm thick approved	
2.	Quarry dust	50mm thick maximum	
3.	Insecticide treatment	TERMIDOL	
4.	Damp proof membrane	1000-gauge polythene or other equal and approved plastic sheet damp proof membrane	
5.	Coarse Aggregate	30-38 mm thick	
6.	Fine Aggregate	NOT more than 22mm thick	
7.	Vibrated reinforced concrete	BS 8110, Foundation BS 8004	
8.	cement	32.5N Ordinary Portland Cement	
9.	Deformed Steel Bars	High tensile Deformed Steel Bars to BS4461	
10.	Mesh	Fabric Mesh to BS4483 ref A142	
11.	Natural Stones	200mm thick, rough chisel dressed for substructure walls and fine chisel for superstructure wall	
12.	Hoop Iron	20 s.w.g by 25mm wide	
13.	Damp proof course	3-ply Hessian felt bituminous	
14.	Timber	Cypress of GS grade seasoned to an equilibrium content between 9% and 15% to a requirement of KS02771 of 199	
15.	Roof insulation foil	Jumbolen	
16.	Iron Sheets	Gauge 30 IT5 Profiled	
17.	Gutter	180mm diameter plastic	
18.	Curtain Rods	Wrot Iron	
19.	Paints	approved silk vinyl paint and approved gloss oil paints	

The proposed project under this tender for setting the solar PV hybrid power plant shall broadly follow technical specifications given below.

- These specifications describe the requirements for the equipment. Tenderers are requested to submit with their offers the detailed specifications, drawings and catalogues, for the products they intend to supply. **The details in the provided catalogues SHALL be used in the tender evaluation for specification compliance.**
- Tenderers must indicate on the specifications sheets whether the equipment offered comply with each specified requirement.
- All the dimensions and capacities of the equipment to be supplied **SHALL** not be less than those required in these specifications.

The Tenderer shall indicate in the technical specification of each component brand name, model and country of origin. Comparative specification should indicate any derivations from technical parameter, design, or functional description of tender specification

ANNEX 1 – TECHNICAL REQUIREMENTS

a) DOCUMENTATION AND INSTRUCTIONS (REQUIRED DURING INSTALLATION AND COMMISSIONING)

No.	PRODUCTS DOCUMENTATION AND SPECIFICATION	BIDDER'S RESPONSE
1	Product description and data sheets, manufacture description, and operation manual	
2	Installation instructions	
3	Connection plans, single line diagram	
4	Commissioning instructions, manual for start and stop operation, commissioning protocol	
5	Operating instructions, do's and don'ts	
6	Maintenance instructions, maintenance interval, maintenance effort, necessary staff	
7	Error sources, error diagnosis and troubleshooting instructions	

b) TECHNICAL PARTICULARS FOR SOLAR PHOTOVOLTAIC MODULES

ITEM	RREC'S REQUIREMENT FOR SOLAR MODULE		BIDDER'S RESPONSE
1.	Name of Manufacturer, Brand Name		
2.	Model No.		
3.	Cell type	N-type bifacial mono crystalline	
4.	Originality Verification system	Barcode or Serial number with batch number	
5.	Solar cells encapsulated in EVA (ethylene-vinyl acetate); anti- reflection coating;Module on the front side protected by tempered, highly translucent glass.		
6.			
7.	Glass-foil laminated in anodized aluminum-frame		
8.	Wind load certification	0.024 bars	
9.	Front glass	High transmission, low iron, Tempered glass	
10.	Weather resistant Junction box with 3 Bypass-diodes on the backside of the modules with protection class min. IP 67 rated		
11.	Wiring of the modules with pin-and-socket connector according to EN50521		
12.	Quantity of cells	state	
13.	Temperature coefficient PMPP:	$\leq -0.45\%/C$	
14.	Temperature coefficient Voc:	$\leq -0.27\%/C$	
15.	Temperature coefficient Isc:	$\leq 0.05\%/C$	

ITEM	REREC'S REQUIREMENT FOR SOLAR MODULE		BIDDER'S RESPONSE
16.	Operating temperature range:	$-0^{\circ}\text{C} < =T < =45^{\circ}\text{C}$	
17.	Nominal operating cell temperature(NOCT)	$45\pm 2^{\circ}\text{C}$	
18.	Module efficiency	at STC-conditions $> 22\%$	
19.	Current at maximum power point (A) (maximum)	State	
20.	Voltage at maximum Power Point (V) (minimum)	State	
21.	Open Circuit voltage (Voc)	State	
22.	Short circuit current (Isc)	State	
23.	Minimum power rating	500W	
24.	10 years product warranty		
25.	25 years linear performance guarantee (90% up to 12 years and 80% up to 25 years)		
26.	CE- conformity, DVE GS, TUV quality certified for product		
27.	Horizontal and vertical assembly possible		
28.	High Mechanical load (acc. IEC 61215 (5400Pa superimposed load and 2400Pa suction load))		
29.	Pre-cabled with MC4 Plug –connectors (IP 67)		
30.	Nominal power at IEC-Conditions (radiation 1000W/m ² , Air-Mass 1.525°C)		
31.	Output cables	Minimum TUV 1x4.0mm SQ	
32.	Product certification	IEC 61215 (Ed.2)	
33.	Protection class	II/ IEC 61730	
34.	Salt mist corrosion test	IEC 61701 (Ed. 2)	
35.	Documentation: English	Please indicate:	
36.	Power Tolerance	Positive power tolerance -0/+3%	
37.	Cell dimension (length x width) in mm		
38.	Module dimension (length x width x height) in mm		
39.	Module weight in kg		

c) TECHNICAL PARTICULARS FOR HYBRID INVERTER

ITEM	REREC MINIMUM SPECIFICATION FOR HYRID INVERTER		BIDDER’SRESPONSE
Battery Input Data			
1	Name of Manufacturer, Brand Name		
2	Battery type	Li-ion phosphate	
3	Nominal battery voltage (V)	48V(Minimum)	
4	Max Charging Current(A)	State	
5	Max Discharging Current(A)	State	
6	No. of Battery Input	state	
7	Max. Charge / Discharge Power (KW)	State	
PV String Input Data (or DC-DC Converter)			
8	Min. Input Power (KW)	State (Provide design / selection calculations)	
9	Max. Input Voltage (V)	State (Provide design / selection calculations)	
10	MPPT Operating Voltage Range (V)	State (Provide design / selection calculations)	
11	MPPT Voltage Range at Nominal Power(V)	State (Provide design / selection calculations)	
12	Start-up Voltage (V)	Indicate	
13	Nominal Input Voltage (V)	State	
14	Max. Input Current per MPPT (A)	State	
15	Max. Short Circuit Current per MPPT (A)	State	
16	Max. Back-feed Current to the Array (A)	indicate	
17	Number of MPPTs Trackers	Indicate	
18	Number of Strings per MPPT (based on current limit)	indicate	
AC Output Data (On-grid)			
19	Nominal Apparent Power Output to Utility Grid (VA)	State	
20	Output Rated Active Power (W)	50000(Min)	
21	Max. Apparent Power Output to Utility Grid	1.5 times of rated power,10s	
22	Nominal Apparent Power from Grid (KVA)	State	

ITEM	REREC MINIMUM SPECIFICATION FOR HYRID INVERTER		BIDDER'S RESPONSE
23	Max. Apparent Power from Utility Grid(KVA)	State	
24	Nominal Output Voltage (V)	415, 3L / N / PE	
25	Output Voltage Range (V)	312~460 (AS) / 318~497	
26	Nominal AC Grid Frequency (Hz)	50	
27	AC Grid Frequency Range (Hz)	47~52 (AS) / 47.5~51.5	
28	Max. AC Current Output to Utility Grid (A)	76	
29	Max. AC Current from Utility Grid (A)	100	
30	Max. Output Fault Current (Peak& Duration) (A)	156A@150us	
31	Inrush Current (Peak & Duration) (A)	160	
32	Nominal Output Current (A)	72.5	
33	Output Power Factor	-1(Adjustable from 0.8 leading to 0.8 lagging)	
34	Max. Total Harmonic Distortion	<3%	
35	Generator input/Smart load/Ac Couple current	Indicated	
Efficiency			
36	Max. Efficiency	97.60%	
37	Max. Battery to Load Efficiency	97.20%	
Protection			
38	DC Insulation Resistance Detection	Integrated	
39	Residual Current Monitoring Unit	Integrated	
40	Anti-islanding Protection	Integrated	
41	DC Reverse Polarity Protection	Integrated	
42	AC Overcurrent / Overvoltage Protection	Integrated	
43	AC Short Circuit Protection	Integrated	
44	DC / AC Surge Arrester	Type II (Type I Optional)	
45	DC / AC Switch	Integrated	

ITEM	REREC MINIMUM SPECIFICATION FOR HYRID INVERTER		BIDDER'S RESPONSE
46	Emergency Power Off	Integrated	
47	Rapid Shutdown	Optional	
48	Remote Shutdown	Integrated	
General Data			
49	Operating Temperature Range (°C)	-20~+60°C (>45°C	
50		derating)	
51	Relative Humidity	0~95% (Non-condensing)	
52	Max. Operating Altitude (m)	4000	
53	Cooling Method	Fan Cooling	
54	User Interface	LCD & LED & APP	
55	Communication with BMS	RS485/CAN	
56	Communication with Meter	RS485/CAN	
57	Weight (Kg)	Indicate	
58	Dimension W × H × D -in (mm)	Indicate	
59	Noise Emission (dB)	50	
60	Topology	Transformerless	
61	DC / AC Connector	NC	
62	Protective Class	I	
63	Environmental Category	4K4H	
64	Storage Environment (°C)	-30~+60°C	
65	Overvoltage Category	DC II / AC III	
66	The Decisive Voltage Class (DVC)	C	
67	Installation Style	Wall -Mounted	
68	Warranty	5 years	

d) TECHNICAL PARTICULARS FOR BATTERY STORAGE

ITEM	REREC MINIMUM SPECIFICATION FOR THE BATTERY STORAGE		BIDDER'S RESPONSE
1	Type of battery	Lithium-ion Phosphate	
2	Name of manufacturer, Brand Model, Type name,		
3	Type of technology		
4	State of charge	Pre-charged	
5	DC-Voltage	V/cell	
6	DC-Voltage battery bank	V	
7	Qty of cells	State	
8	String configuration	Provide drawing and design calculations	
9	Number of Strings	State	
10	Rated energy capacity/string	100 kWh (Min)	
11	Total rated Capacity (kWh)	State (70% of the plant daily generation provide design calculations)	
12	Energy (kWh) per Piece	10 kWh (Min.)	
13	Nominal Voltage (V)	≥48	
14	Discharge Voltage (V)	indicate	
15	Charging Voltage (V)	indicate	
16	Max. Charging Current (A)	State	
17	Max. Discharge Current (A)	State	
18	Storage temperature	0~35°C	
19	Max. working altitude (M)	4000M	
20	Relative humidity	0~95% non-condensing	
21	Installation	Frame	
22	Ingress protection	IP21	
23	Operating temperature	-25°C~55°C	
24	Certification	UN 38.3, IEC 62619	
25	Self-discharge per month at 20° degrees	< 3%	
26	Cycles at 80% DoD(according to IEC 896- 1)	> 6000@ 25°C 90% (Minimum)	

ITEM	REREC MINIMUM SPECIFICATION FOR THE BATTERY STORAGE		BIDDER'S RESPONSE
27	Max. DOD in operation	> 90 %	
28	At least 10 years without losing more than 20% of the rated capacity		
29	Battery management system (BMS)	Cell balancing	
30		Protection overcharge, over-discharge each cell	
31		Protection over and under temperature	
32		Isolation of battery if any of the above occur	
33		Alert if there is a failure	
34		Communication with Battery inverter	
35	BMS Communication interface	RS485,Ethernet	
36	BMS Communication protocol	Modbus RTU, Modbus TCP	
37	Warranty	5 Years	
38	Performance guarantee	8 Years	

e) TECHNICAL PARTICULARS FOR DIESEL GENERATOR

ITEM	SPECIFICATION OF 3-PHASE DIESEL GENERATOR		BIDDER'S RESPONSE
1	Name of manufacturer, Brand name, Model, Type		
2	Type of Diesel generator	Synchronous generator	
3	Diesel Generating Set, water cooled, incl. sound and weather proofed canopy; Stationary version, incl. lifting hook; tropicalized, ready for use, fitted as complete unit on a rigid base frame (e.g. skid mounted), consisting of Motor, Alternator, Battery, Fuel tank and separate switch board and accessories mentioned below. Norms and reference values to be followed: VDE, EN, DIN, ISO or equivalent norms. In particular VDE 0100, Part 551/560, VDE 0108, DIN ISO 8528, DIN ISO 3046 and/or norms or other guidelines as may be mentioned in the present specification.		
4	Output power (Tolerance + 2,5 / - 0 KVA) taking into consideration the environmental conditions	50KVA	
5	Output power	50KVA	
6	Fuel consumption at 50 % load	l	
7	Fuel consumption at 80 % load	l	
8	Overall efficiency	%	

ITEM	SPECIFICATION OF 3-PHASE DIESEL GENERATOR		BIDDER'S RESPONSE
9	Site of operation / Purpose / Environmental conditions Outdoor installation up to +35°C, Altitude see, air humidity 70 %		
10	Environmental conditions	Ambient temperature up to +35°C	
11	CE declaration of conformity by the manufacturer exists. Please attach the document to your offer.		
12	Welded sectional steel base frame, warp resistant, lifting hook on each corner for easy lifting		
13	Motor, Norms and reference values: ISO 3046, DIN 6271, BS 5514		
14	Type: Diesel, direct injection, forced oil lubrication, fuel transfer pump		
15	Revs: 1500 rpm		
16	Speed regulation: electrical		
17	Cooling: water cooled, considering a surrounding temperature of 40°C		
18	Alternator, battery charging: Integrated 24V		
19	Starter motor: integrated 24V		
20	Starter battery fitted to the aggregate incl. hood, 24V, dry pre-charged		
21	Fuel tank: steel, fitted to the frame, incl. fuel level gauge. Tank capacity: at least for a 8 hours run under maximum continuous output. (include 5,000 lts external tank)		
22	Motor brand and designation, Model and Type		
23	Number of cylinders and cubic capacity		
24	Fuel tank capacity		
25	Oil capacity		
26	Motor capacity as per ISO 3046-7 based on 25°C intake temperature, 25°C cooling water intake temperature, 1.000 mbar air pressure, 30% air humidity – (KW)		
27	Motor capacity as per ISO 3046 in reference of the environmental conditions, mechanical (KWm)		
28	Motor capacity as per ISO 3046 in reference to the environmental conditions, electrical (KWe)		
29	Fuel consumption as per ISO 3046-1 including attached pumps. Lower fuel heating value 42.700 KJ/kg Tolerance + 5% at PRP 100% load in g/KWh		
30	Lubrication oil consumption (ltr/h) under standard conditions		
31	Alternator brand, model, type		
32	Efficiency factor of Alternator		
33	Alternator: Norms and reference values: VDE 0530, BS 4999, UTE NFnC 51.111, IEC 34.1, NEMA MG 21		
34	Three-phase current alternator as per VDE 0530, internal pol machine with damping winding, self-regulating, self-starting		
35	Voltage rigidity: max 5 %		
36	Nominal voltage: Per phase 240V alternating current, 415 V three-phase current		
37	Frequency: 50 Hz		
38	Power factor: cos phi 0,8		
39	Insulation class: H or F		
40	Isolation good for tropic climate		
41	Radio interference suppression according to VDE 0875 “N”		
42	Protection class DIN 40050, IP 23		

ITEM	SPECIFICATION OF 3-PHASE DIESEL GENERATOR	BIDDER'S RESPONSE
43	G3 Classification according to DIN ISO 8528	
44	Exhaust system, sound protection	
45	Weather and sound proofed canopy incl. exhaust silencer. High corrosion resistance: stainless covered with zinc and made in dichromate. Large doors allow easy access to the generator set for service and monitoring purposes. Lockable doors with one window showing the control panel, fully assembled for immediate use. Exhaust system fully integrated (inner mounted).sound protection LWA below 89 dB (A)pW. Emergency stop button is accessible from outside enclosure.	
46	Please indicate:	
47	Acoustic power (LWA) [dB (A)]	
48	Acoustic pressure level at 1 m distance	
49	Acoustic pressure level at 7 m distance	
50	Acoustic pressure level at 10 m distance	
51	Control fittings / Measuring Instruments / Switch board	
52	Switch cabinet - vibration proof – fitted to the steel base frame - Digital control panel	
53	Motor protection accessories (Oil pressure, water temperature, excessive revs) Generator protection switch, thermic-magnetic overload protection, protection of Instruments and indicators	
54	Battery-charging control light, oil-pressure warning light, excessive temperature warning light, light test, excessive revs alarm, false start light, emergency-off light, central warning light	
55	Measuring instruments, switches; Ampere, Volt, frequency, operation hours counter, Energy production, emergency “off” button, manual mode switch	
56	30 m reinforced electrical cable for electrical power supply, under- or above ground use	
57	5 m yellow-green cable with ground pin	
58	Labeling of all components in English language	
59	Please indicate:	
60	Dimensions of one unit: (length x width x height)	
61	Weight of one unit in kg (without any fillings)	
62	Documentation	
63	Manual for installation, commissioning and use plus a spare parts catalogue for each part of the generator (motor, generator, switch board, wiring diagram) in English	
64	Spare parts / Maintenance parts / Consumables covering 1000 hrs of operation	
65	2 pcs. Oil filters	
66	1 pcs. Air filter	
67	2 pcs. Fuel filter ext.	
68	1 set of seals, screws, nuts, etc, for 1000 hrs of operation	
69	1 pcs. V-belt	
70	Standard tool set	
71	Standard tool set to provide maintenance and small repairs up to 1000 hrs of operation	
72	Warranty(2 years or 1000Hrs)	

f) TECHNICAL PARTICULARS FOR LAPTOP

ITEM	REREC'S REQUIREMENT FOR LAPTOP		TENDERER'S RESPONSE
1	Name of the Manufacturer		
2	RAM	32GB	
3	Processor	Core i7	
4	Storage	SSD 1TB	
5	Min. Processing Speed	4.6 GHz	
6	Graphic Card	8 GB	
7	Operating System	Windows 11 Pro	
8	Max . Screen size	13.5 inch (diagonal)	

g) BALANCE OF SYSTEM (REQUIRED DURING INSTALLATION)

ITEM	SPECIFICATION OF BALANCE OF SYSTEM (BOS)		BIDDER'S RESPONSE
	The following material/Equipment will adhere to the prescribed standards		
1	Outdoor cabinets	UV and water resistant material, min IP 54	
2	Cabinets/enclosures (where applicable shall contain)	MCB	
3		MCCB	
4		SPDs, class II IEC 61643-11	
5		Operating temperature up to 80 °C	
6		Non-metallic fiberglass enclosures with clear polycarbonate covers	
7	Electricity meter	Bidirectional, 3 phase class 0,5	
8	AC cabling- Inverter distribution to grid connection point	IEC 60364	
9		KS 04-192: 1988	
10		KS 04 -194: 1990	
11		KS 04 -187/188	
12		KS 04 -290: 1987	
13	Lightning protection	IEC 62305	
14	Miscellaneous accessories (if applicable) Conduit outlets and junction boxes	KS 04-179: 1983	

h) TECHNICAL PARTICULARS DC CABLING AND CONNECTORS

ITEM	SPECIFICATION FOR DC CABLING AND CONNECTORS (The following material/Equipment will adhere to the prescribed standards)		BIDDER'S RESPONSE
1	Fine copper for PV string connection to inverter		
2	Outdoor use TUV approval Nr.	TUV PfG 1169/08.2007	
3	Ozone resistant	EN 50396	
4	Flame retardant	IEC/EN 60332-1-2	
5	UV resistant	HD 605/A1	
6	Halogen free	EN 50267-2-1, EN 60684-2	
7	Acid + Alkaline resistant	IEC /EN 60811-2-1	
8	Low corrosively of gases	EN 50267-2-2	
9	Weather resistant	HD 605/A1	
10	DC wiring losses	Total DC wiring losses max. 1,5%	
11	DC connectors	EN 50521	
12		Crimped according to manufacturer instructions using only certified tools	

i) COMMISSIONING AND TRAINING

ITEM	COMMISSIONING AND TRAINING ON SITE (The following shall be carried out during commissioning)	BIDDER'S RESPONSE
1	Complete commissioning and trial operation of the system. Please indicate.	
2	Training on the operation of the power plant components, maintenance and monitoring of the system. General information, system description and scope of delivery. Please indicate	

j) PERFORMANCE GUARANTEES

ITEM	PERFORMANCE GUARANTEES	BIDDER'S RESPONSE
1	Upon commissioning of the solar PV hybrid power plant and 1 month of operation the final acceptance of the solar PV hybrid system will be confirmed after. During this one month the contractor should fix all installation problems that arise.	
2	After final acceptance, a 12-month defect liability period shall commence.	

PART II: Sub-Station Specifications

The Scope of the project

A mini-grid comprising of photovoltaic solar (PV) generation, battery storage and a generator backup. The entire generation is to be synchronized and managed by the solar PV controllers at 415Volts and stepped to 11KV distribution network.

Protection at the HV (High Voltage) side shall be done with the 11KV Circuit breaker complete with its Control and protective relay panel and the LV protection up to the step up transformer to be enhanced by the feeder which shall be installed in the 20feet air conditioned containers provided by the contractor.

Specifications for 415 V Ac Metal-Clad Switchgear Board

1.1 General Specifications

Scope

This Specification covers the Design and Engineering, Manufacture, Testing at The Manufacturer's Factory, painting, packing for transport, insuring, shipping, delivering to the port of Kenya, landing, customs clearing, Local Transportation and Delivery to Site, Unpacking, Erection, Test and Commissioning of a two panels 415 V AC Indoor Metal Clad Switchgear.

Subsequent paragraphs will give detailed descriptions and requirements for the Switchgear Panels, including Air Circuit Breakers, Current Transformers, Protection Relays, Metering, Measuring, Indicating and Control devices and other equipment/Devices, specified herein.

Standards

Ratings, characteristics, tests and test procedures, etc. for the 415V AC Metal-Clad Switchgear Board and all the Protection Relays, Measuring and Indicating Instruments and the control and monitoring devices and Accessories, including Current transformers shall comply with the provisions and requirements of the standards of the International Electro- technical Commission (IEC), and also relevant ANSI Standards where Specified.

The latest revision or edition in effect at the time of Bid Invitation shall apply. Where references are given to numbers in the old numbering scheme from IEC it shall be taken to be the equivalent number in the new five-digit number scheme. The Bidder shall specifically state the Precise Standard, complete with identification number, to which the various equipment and materials are manufactured and tested. The Bid Document may not contain a full list of standards to be used, as they only are referred to where useful for clarification of the text.

Service Conditions

From the geographical condition, the area where the switchgear panels shall be installed is categorized into the tropical climate zone.

In choosing materials and their finishes, due regard shall be given to the humid tropical conditions under which the switchgear panels shall be called upon to work. The Manufacturer of the Switchgear panels shall submit details of his usual practice of tropicalization which have proven satisfactory for application to the Switchgear panels and associated equipment to prevent Rusting and Ageing in the Tropical Climate Zone. The Applicable standards for tropicalization shall be listed.

i) Climatic Conditions & Geo-Reference

Unless otherwise specifically stated in Particular Technical Specifications, any equipment or component or assembly shall be designed for the following service conditions:

Parameter

<u>Ambient air temperature</u>	Max	Min
Outdoor	+40°C	-1°C
Indoor	+40°C	-1°C
24 hour average maximum	+30°C	-1°C
<u>Relative humidity</u>	90 -100%	
Height above sea level	1000 m	
EMC Class (IEC 61000)	Industrial environments	Seismic coefficient 1.5

Rainfall conditions

Average	800-1700 mm/year
Maximum	160mm in 24 hrs
Annual mean isokeraunic level Max 180 thunderstorm days	
Pollution (IEC 60815) Heavy: class II	

Geo-Reference Latitude (o) Longitude (o) Altitude (m) a.s.l.

Switchgear room Temperature

The Switchgear shall be installed in a room without Air conditioning but with ventilation to allow natural cooling. Therefore, All the Protection and control devices employed shall be capable of operating in this environment without failure for their designed life time. Particularly the power supply modules of the Protection and Control devices shall be designed for minimum heat generation and effective heat dissipation to ensure that the temperature of these devices enclosed in the relay panels at the above listed Ambient temperatures shall not exceed the Maximum operating temperature of the device.

ii) **Tropicalization**

- a) All equipment must be designed for operations in the severe tropic climate conditions and fully comply with climatic aging tests as per IEC 60932- class 2

Metals:

Iron and Steel are generally to be painted or galvanized as appropriate. Indoor parts may alternatively have chromium or copper-nickel plates or other approved protective finish. Small iron and steel parts (other than rustless steel) of all instruments and electrical equipment, the cores of electromagnets and the metal parts of relays and mechanisms shall be treated in an appropriate manner to prevent rusting.

Screws, Nuts, Springs, Etc

The use of Iron and steels shall be avoided in instruments and electrical relays wherever possible. Steel screws shall be zinc, cadmium or chromium plated or where plating is not possible owing to tolerance limitations, shall be of corrosion resisting steel. Instrument screws (except those forming part of a magnetic circuit) shall be of brass or bronze. Springs shall be of non- rusting material, e.g., phosphor-bronze or nickel silver, as far as possible.

Working Stress and Equipment/Apparatus Design

i) **General**

The design, dimensions and materials of all parts shall be such that they will not suffer damage under the most adverse conditions nor result in deflections and vibrations, which might adversely affect the operation of the equipment. Mechanisms shall be constructed to avoid sticking due to rust or corrosion.

The equipment and apparatus shall be designed and manufactured in the best and most substantial and workmanlike manner with materials best suited to their respective purpose and generally in accordance with up-to-date recognized standards of good practice. The equipment shall be designed to cope with 0.10G acceleration of seismology on the centers of gravity. All equipment shall be designed to minimize the risk of fire and consequential damage, to prevent ingress of vermin and dust and accidental contact with electrically energized or moving parts. The switchgear panels shall be capable of continuous operation with minimum attention and maintenance in the exceptionally severe conditions likely to be obtained in a tropical climate and where the switchgear is called upon to frequently interrupt fault currents on the system and also where the duty of operation is high.

ii) Strength and quality

Liberal factors of safety shall be used throughout, especially in the design of all parts subject to alternating stresses or shocks.

iii) Design data low voltage equipment

Low voltage equipment and installation shall be designed in accordance with EMC directives. The rating and design criteria for low voltage equipment shall be as follows:

a) AC Supply Rating system

Rated voltage between phase	415 V
Connection type	3ph 4wire
Rated voltage between phase to earth	240 V
Grounding system	Solid Earthing
Frequency	50 HZ
Voltage variation	+/-10%
Frequency variation	+/-2%
Power frequency 1 min, Test Voltage	3 kV

The three-phase supply shall be used for power circuit and the single- phase supply for lighting, indication, motor controls and similar small power circuits. Unless otherwise specified, the equipment provided under this Tender is to be capable of reliable operation at voltages as low as 85% of the rated voltage, and to withstand continuously up to 110% supply voltage above the rated value of 240V single phase or 415V AC three phase.

b) DC Auxiliary Supply Rating

Equipment/Device Rated voltage	24V DC
Connection type	2 wire
Voltage variation	18-36 V DC

The Auxiliary DC Supply shall be used for controls, indication, alarm, protection relays, and Circuit breaker tripping and closing circuit, e.t.c.

All equipment and apparatus including the Circuit Breakers, Protective relays, Control Devices and Accessories, Measuring and Indicating Instruments and electronic equipment shall be capable of satisfactory operation at 80% to 125% of the rated supply voltage.

Basic Requirements for Electrical Equipment

All materials supplied under this Contract shall be new and of the best quality and of the class most suitable for working under the conditions specified. They shall withstand the variations of temperature and atmospheric conditions arising under working conditions without distortion, deterioration or undue stresses in any parts and also without affecting the suitability of the various parts of the Works for which they were designed.

a) Electrical controls, auxiliaries and power supplies

i) Responsibility for electrical control and auxiliaries

The Manufacturer shall provide all control, indication, alarm and protection devices and all auxiliary equipment with wiring and interconnecting cable which are integral parts of or are directly associated with or mounted on the Switchgear panels to be supplied under this Tender. The design of Protection and Control schemes for the switchgear panels shall be subject to approval by the Employer.

ii) Operation and control

Interlocking devices shall be incorporated in the control circuit to ensure Safety, and Proper sequence and correct operation of the equipment.

b) Measuring instruments

- i)** All measuring instruments, including energy meters, shall be of flush-mounted, back-connected, dust-proof and heavy-duty switchboard type. Each measuring instrument shall have a removable cover, either transparent or with a transparent window. Each instrument shall be suitable for operation with the instrument transformers detailed in this specification, under both normal and short-circuit conditions.
- ii)** For analog type instruments, scale plates shall be of a permanent white circular or rectangular finish with black pointer and markings. The scale range shall be determined from the current transformer and voltage transformer ratios and is given in the detailed specifications for each instrument.

All measuring instruments of analog type shall be approximately 110mm² enclosures and shall be provided with clearly readable long scale, approximately 240 degrees. The maximum error shall be not more than one and a half (1.5) percent of full-scale range.

c) Indicating lamps

Indicating lamp assemblies shall be of the switchboard type, insulated for 24 V D.C. service, with appropriately colored lens and integrally mounted resistors for 110-volt service. The lens shall be made of a material, which will not be softened by the heat from the lamps.

For the Circuit Breakers, Red indicating lamps shall be used for “ON” position, green lamps for “OFF” position Indication and Amber for Transition

d) Nameplate and Escutcheon Plates

- i)** Each cubicle, panel, meter, switch and device shall be provided with a nameplate or escutcheon plate for identification with English description and also where appropriate the IEC Number on the front of the panel directly below each device as appropriate. On the inside of the control compartment of the switchgear panel, a yellow label, engraved in Black Letters and Numbers shall be fixed below each device. The Device Name/Number fixed on the inside of the control compartment shall correspond to the Name/Number used in the drawings. Each equipment shall be provided with a rating plate containing the necessary information specified in the relevant IEC standards.
- ii)** The plates shall be made of weatherproof and corrosion-proof materials and shall not be deformed under the service conditions at the site. The entries on the plates shall be indelibly marked by engraving with black letter on a white background.

e) Wiring

i) General

- 1.** All wiring inside the switchgear panel shall be done with PVC insulated wire not less than 2.5 sq.mm, flexible cable. A suitable wiring duct system firmly fixed on the panel and having covers shall be installed for all inter-panel and front-to-rear panel wiring as well as for wiring within the panels, which will provide easy access for inspection and replacement of the wires.

2. Wiring between terminals of the various devices shall be point to point. Splices or tee connection will not be acceptable. Wire runs from the duct to the device shall be neatly trucked or clamped.
3. Exposed wiring shall be kept to a minimum, but where used, shall be formed into compact groups suitably bound together and properly supported.
4. Instrument transformer secondary circuits shall be grounded only on the Terminal Block in the Control Compartment. Cable supports and clamp type terminal lugs shall be provided for all incoming and outgoing power wiring terminated at each panel. All wiring conductors (wires) shall be marked at each point of termination onto the terminal block or device. These wire markers shall be of an approved type and permanently attached to the conductor insulation. The method of ferruling shall be subject to approval by the Employer; It is however preferred that the Wire marker (ferrule) correspond to the device terminal Number of the device or the Terminal Block Number where it is terminated.

ii) Phase arrangement

The standard phase arrangement when facing the front of the panel shall be R-S-T- N, and P-N from the left to right, from top to bottom, and front to back for A.C three- phase and single-phase circuits. For DC circuit it shall be N-P from left to right, P-N from top to bottom and front to back. All relays, instruments, other devices, buses and equipment involving three-phase circuit shall be arranged and connected in accordance with the standard phase arrangement wherever possible.

f) Terminal blocks

- i. Terminal blocks for control wiring shall be rated not less than 600V AC.
- ii. Each Individual Terminal Block shall be marked with a distinctive Number, which shall be the same Number used in the drawings, for identification purposes. The TB number shall be engraved in black numbers in white background.
- iii. Each set of terminal Block shall be identified by a label to distinguish it from another set of terminal block with similar Numbers for the individual terminal blocks. The labels used will match those used in the drawings.

Equipment and Switchgear Earthing

General

All the Compartments including the hinged doors of the Switchgear Panels and all the earthing points of the equipment installed/mounted in the Switchgear panels shall be connected to the grounding conductor at the bottom of the panel for external connection to the substation earthing System.

Earthing conductors shall be of annealed high conductivity copper. The earthing conductor on the primary equipment such as the Earth Switch and also for inter-panel earth-bonding as well as for external connection to the substation Earthing – grid shall be adequate to carry the rated switchgear short-circuit current of 65kA for 1 seconds.

Materials and Workmanship

General

Materials shall be new; the best quality of their respective kinds and such as are usual and suitable for work of like character. All materials shall comply with the latest issues of the specified standard unless otherwise specified or permitted by the Employer.

Workmanship shall be of the highest class throughout to ensure reliable and vibrations free Operations. The design, dimensions and materials of all parts shall be such that the stresses to which they may be subjected shall not cause distortion, undue wear, or damage under the most severe conditions encountered in service.

All parts shall conform to the dimensions shown and shall be built in accordance with approved drawings. All joints, datum surfaces and meeting components shall be machined and all castings shall be spot faced

for nuts. All machined finished shall be shown on the drawings. All screw, bolts, studs and nuts and threads for pipe shall conform to the latest standards of the International Organization for Standardization covering these components and shall all conform to the standards for metric sizes

All materials and works that have cracks, flaws or other defects or inferior workmanship will be rejected by the Employer.

Assembly

Necessary items of equipment shall be assembled in the factory prior to shipment and Routine tests shall be performed by the Manufacturer as per the requirements of the latest issue of IEC as specified under each equipment in these specifications to demonstrate to the satisfaction of the Employer that the Switchgear panels comply with the requirements of the relevant IEC standards.

Casting

Casting shall be true to pattern, of workmanlike finish and of uniform quality and condition, free from blowholes, porosity, hard spots, shrinkage defects, cracks or other injurious defects, shall be satisfactorily cleaned for their intended purpose.

Operational Details

Instructions shall be engraved on the switchgear panel, on the circuit breaker compartment describing in simple steps how to carry out correct and safe Isolation, racking-in and switching operations on the circuit breaker. Similar details should be provided for the operation of the earth switch.

Protection, Cleaning and Painting

All outside panel surfaces shall be primed, filed where necessary, and given not less than two coats of synthetic undercoat. The finishing coat for the indoor installations shall be gloss paint.

Primer shall be applied to surfaces prepared in accordance with the plant manufacturer's instructions. The surface shall be wiped clean immediately prior to applying the paint. The primer and finish coats of paint shall be applied using the methods and equipment recommended by the manufacturer.

No painting or protection is required for finished or unfinished stainless steel parts.

The humid and tropical conditions shall be taken into account on selection of the paints and painting procedure.

Drawings

- 5.1 Before starting manufacture of the Switchgear panels, dimensioned drawings and data showing all significant details of the equipment and materials to be used shall be submitted to the Employer for approval. Four 4 weeks shall be allowed for discussions between the manufacturer and the employer leading to final Approval of the drawings by the Employer. Manufacturing of the switchgear panels shall not commence under any circumstances without receipt of Approved drawings by the Manufacturer from the employer.
- 5.2 The drawings shall be modified as necessary if requested by the Employer, and resubmitted for final approval.
- 5.3 The manufacture of the switchgear shall then proceed strictly in accordance with the Approved drawings and also in accordance with the Detailed specifications as contained herein. Where conflict may arise between the specifications and the approved drawings, the Specifications will take precedence, unless it's specifically indicated in writing on the Approved drawings that the conflicting clause in the specifications is superseded, or where following discussions between the Manufacturer and the employer, the employer gives approval in writing to supersede the conflicting clause in the specifications.

- 5.4 It is to be understood, however, that approval of the drawings will not relieve the manufacturer of any responsibility in connection with the works that the switchgear will fully comply with the relevant IEC/ANSI standards and with these specifications.
- 5.5 **All drawings submitted for approval or sent to the Employer for any other reason shall be in hard copy form and shall be sent by courier. Drawings for Approval shall not by any means be forwarded via e-mail or any other media except in hard copy form.**

Following completion of the manufacture of the switchgear Panels, the manufacturer shall carry out the following Checks and Tests before Inviting the Employer for Factory Acceptance Tests. Dimensional checks for the switchgear Board and the Busbars. Primary Injection Tests to check correct connection of the current transformers to the relays and instruments and Measuring devices.

Electrical Functional Tests

Mechanical/Interlock checks.

Any problems noted will be rectified and the switchgear panels shall only be shipped once the above tests and Checks are confirmed to be satisfactory.

Upon testing of the panels as in e) above the drawings will be edited to capture any minor wiring errors detected in order to produce the final construction drawings. A copy of the final construction drawings signed by the Manufacturer shall be send by courier to the employer before the panels are shipped.

All Protection and Control drawings shall be done on A4 - size paper. The function of each drawing shall be clearly indicated. Related drawings shall be arranged sequentially, and have the same drawing number but different sheet numbers. The drawings shall include the following; All Protection and Control drawings shall be done on A4 - size paper. The function of each drawing shall be clearly indicated. Related drawings shall be arranged sequentially, and have the same drawing number but different sheet numbers. The drawings shall include the following:

- a) Ac single line drawing
- b) AC Schematics
- c) DC Schematics
- d) Functional Drawings
- e) Panel wiring and cable terminations and schedules
- f) Panel device layout drawing
- g) General layout drawings for the switchgear panels
- h) Relays and accessories list.

Five (5) Copies of Final As built drawings shall be supplied after commissioning of the Switchgear.

Operating and Maintenance Instructions

The Contractor shall supply detailed instructions manuals concerning the correct manner of assembling/Installing/Erection, configuring, setting, Testing and Commissioning, operating and maintaining the equipment and devices constituting the Switchgear Board, including the board itself. The maintenance details of each component shall also be described, including the frequency of inspections and lubrication.

The instruction manual shall include a separate and complete section describing the normal and emergency operating procedures for the Switchgear, and shall include explanatory diagrammatic drawings to facilitate understanding the instructions.

The Manufacturer shall, in preparing the instruction manuals, take into account the lack of experience and familiarity of the Operators with this type of equipment.

The manual shall give specific information as to oil, grease, or any other materials needed for maintenance operations. This information shall include brand names and manufacturer's numbers or designations for at least two brands available in Kenya, preferably manufactured in Kenya.

A complete set of the Operating and Maintenance manuals for All the Plant, Equipment and Accessories to be installed/mounted in the switchgear panels shall be sent to the Employer together with the Drawings for Approval. The operating and maintenance manuals shall be original copies printed by the manufacturer. Any illegible copies of the operating and maintenance manuals submitted shall be rejected by the employer.

Before Approval of Shipment of the switchgear Panels, Five (5) Copies of the Operating and Maintenance Instructions/Manuals shall be sent to the Employer by Courier. The operating and maintenance manuals shall be original copies printed by the manufacturer. Any illegible copies of the operating and maintenance manuals submitted shall be rejected

In addition, three (3) Soft copies of the manuals shall be sent to the employer by Courier.

Testing At Place of Manufacture

The manufacturer shall be responsible for performing or for having performed all the required tests specified under the specification for the switchgear and all the Current Transformers, Protection Relays, Energy Meter, Measuring and Indicating instruments.

Tender documents shall be accompanied by copies of Type test and Routine test reports & certificates for similar rated equipment for the purpose of tender evaluation. Type test reports & certificates shall be certified by the National Standards and Testing Authority (NSTA) of the country of origin or by a third party Reputable Testing Authority. Where a body other than NSTA is used to certify the type-test reports, a copy of the certificate of accreditation shall be attached. Current contact information of the testing and certification authority shall be provided. Tenderers should note that this requirement is Mandatory.

Upon completion of the manufacturing process, routine tests shall be carried out as per the respective IEC standards of each equipment as follows:

- i) Circuit Breaker IEC 60298, IEC 60947
- ii) Switchgear panels, IEC 60294
- iii) Current Transformers, IEC 60044-1
- iv) Voltage Transformer, IEC 60044-2
- v) Protection Relays and Measuring and Indicating Instruments, IEC 60255 & 51

Only Upon receipt of Authentic certified copies of the Routine Test Reports/certificates and special Tests shall the Employer give clearance for shipment of the Switchgear Board once all the other listed requirements on Drawings, Instruction and maintenance manuals and software are met.

Software

The software shall support secure online firmware updates to allow remote maintenance, bug fixes, and feature enhancements without physical intervention.

Key Requirements:

I. Remote Accessibility

- The update must be possible via secure internet/cloud or utility intranet connection.
- Support standard communication protocols (e.g., HTTPS, FTP, MQTT, or IEC 61850-based channels).

II. Security

- End-to-end encryption of update files.
- Authentication of both server and device before update.
- Digital signature verification to prevent unauthorized or corrupted firmware installation.

III. Reliability

- Update should be possible without interrupting critical relay protection functions (fail-safe operation).
- Rollback mechanism to previous firmware version in case of update failure.
- Update progress monitoring with status logs and alarms.

IV. Compatibility & Management

- Centralized update management through SCADA/EMS or dedicated vendor platform.
- Version control to ensure correct firmware is applied to the correct relay model.
- Update scheduling (manual or automatic) to avoid operational disruptions.

Spare Parts

The manufacturer shall furnish spare parts as listed in the specifications.

The spare parts supplied shall be packed or treated in such a manner as to be suitable for storage under the climate conditions at the Site for a period of not less than two years, and each part shall be clearly marked with the description and purpose on the outside of the package. The manner of storage shall be recommended by the manufacturer.

Spare parts so provided shall be delivered with the switchgear to the employer's stores. Delivery of spare parts will not be deemed to be complete until the packages have been opened and their contents checked by a representative of the Employer.

Detailed Specifications for 415 V Ac Metal-Clad Indoor Switchgear Panels

Construction for Each Panel

- 10.1.1 The whole switchgear equipment and components shall be designed and constructed in accordance with IEC 60298 and IEC 60947. The Board shall be complete with all the relevant components including, Busbars, Circuit Breaker, Cable Compartment, Instrument Transformers, Protection Relays, instruments and controls.
- 10.1.2 The Switchgear Board, shall be constructed to 1P42 degree of Protection in accordance with IEC 60529. A type test Report for the Degree of Protection of the Switchgear panels from a third party Reputable Testing Laboratory or Certified by the National Standards and Testing Authority (NSTA) or a laboratory Accredited to the NSTA shall be submitted with the Tender for Evaluation Purposes.
- 10.1.3 The switchgear panel or cubicle shall be built up of separate metal clad- compartmented cubicles with earthed metal partitions. The compartments shall be for busbar, cable connection and current transformer, Air circuit breaker, and Protection and Control compartments.
- 10.1.4 The Air circuit breakers shall be mounted on an inbuilt carriage to facilitate Isolation and withdrawal of the Air Circuit Breaker. Where the carriage is fixed in the compartment and does not allow complete withdraw of the Air circuit breaker outside it's compartment, then a purposely built Trolley shall be provided equipped with a lowering/raising gear to lower the Air circuit breaker to the floor, and to raise the circuit breaker to it's compartment by one switching operator.
- 10.1.5 The complete switchgear shall be such that the complete switchboard is of flush- front design.
- 10.1.6 All the Protection Relays, Auxiliary Relays, Energy Meters Indication Lamps, Instruments, Control and selection switches and any other associated accessories will be mounted in the Protection and Control compartment. All the Protection Relays, Auxiliary Relays, Energy Meters Indication Lamps, Instruments, Control and selection switches and any other associated accessories will be mounted in the Protection and Control compartment.

- 10.1.7 The cable compartment should have an anti-vermin guard plate giving protection against rats, rodents etc.
- 10.1.8 The Circuit breaker compartment door shall be provided with provisions for padlocking.
- 10.1.9 The doors shall be capable of withstanding the effects of maximum internal arcing fault without being blown off and causing danger to other equipment/personnel.
- 10.1.10 The busbar shall be single, three phase, air insulated. The primary busbars and connections shall be of high conductivity and electrolytic material, high grade copper, and shall be in unit lengths.
- 10.1.11 Busbars, connections and their support shall be rated 800Amps continuously under ambient conditions and capable of carrying the short-time current associated with the short circuit ratings of the circuit breakers, of 65kA for 1 Seconds.
- 10.1.12 Busbars shall be extensible at both ends, such extension shall entail the minimum possible disturbance to the existing busbar.
- 10.1.13 Provision shall be made for locking busbar and circuit shutters separately in the Circuit Breaker compartment.
- 10.1.14 Provision shall be made for integral circuit earthing and for busbar earthing. Means of earthing shall be by circuit breaker or purposely built earth switch. Mechanical interlocks to ensure correct switching operation shall then be provided.
- 10.1.15 The earth switch shall be easy to operate by one operator and be spring loaded to ensure Effective Make Operation independent of the Operator Action. The earth switch shall be rated to make and carry for 3 seconds, the rated short-circuit current of the Air Circuit Breaker.
- 10.1.16 The Status of the earth Switch shall be visible from the front of the Panel.
- 10.1.17 The operation of the Earth Switch shall be set in such a way that during both the Close and Open Operations, a clearance of at least 9 inches shall be maintained between the operating handle and the bottom of the switchgear panel.
- 10.1.18 It shall not be possible to insert the Earth switch Operating handle into Position except when the Circuit breaker is in the Test or Isolated Position.
- 10.1.19 All earthing facilities shall be rated for fault making at the rated switchgear short- circuit current.
- 10.1.20 The Panel wiring for protection, instruments, indication and metering circuits and other control accessories shall be completely done. All circuits for connection to external cables such DC & AC auxiliary supplies, external tripping, and Indications shall be wired up to the terminal Block at the Back of the panel where external cables shall be connected. At least 12 spare terminals shall be provided on the terminal board for any future requirements.
- 10.1.21 It is emphasized that Each Switchgear panel will have a terminal block at the back of the panel where all external cables such as Auxiliary DC supply, shall be made.
- 10.1.22 Auxiliary 24V DC supplies for Circuit Breaker control, Alarm circuits and Protection relays, shall be controlled by suitably rated Miniature Circuit Breakers.
- 10.1.23 The cubicle shall be tropical vermin proof. The plates shall be of mild steel thoroughly cleaned by shot blasting or other approved methods. They shall then be given a primary coat and two coats of contrasting colour of durable and weather resisting paint. The final coat shall be gloss and of Admiralty Grey (Shade 632) as specified in BS 381C. The final thickness of the paint shall not be less than 80 Microns at any point within the switchgear panel
- 10.1.24 Anti-condensation heaters shall be provided inside each cubicle. They shall be located so as not to cause injury to personnel or damage to equipment. The heaters shall be controlled by a hygostat with a variable humidity and temperature setting. The Heaters shall be dimensioned to ensure that condensation cannot occur within the switchgear panel.

10.1.25 The 240V AC supply, for the heaters shall be controlled by a suitably rated single pole miniature circuit Breaker.

All the switchgear panels shall be rodent and vermin proof.

Circuit Breakers

10.2.1 The circuit breaker shall be three pole operated, indoor type, Air Circuit Breakers.

10.2.2 The moving portion of each circuit breaker shall consist of a three-pole circuit breaker, operating mechanism, primary and secondary disconnecting devices, auxiliary switches, position indicators and necessary control wiring. The Auxiliary switches shall be of the plug-in type, with the male contacts mounted on the Breaker carriage and the female contacts on the plug-in cable connected to the Panel wiring. Other options may be considered where there is adequate proof that the auxiliary contacts will always be making firmly without mis-alignment. Finger contacts will however not be acceptable.

10.2.3 The circuit breakers of the same current and voltage ratings shall be fully interchangeable, both electrically and mechanically.

10.2.4 Name plate for the circuit breaker shall be provided with all the required details as per IEC Standards.

10.2.5 The circuit breaker operating mechanism shall be motor wound spring operated, power closing with electrical release and with provision for hand charge.

10.2.6 Mechanical indication shall be provided to indicate the state of the spring.

10.2.7 The operating mechanism shall be completely trip free both mechanically and electrically.

10.2.8 The circuit breaker shall have a mechanical operations counter

10.2.9 One mechanical ON/OFF indicator, with inscription "ON" white letters on red background and inscription "OFF" white letters on green background shall be provided for the circuit breaker.

10.2.10 One mechanical indication of the state of the spring inscription – SPRINGS CHARGED (white letters on red background); SPRINGS FREE, (white letters on green background) shall be provided for the circuit breaker.

10.2.11 Where the Circuit Breaker is used for Circuit or Busbar Integral earthing, the control wiring of the breaker housing should be such that when the breaker is in circuit earth or busbar earth positions it shall only be operated mechanically and not electrically.

10.2.12 The Circuit Breaker Maintenance and Operations Manual shall contain clear instructions on the Maintenance requirements of the Circuit Breaker (if any), to prevent Switchgear failure in service, due to excessive Fault Current Clearance or any other cause.

Current Transformers

10.3.1 Current transformers shall be Cast Resin Type and shall be accommodated inside the cubicle, in a separate compartment.

10.3.2 The current transformers shall be in accordance with the requirement of IEC 60044- 1 and shall have the specified accuracy under load conditions and shall be able to withstand the effect of short-circuit fault current rating of the switchgear, of 65kA for 1 seconds.

10.3.3 Current transformers shall have a rated burden as specified, sufficient for the connected Numerical Protection relays and Energy meters and instruments.

10.3.4 Copies of Type Test certificates and routine Test Reports/Certificates as per IEC 60044-1, of CTs of similar Rating and Class as the specified CTs shall be submitted with the Tender for tender Evaluation Purposes. The Specified CTs must be within the Product Range of the manufacturer.

Protection Relays

- 10.4.1 The Measurement relays shall be Flush mounted and of Numeric Design, with event recording, Fault recording, power measurement, and shall be in accordance to IEC 60255.*
- 10.4.2 Besides the communication port, the relays shall have a human – machine interface facility (MMI) with and LCD Screen where one can easily access relay information.
- 10.4.3 Relay contacts shall be suitable for making and breaking the maximum currents, which they are required to control in normal service. Where contacts of the protective relays are not sufficient for Circuit Breaker Tripping, auxiliary Trip relays shall be provided, in order to prevent Damage to output contacts of the Measuring relay.
- 10.4.4 Relay contacts shall make firmly without bounce and the relay mechanism shall not be affected by Panel vibration or external magnetic fields.
- 10.4.5 Relays shall be provided with clearly inscribed labels describing their functions and IEC Device Function numbers.
- 10.4.6 Relays shall be suitable for operation on the station D.C. supply without use of dropping resistors or diodes.
- 10.4.7 To reduce the effect of electrolysis, relay coils operating on DC shall be so connected such that they are not continuously connected from the positive pole of the station battery.
- 10.4.8 The relay Thermal rating shall be such that the fault clearance times on any
Combination of current and time multiplier settings shall not exceed the thermal withstand capability of the relay. (Max. fault current = 25kA).
- 10.4.9 The relays shall be EMC 89/336/EEC compliant.

Indications and Instruments

- 10.5.1 All instruments shall be flush mounted and shall be in accordance with the requirement of IEC 51.
- 10.5.2 Each cubicle shall have the following indications:-
- i) One indicator lamp to show the breaker in closed position - RED colour
 - ii) One indicator lamp to show the breaker in open position - GREEN colour
- 10.5.3 The instruments shall be supplied as described under each panel in the subsequent sections.
- 10.5.4 Power Cable Termination: Cable compartment design shall be suitable for heat shrinkable (or equivalent) jointing application termination. The compartment shall be adequate for connection of cables to evacuate the total load of 800 Amps.

Accessories:

The following accessories shall be supplied with the switchboard at no extra cost:

Spring charging handle	FOUR SETS
Circuit breaker draw out handle	FOUR SETS
Recommended set of circuit breaker maintenance tools	ONE SET

Ratings of Switchgear and Equipment

Incomer and Feeder Air Circuit Breaker

Interrupting Medium	Air
Number of poles	3
Highest equipment Voltage	600 V AC
Nominal System Voltage	415 V AC
One minute power frequency withstand voltage	3 kV
Impulse withstand voltage (BIL)	8 kVp
Frequency	50 Hz
Rated short time current	50 kA
Rated Short circuit current withstand	50 kA, 1 seconds
Auxiliary D.C. voltage for closing and tripping coils	24 V DC
Auxiliary a.c. voltage	240V AC, 50Hz
Tripping/closing coil auxiliary voltage	24 V DC
Spring charging motor supply	240 V AC
Rated normal Current	800 A

Current Transformers for Incomer and Feeder Panels

i)	Rated Short time current (STC) withstand	25 kA for 3 seconds
ii)	Rated Voltage of the CT	600 V
iii)	One minute power frequency withstand voltage	3kV
iv)	Impulse withstand voltage	8 kVp
v)	Rated maximum continuous current	800 Amps

Ratio and class:

i) Feeder Panels:

Core1:	C.T Ratio	: 800-400/1 A
	Class	: 5P10
	VA	: 10VA
Core2:	C.T Ratio	: 800-400/1 A
	Class	: 0.5
	VA	: 10VA

ii) Incomer panels:

Core1:	C.T Ratio	: 800-400/1 A
	Class	: 5P10
	VA	: 10VA
Core2:	C.T Ratio	: 800-400/1 A
	Class	: 0.5
	VA	: 10VA

Tests

All switchgear shall be tested in accordance with the requirement of IEC 60298. Tests shall be carried out on the circuit breakers as per the requirement of IEC 60947. Current transformers shall be tested in accordance with the requirement of IEC 60044-1.

10.7.3.1 Schedule of Tests to be carried out at the Manufacturer's plant

- a) Test on Complete 415 V AC Switchgear Board
 - i. Power frequency Withstand Test
 - ii. Megger Test
 - iii. Contact resistance test of Primary joints
 - iv. Power frequency Withstand Test on secondary Wiring
 - v. Dimensional Checks
 - vi. Operational/Functional Tests
 - vii. Primary Injection Tests
 - viii. Calibration Tests on Relays and Instruments.
- b) 600 V AC Air Circuit Breaker
 - i) Routine tests.
 - 1. Operation test.
 - 2. High Voltage test, dry. 3kV Power frequency Voltage test on controls and auxiliary circuits.
 - 3. Measurement of resistance of the main circuit.
 - ii) Type Tests: Submit copies of Type test Reports and Certificate
 - 1. Mechanical endurance test
 - 2. Temperature rise test.
 - 3. Impulse voltage test
 - 4. Interrupting Capacity test.

NB: Copies of Type Test Certificates for similar rated Circuit Breakers and Certified by National Standards and Testing Authority body or Reputable Third Party Test Laboratory shall be submitted with the Tender for Evaluation Purposes.

c) Current Transformer

Type and routine tests shall be carried out at the manufacturer's plant as per the requirement of IEC 60044-1, as listed below.

- i) Polarity Test and Verification of terminal markings
- ii) Ratio and phase angle error test (accuracy class composite error test)
- iii) Power frequency Tests on Primary and secondary windings

Protection Relays, Controls and Measuring Devices

Requirements For 415 V Ac Switchgear Panels:

General Requirements

Protection against electrical faults and abnormal conditions on 415 V AC Switchboard and the outgoing 11 kV feeders shall be conducted by the protective relays and associated switchgear. The Protection schemes shall be designed to ensure detection of all faults, fast discriminative fault clearance in order to ensure safety of personnel, equipment and continuity of Electric Power Supply.

Bill of Materials:

a) Feeder Panels Requirements

Each Feeder Panel shall be equipped with the following Protection Relays, Measuring and indicating devices, Controls and other Accessories.

- i) Three phase overcurrent and earth fault.
- ii) Combined Earth Fault and sensitive Earth Fault Relay.

- iii) Three Ammeters with MDI with face plates available for both CT ratios. The Ammeter shall indicate both the instantaneous Load current and also the Maximum Demand Load current since the last reset.
- iv) Energy Meter
- v) Voltmeter and Voltage Selector Switch, Circuit breaker control switch (Close, Open & Neutral), with a mechanical Lock, to prevent unintended tripping of the Circuit Breaker.
- vi) Sensitive Earth Fault (SEF) mechanical isolation link or switch.
- vii) Circuit Breaker ON(red) and OFF(green) Indication lamps.
- viii) Door switch Operated Lighting point and Bulb.
- ix) 3 Pin - Square Power Socket Outlet with red neon indicator.
- x) Suitably rated MCBs for Auxiliary 24V DC and for 240 V AC supplies.

b) Common Alarm System

A common Alarm System shall be supplied equipped with the following:

- i) Urgent Alarm relay
- ii) Non-urgent Alarm relay. NB: The urgent and non-urgent Alarm relays will be separate Relays.
- iii) 16 window Annunciator relay.
- iv) Hooter.
- v) Suitably rated MCBs for Auxiliary 24V DC and 240 V AC supplies.

c) Incomer Panels Requirements

The Generator Panel shall be equipped with the following Protection Relays, Measuring and indicating devices, Controls and other Accessories:

- i) Three phase overcurrent and earth fault relay.
- ii) Reverse Power Relay.
- iii) Three Ammeter with MDI
The Ammeter shall indicate both the instantaneous Load current and also the Maximum Demand Load current since the last reset.
- iv) Energy Meter.
- v) Kilowatt Meter.
- vi) Power Factor Meter.
- vii) Voltage meter.
- viii) Auto/Manual Selector Switch.
- ix) Voltage selector switch.
- x) Circuit breaker control switch (Close, Open & Neutral) with mechanical locking to prevent unintended operation.
- xi) Circuit Breaker status ON (red) and OFF (green) Indication lamps.
- xii) Door switch Operated Lighting point and Bulb.
- xiii) Pin - Square Power Socket Outlet with neon indicator.
- xiv) Suitably rated MCBs for Auxiliary 24V DC and 240 V supplies.

Protection Relays and Control Devices

Reference Standards IEC 60255: Electrical Relays

General Requirements

- a) The electrical Measuring protective relays shall be of Numeric Design. The Protective Relays and Auxiliary Relays shall operate successfully for any value of the DC supply voltage between 85% and 125% of the rated voltage of 24 V DC without exceeding the temperature rise limits for the operating coils.
- b) Each Measuring protection relay shall be of the Panel flush mounted, back connected, type with rectangular case. Each relay shall have a removable transparent cover or cover with a transparent window making the front of the relay visible. It is preferred that each measuring relay shall be of a withdrawable type from the front of the panel with sliding contacts, without opening the current transformer secondary circuits, disturbing external circuits or requiring disconnection of leads on the rear of the panels.
- c) Each protection relay shall be equipped with adequate electrically independent contacts, of adequate rating for Trip and alarm functions.
- d) Relays contacts shall be suitable for making and breaking the maximum currents, which they may be required to control in normal service. Where contacts of the protective relays are unable to deal directly with the tripping currents, Auxiliary Trip relays shall be provided. This will ensure safety for the protection relays output contacts.
- e) Relays contacts shall make firmly without bounce and the whole of the relay mechanism shall be as far as possible unaffected by vibration or external magnetic fields.
- f) Relays shall be provided with clearly inscribed labels on the surface of the panel describing their application in words e.g., “Three Overcurrent & Earth Fault Relay” in addition to the IEC numbering and outside.
- g) The Numerical Relays will be equipped with an RS232 Communication Port to facilitate connection to a Laptop. Also a communication port shall be provided on each Numerical Relay for Remote Interrogation and Programming of the Numerical Relays.
- h) The Relays will also have an MMI with LCD screen and Keypad to facilitate manual Relay programming and Data access.
- i) Relay Operation due to system fault, shall be indicated by a Red L.E.D. and the fault details (flags) shall be displayed on the MMI. Both the Relay Fault flags and Red L.E.D shall be reset via Reset push buttons without opening the Relay Cover.

Detailed Specifications for Relays, Measuring And Indicating Instruments, Control Switches And Other Accessories

These specifications indicate the required performance characteristics for each of the Protection Relays and are in accordance with IEC 60255.

a) Three phase over-current and earth fault relay

Should incorporate the following Features:

- i) Relay must be of Numerical Design.
- ii) Shall be suitable for mounting on the panel front.
- iii) Current setting range for overcurrent relay $0.2I_n$ - $2.4I_n$.
- iv) Current setting range for earth fault relay $0.05I_n$ - $0.8I_n$.
- v) I.D.M.T characteristics according to BS142 or IEC255 i.e. SI, VI, EI, LTI, including definite time for the high-set Elements.
- vi) Time setting multiplier 0.05 - 1.0.
- vii) Broken conductor protection feature

- viii) Highest Element for both overcurrent and earth fault with.
- ix) Protection, with a setting range of 1-30In and a definite time delay setting of 0 - 60 Seconds.
- x) Drop off /pickup ratio >90%.
- xi) Low transient overreach < 10%.
- xii) LCD screen where the Settings and Measurement can be read.
- xiii) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of Data using a Laptop Computer on the front surface of the Relay.

b) Earth Fault Relay

Should incorporate the following Features:

- i) Relay must be of Numerical Type.
- ii) Current setting range 0.05In-0.8In.
- iii) I.D.M.T characteristics according to BS142 or IEC255 i.e. SI VI, EI, LTI, including definite time for the high-set Elements.
- iv) Time setting multiplier 0.05 - 1.0.
- v) Highest Element with a setting range of 1-30In.
- vi) Circuit Breaker Maintenance.
- vii) Drop off /pickup ratio >90%.
- viii) Low transient overreach < 10%.
- ix) LCD screen where the Settings and Measurements can be read.
- x) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of Data using Laptop Computer on the front surface of the Relay.

c) Sensitive Earth Fault Relay

Should incorporate the following Features:

- i) Relay must be of Numerical Type.
- ii) Current setting range for earth fault relay 0.010In- 0.8In.
- iii) Definite time delay characteristic; setting range, 0- 30 Seconds.
- iv) Drop off /pickup ratio >90%.
- v) Low transient overreach < 10%.
- vi) LCD screen where the Settings and Measurements can be read.
- vii) Keypad for manual programming of settings and data access.
- viii) Serial RS232 Port for Programming of the Relay and Access of Data using a Laptop Computer on the front surface of the Relay.

d) Reverse Power Relay

Should incorporate the following Features:

- i) Relay must be of Numerical design.
- ii) Directional Power setting range, 0.2 to 20%.
- iii) Definite time Delay; 0.4 to 10 seconds in suitable steps.
- iv) LCD screen where the Settings and Measurements can be read.
- v) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of data using a Laptop Computer on the front surface of the Relay.

e) Annunciator Relay Unit

- i) Shall have Silence, Accept and Reset, push buttons, to control the Alarms.
- ii) Shall be equipped with At Least 16 separate alarm Elements.
- iii) Each of the elements shall be freely assigned to one of two common output.
- iv) Alarms; Urgent and NON-urgent Alarm.

- v) Each Alarm Element shall have a Red L.E.D. to indicate ON status. It shall also have provision for fixing of Identification Label changeable on site. A flashing Alarm element shall be clearly visible.
- vi) The Urgent and Non-Urgent common Alarms Shall be freely configurable to the output Relays.
- vii) High Immunity against Electrical interference.
- viii) Relay output for audible alarm and for self-supervision shall be provided.
- ix) Integrated event register to provide analysis of the latest sixteen (16) events.

f) Circuit breaker Close/Open control Switch

The switch shall have a mechanical interlock to prevent accidental operation of the switch. It shall have a close, Neutral and Open positions engraved on the switch. After an operation, the switch shall return to the neutral Position by spring Action.

g) Indicating Instruments, Directly connected

ALL the instruments shall be of Moving Iron type

- i) The IP Protection Class shall be IP54.
- ii) Accuracy class shall be 1.5, with maximum tolerated error of $\pm 1.5\%$ of final scale value.
- iii) Overload withstand shall be at least 20% continuous.
- iv) All instruments shall be suitable for continuous operation under Tropical Climatic conditions.
- v) Ammeter Instrument with MDI– 800A

Indicating Range, 0 – 800 A for current input of 0 – 1A Full Scale Deflection, 800 A

Black Scale on white background Dimensions, 96X96 mm.

Shall have a resetable maximum demand indicator having a different color from the normal pointer as well as the normal instantaneous demand pointer.

Shall be Suitable for Flush Mounting on the panel.

- vi) Voltmeter Instrument - 415 V AC

Indicating Range, 0 – 500 V AC Black Scale on white background Dimensions, 96X96 mm.

Suitable for Flush Mounting on the panel.

- vii) Signaling Hooter

The actuator system shall consist of a strong, non polarized electromagnet with an impact resistance sturdy casing.

Rated frequency 50 HZ.

Rated voltage shall be 240V AC; $\pm 6/-10\%$ Protection degree shall be IP 55

Operating mode continuous

Volume approximately 108 dB(A) 1 ¼ m Connection terminals shall be 2.5 mm 2

Detailed Specifications for the Energy Meters

NB: These energy meters are for tariff metering similar to those used by Utilities

These specifications are for energy meters to be installed on the switchgear panels for purposes of Recording delivered Electrical Energy, and are in accordance with IEC 61334-4-4-1(DLMS Standard protocol).

The Energy Meter Supplied shall meet all the requirements detailed below:

The meters shall conform fully to IEC 687 for class 0.5S Energy Meters and any other relevant specifications.

The meters shall be programmable and relevant software and connection cable to laptop shall be provided. Meters complying with IEC 61334-4-4-1(DLMS Standard protocol) shall be preferred. The meters shall have memory and be capable of storage of at least 12 months load profile and other data.

The meters shall be capable of bi-directional metering so as to record faithfully, both export and import quantities. The accuracy shall be as per IEC 687 in both directions. The quantities to be displayed shall be determined by the user through use of Software that shall be provided. The meters shall be configurable for use in three phase 3/4-wire networks systems as follows:

3x240/415 V, 10 (100) A

3x240/415 V, /5 (1) A

3x /110V, /5 (1) A

The meters shall be usable on phase voltages of magnitudes ranging from 100V to 500V, 50 Hz. Meters with voltage-surge protection that meets IEC 687 specifications. The meters shall be for flush panel mounting. The meters shall have a non-volatile memory so as to ensure no loss of data during power failures. Security passwords and switches shall be provided to prevent unauthorized programming of the meter. The meters shall be fully year 2000 compliant and a certificate of confirmation shall accompany the tender.

The meters shall be suitable for operation in any part of the Republic of Kenya where the climate varies largely from temperatures between -5 and 40 Degrees Celsius and relative humidity reaching 95% in some parts. Operating altitudes ranging from sea level to 2200 meters above sea level. The meters shall support multi-tariff metering.

The Meters shall incorporate instrumentation for the following measurements: -

MW, MVAR, MVA, p.f., Phase Currents, Phase voltages and the angle between individual Phase Voltage and corresponding phase current. These measurements shall be visible on the Meter display.

The meters MUST have a capability of freezing billing readings on any selected date of the month.

The meters will measure maximum demand for MW, MVAR and MVA and these will be accessible on the Meter display. The Demand integration period will be programmable.

The CT and VT ratios shall be programmable. The meters shall have an accurate internal quartz controlled clock. It should be possible to reset the clock without loss of billing data. The supplier shall show proof of ISO 9000 and ISO 14000 standards compliance by attaching copies. The meters shall be provided with adequate sealing facilities to prevent tampering. The nameplate and meter details shall be clearly marked using materials and colors that are durable and indelible.

In addition to requirements of IEC 687 the name-plate shall carry the following particulars:

- i) The inscription “ The property of REREC”
- ii) Owner’s serial numbers as directed with a minimum 5mm figure height.
- iii) Year of manufacture.

The meter base cover shall be of non-metallic, non-hygroscopic, flame retardant, polished material having high impact-resilience and low dirt absorption properties. The front cover may be of translucent material with a clear transparent front. The meter shall have a minimum of three sealing - provisions for the meter body, terminal cover and front cover (where applicable).

The meter terminal cover shall be the normal short length with provisions of easy bottom breakage for cable entry. The terminals shall be of bottom entry, and the arrangement shall be:

L1 L 1: L2 L2: L3 L3: N or

I1 V1 I1: I2 V2 I2: I3 V3 I3: N

The accuracy shall be Class 0.5. The meter errors shall comply with the requirement IEC 687 and shall be adjusted at the manufacturer's works to be within between low and high load and shall exhibit good stability. The meter shall have a warranty against any defects, which may develop due to faulty material, calibration, transportation or workmanship for a period of not less than eighteen months from the date of delivery. All defective meters shall be replaced at the supplier's cost.

The following drawings and information shall be required with the tender:

Meter drawing giving all the relevant dimensions. Wiring diagrams.

Description leaflet including details of programming of the meters User's and service manuals.

Schedule

The Tenderer shall after reading through the Technical Specifications and the Tender Documents in general complete the technical schedules below. The completed schedules shall accompany the bid.

ANNEX 2 – TECHNICAL REQUIREMENTS

I SWITCHGEAR PANEL			
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDER'S RESPONSE
1	Manufacturer's name	State	
2	Manufacturer's letter of authorization	Provide copy	
3	Copy of ISO 9001/2certificate.	Provide copy	
4	Type or designation numberof Switchgear offered.	To provide	
5	enclosure [IP] class ofprotection	IP42	
6	Rated voltage	600 V	
7	Rated power frequencywithstand	2kV	
8	Rated lighting impulsewithstand	8 kVp	
9	Metal clad compartments[CB, Busbar, LV, CT& Cable] attach layout drawing	4	
10	Busbar material	Tinned copper	
11	Dimensions [WxHxD [attach layout drawing]	Provide	
12	Short circuit withstand	25kV, 3 sec	
13	Lockable door with viewingglass in CB compartments.	Yes	
14	Shutters for Busbars [red] and circuit [yellow]provided.	Provide	
15	Busbar rating	800A	
16	Circuit rating - Incomer	800A	
17	Circuit rating - Feeder	800A	
18	Warranty	3 years	

II 600 V AC AIR CIRCUIT BREAKER			
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDER'S RESPONSE
1	Manufacturer's name	State	
2	Type or designation number of circuit breaker offered	Indicate	
3	Name of manufacturer of vacuum interrupter	Provide	
4	Rated circuit breaker voltage	600 V	
5	1-minute power frequency withstand	2kV	
6	Impulse withstand voltage	8kV	
7	Rated short circuit current and withstand	65kA, 1 sec	
8	Auxiliary DC voltage for closing and tripping coils	24 VDC	
9	Auxiliary AC supply	240 VAC	
10	CB mechanism	Motor wound spring	
11	Visible spring charged Mechanical indication on CB as per specifications.	Provide	
12	Visible CB ON/OFF indications as per specifications	Provide	
13	Connection of CB to auxiliary panel circuits via a plug-in cable	Yes	
14	Operations counter	Provide	
15	ACB Continuous Current Rating	800 A	

III	CURRENT TRANSFORMERS		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDER'S RESPONSE
1	Manufacturer's name	Indicate	
2	Type or designation number of CT	Indicate	
3	Rated voltage of offered CT	600 V	
4	1 minute power frequency withstand voltage	2 kV	
5	Impulse voltage withstand	8 kVp	
6	Short-circuit withstand current and duration	65kA, 1 sec	
8	Incomer Panel CT Details Ratio 800-400/1A Core 1: clx; VR \geq 250V; I \leq 0.02A Core 2: 15 VA, 5P10 Core 3: 15 VA cl 0.5	Indicate Indicate Indicate Indicate	

IV	PROTECTION RELAYS, AUXILIARY RELAYS AND CONTROL DEVICES:		
[a]	THREE PHASE OVERCURRENT AND EARTH FAULT RELAY		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDERS RESPONSE
i	Manufacturer	State	
ii	Type of designation name	State	
iii	Design	Numeric	
iv	Flush mounting on panel	State	
v	One time delayed element and two high set elements	Provide	
viii	MMI with keypad and screen	Provide	
ix	Software to be provided –	Provide	
x	2 No. connection cable from relay to laptop computer to be provided	Provide	
xi	Serial RS232 port	Provide	

[b]	EARTH FAULT RELAY		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDER'S RESPONSE
i	Manufacturer's name	State	
ii	Type or designation name	State	
iii	Design	Numeric	
iv	Flush mounting on panel	State	
v	One time delayed element and two high set elements	Provide	
vi	Software to be provided –name	Provide	
vii	MMI with keypad and LCDscreen	Provide	
viii	Serial RS 232 port	Provide	
[c]	SENSITIVE EARTH FAULT RELAY		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDERS RESPONSE
i	Manufacturer's name	State	
ii	Type or designation name	State	
iii	Design	Numeric	
v	Software to be provided – name	Provide	
vi	MMI with keypad and LCD screen	Provide	
vii	Serial RS 232 port	Provide	
[d]	THREE-PHASE DIRECTIONAL POWER RELAY		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDER'S RESPONSE
i	Manufacturer's name	State	
ii	Type or designation name	State	
iii	Design	Numeric	
iv	Directional Power Setting Range	State	
v	Flush mounting on panel	State	
vi	Definite time delay	Provide	
vii	Software to be provided – name	Provide	
viii	MMI with keypad and LCD screen	Provide	
ix	Serial RS 232 port	Provide	

[e]	ANNUNCIATOR RELAY UNIT		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDER'S RESPONSE
i	Manufacturer's name	State	
ii	Type or designation name	State	
iii	Incorporates 16 Alarm elements	State	
iv	Has RED LED for visual indication	Provide	
v	Has silence, accept and reset push buttons	Provide	
vi	Alarms freely assigned to urgent or non-urgent bus-wires	State	
[f]	CIRCUIT BREAKER CLOSE/OPEN SWITCH		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDERS RESPONSE
i	Manufacturer's name	State	
ii	Type or designation name	State	
iii	Close and open position marked on the escutcheon plate	State	
[g]	DIRECTLY CONNECTED INSTRUMENTS		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDERS RESPONSE
	1 AMMETER WITH MDI- 800A		
i	Manufacturer's name	State	
ii	Type or designation name	State	
iii	96 mm x 96 mm	State	
iv	Flush panel mounting	State	
	2. FREQUENCY METERS		
i.	Range	45-55hz	
ii.	Mounting	Flush in 48*96 sq.mm	
	3. VOLTMETERS		
i.	Mounting	Flush	
ii.	Size	48 *96 sqm case	
iii.	Frequency	50Hz	
iv.	Operating voltage	415vac	
v.	Dielectric strength	2kv rms for 1 min	

[h]	MULTIFUNCTIONAL ELECTRICITY METER		
ITEM	DESCRIPTION	REREC'S REQUIREMENT	BIDDERS RESPONSE
i.	Class of accuracy	0.5	
ii.	CT ratio	800A-400/1A	
iii.	Type or designation name	State	
iv.	Mounting	Flush	
v.	Measuring Parameter	KWh,kVAh,kVAR Instantaneous P.F,KW,KVA, supply frequency,Phase voltage and Phase currents	
vi.	Display	Customized backlit liquid crystal display	

PART III: Low Voltage (LV) Single Core Aluminium Cables (PVC)

Lv Single Core Aluminium Cables (Pvc)					
0.	Fore Word				
	0.1	This standard lays down specification for LV single core PVC insulated cables.			
	0.2	This specification is intended for procurement of materials and does not include provision of contract.			
	0.3	This specification is based on IEC 502 and BS 6346. It is subject to revision as and when required.			
	0.4	This specification supersedes all specifications for LV single core PVC insulated cables issued before the revision date.			
1.	Scope				
	1.1	This specification is for single core, stranded aluminium conductors, polyvinyl chloride (PVC) insulated, armoured, PVC outer sheathed power cables for operation up to and including 600 volts to sheath and 1000 volts between conductors.			
	1.2	This specification is for following cable sizes:			
		630 sq. mm Aluminium conductor PVC insulated single core cable.			
		300 sq. mm copper conductor PVC insulated single core cable.			
2.0	Materials And Construction				
	2.1	The cable shall be made from circular stranded compact plain aluminium conductor as per IEC 228.			
	2.2	The insulation shall be polyvinyl chloride (PVC) complying with the requirement of IEC 502 for type PVC/A.			
	2.3	The insulation shall be applied by extrusion process and shall form a compact homogeneous body. The insulation shall concentrically cover the conductor			
	2.4	Extruded over-sheath shall be of black polyvinyl chloride (PVC).			
	2.5	The cable shall be clearly and permanently embossed with the following information throughout the length of the over-sheath. Letters and figures raised and consist of upright block characters. Minimum size of characters not less than 15% of average overall cable diameter.			
		600/1000 VOLTS PVC CABLE			
		Year of manufacture			
		(Example: ‘600/1000 VOLTS PVC CABLE 1996’)			
3.0	Standard Sizes And Characteristics				
	3.1	The characteristics of the cables shall comply with the following table			
		Item		Characteristics	
		Conductor resistance		Not more than the value indicated	
		A.C. withstand voltage		To withstand the indicated value for 5 min.	
		Insulation resistance		Not less than the value indicated.	
		Tensile strength	PVC	Tensile strength, minimum	12.5N/mm (1.27 Kg/mm)
		Ageing requirement*	PVC	Elongation, Minimum percentage of unaged value	150% 75 - 125%
	* Treatment: PVC temperature 100 - 20°c duration 168 hrs				

	3.2	The cable shall conform with the following requirements		
		Cable size	630 sq. mm	300 sq. mm
		Nominal sectional area	630 sq. mm	300 sq. mm
		Thickness of insulation	2.8 mm	2.4 mm
		Thickness of outer sheath	2.2 mm	2.2 mm
		Nominal overall diameter	38.8mm	28.0 mm
		Approximate net weight	6200 kg/km	3100 kg/km
		Test voltage	3kV/5min	3kV/5min
		Maximum conductive resistance	0.007 ohms/km	0.0120 ohms/km
4.0	Tests			
	4.1	The cable core, sheath and completed cable shall be tested in accordance with the requirements of BS 6346.		
5.0	Packing			
	5.1	The cable shall be wound on wooden drums such as to prevent damage during transportation. The wooden drums shall be made from treated timber resistant to termite attack.		
	5.2	The following description shall be marked on one flange of the reel		
		(a)	Direction of rotation of the reel	
		(b)	Type of cable	
		(c)	Number of conductors and size	
		(d)	Length	
		(e)	Net weight and gross weight	
		(f)	Manufacturer's name	
		(g)	Year of manufacture	
6.0	References			
	6.1	The following documents were referred to during the preparation of this specification. In cases of conflict, the provisions of this specification shall take precedence.		
		Unless otherwise specified, the latest revision, edition and amendments shall apply		
		IEC 502:(1983): Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV.		
		IEC 228(1978): Conductors of insulated cables.		
		BS 6346 PVC insulated cables for electricity supply		

PART IV: Specifications for 0.415/11kV Step-up Transformer

FOREWORD

This specification lays down requirements for 0.415/11 kV Step-up Transformer. It is intended for use by the successful bidder in purchasing the transformers.

It shall be the responsibility of the successful bidder to ensure adequacy of the design and good engineering practice in the manufacture of the 0.415/11kV Step-up Transformer for REREC. The bidder shall submit together with the tender information, which confirms satisfactory service experience with products, which fall within the scope of this specification.

It is expected that the bidder will engage manufacturers who will provide energy efficient standard design that will provide high level of efficiency and significant initial cost saving.

1.1 SCOPE

This specification is for oil-immersed, air-cooled, outdoor type three phase 0.415/11 Kv Step-up Transformer for ac system operated at 50 Hz.

The transformers shall be connected to an off-grid power station to step-up generation output of 415V to 11 kV distribution network.

REFERENCES

The following documents were referred to during the preparation of this specification; in case of conflict, the requirements of this specification shall take precedence.

- IEC 60076:** Power Transformers
- BS 381C:** Specification for colours for identification, coding and special purposes
- IEC 60296:** Specification for unused mineral insulating oil for transformers and switchgear
- IEC 60354:** Loading guide for oil – immersed power transformers.
- BS 6436:** Specification for Ground Mounted Distribution Transformers for Cable Box or Unit Substation Connection.

TERMS AND DEFINITIONS

For the purpose of this specification the definitions given in the reference standards shall apply.

REQUIREMENTS

SERVICE CONDITIONS

Operating conditions

The transformers shall be suitable for continuous operation outdoors in tropical areas at altitudes of up to 1500m above sea level, humidity of up to 90%, average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C and heavy saline conditions along the coast.

System characteristics

- The primary shall be 415V, 50Hz while the secondary shall be 11 000V, 50Hz, three wire (the neutral solidly earthed).
- The 11kV overhead system is of unearthed construction (i.e. without aerial earth wire).

DESIGN AND CONSTRUCTION

General

- The transformer shall be three phase, oil immersed type, air cooled, core type, outdoor and shall be designed, manufactured and tested as per IEC 60076 and this specification.
- The transformer shall be free breathing type provided with a conservator and a dehydrating breather (cobalt free). The conservator shall be in such a position as not to obstruct the electrical connections to the transformer and shall have oil gauge at one end marked with oil levels. The conservator shall have a feed valve.
- The complete transformer shall be painted and protected against corrosion, and the final colour of the exterior surface shall be Dark Admiralty Grey colour No. 632 as per BS 381C. The inside of the tank shall be coated with oil resisting varnish or paint so that oil cannot come into contact with tank or metal at any point.
- Each transformer shall be suitable for ground mounting (on a plinth).
- Drawings and documentation for the transformer offered shall be given, clearly detailing important dimensions, clearances, accessories, fittings, internal assembly, material details and any special features of the offered design.

Tank

- The transformer tank shall be constructed of mild steel plates. Tank thickness shall be stated in the Technical Particulars
- The transformer tank shall be sealed by means of suitable gasket and be fitted with earthing terminals. Eight(8No.)non-standard shearing bolts to deter unauthorised opening shall be used on bolted corners and centres of sides of the top cover. Relevant tools for unbolting the transformer shall be delivered with the transformer.

Core

- The cores shall be constructed of high quality low loss grain oriented electrical steel laminations. The design shall ensure no hot sections due to overfluxing or circulating currents across the laminations. The flux density at any point shall not exceed 1.65 Tesla.
- The cores shall be clamped effectively with metal cross-arms and be fitted with core lifting lugs. The manufacturer shall demonstrate experimentally or via a previous test report, that the whole structural frame-work supporting the transformer windings and the core can definitely withstand repeated transformer short-circuits.

Windings

- The windings shall be of electrolytic copper capable of sustaining short circuit forces on the transformer.
- The primary windings shall be of full coil copper wires as opposed to segmented winding and the secondary windings shall be coil or foil of copper.
- The HV and LV windings shall be separated so as to allow for cooling and ease of repair. Insulating sleeves for the transformer tappings shall be in crepe paper or better.

Tapping

- The secondary winding (11 kV) shall have tappings at $\pm 2 \times 2.5\%$ operated by an off-circuit self-positioning tapping switch with marked position indicators. Tapping details shall be included on the transformer name plate.
- Switch position No. 1 shall correspond to maximum plus tapping. The make contacts of the tap changer shall be robust and of sufficient surface area.

Vector Group

- The three-phase transformer shall be wound to IEC vector reference YNd11.
- The star point of the secondary winding shall be brought out to a neutral bushing.

Cable Boxes, Bushings and Clearances

- The transformer shall be fitted with cable box on the primary side (LV) and have open bushings on the secondary side (11 kV).
- The LV cable box shall be unfilled type and suitable for terminating up to 7No. single core PVC cables of 240 mm² on a clamp pad, cables entry from bottom.
- The 11 kV bushings shall be open and shall have outdoor brown glazed weather proof bushings provided with external stud for conductor sizes from 7.8 mm to 18.2 mm diameter mounted on the tank top cover.
 - a) Clamp connector shall be provided on each bushing.
 - b) The bushings shall be constructed, arranged and fitted in such a manner as to be changed without opening the transformer.
 - c) Each bushing shall be fitted with adjustable double-gap arcing horns set at 2 X 25mm gaps.
 - d) The minimum external electrical clearances and minimum creepage distances of the 11 kV bushings shall be as indicated below:

Nominal System Voltage between Phases		11 kV
Minimum clearances between phase to earth	mm	250
Minimum Clearances between phases	mm	300
Creepage distance	mm	300

Oil and Cooling

- Cooling of the transformer shall be by natural circulation of oil and natural circulation of air (ONAN). Loading will be as per IEC 60354.
- Each transformer shall be dispatched filled with oil to the correct level and ready for service. The oil shall be new (unused), uninhibited mineral insulating oil class I as per IEC 296. The oil shall be PCB-free.

Fittings and Accessories

- No drain valve shall be fitted.
- Oil gauge shall be provided on each transformer and shall be of dial or floater type. The oil gauge shall be clearly readable by an operator standing at a distance of 5 meters away from the transformer. The maximum and minimum oil level marks shall fall within 50% of the full range of the gauge with the nominal oil level being at the center of the range.
- Each transformer shall be complete with an oil temperature thermometer in a visible and secure position.
- Each transformer shall be complete with a pressure relief device fitted in a visible and secure position. No part of the pressure relief device shall extend to a height greater than the HV bushings.

Rating

- The transformer shall be capable of carrying its full normal rated current continuously under the tropical conditions stated (maximum ambient temperature of 40 °C) and at any tapings without the temperature rise in the hottest region exceeding 55°C and 60°C in oil and winding respectively. Documents to support this shall accompany the tender.
- The transformer shall be capable of sustaining a three-phase symmetrical short circuit on the secondary side with power maintained on the primary side without damage or distress for 2 seconds.

- The rated withstand voltages for the transformers shall be as follows:

	Rated short duration power frequency withstand voltage (r.m.s.)
0.415/11 kV Transformer	38kV

Impedance Voltage

- The impedance voltage measured at the principal tap shall not exceed 5.0%.

Losses and Capitalization

- The guaranteed transformer losses, measured at full load operation, unity power factor and rated voltage shall be submitted with the tender. The loss measurements (no-load and full-load) shall be adjusted to 75 degree Celsius and submitted for evaluation.

TESTS AND INSPECTION

- 4.1.3.1 Type tests and routine tests shall be done in accordance with the requirement of IEC 60076 and this specification. It shall be the responsibility of the manufacture to perform or to have performed all the tests specified.
- 4.1.3.2 Certified true copies of previous type test reports by the relevant International or National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 accredited laboratory) shall be submitted with the offer for evaluation (all in English Language). A copy of accreditation certificate for the laboratory shall also be submitted.
- 4.1.3.3 Routine test reports for the transformer to be supplied shall be submitted to REA for approval before shipment/delivery. REA shall witness routine tests as well as impulse withstand voltage and temperature rise tests at the factory before dispatch.

MARKING AND LABELLING

- 4.1.4.1 Each transformer shall be provided with a rating plate of weatherproof material, fitted in a visible position, showing the appropriate details listed in IEC 76. The entries on the plate shall be indelibly marked (either by etching, engraving or stamping).
- 4.1.4.2 In addition, the name plate shall include load and no load losses for the highest, lowest and principle tap positions, temperature class of insulation, connection diagram and the inscription 'PROPERTY OF RURAL ELECTRIFICATION AND RENEWABLE ENERGY CORPORATION all marked indelibly as in 6.1.

ANNEX C: TECHNICAL REQUIREMENTS FOR STEP-UP TRANSFORMER

ITEM	DESCRIPTION		REREC'S REQUIREMENT	BIDDER'S RESPONSE
1	Manufacturer's Name		State	
2	Transformer Rating	kVA	315KVA	
3	System Frequency	Hz	50	
4	Transformer external paint		Dark Admiral Grey colour No. 632 as per BS 381C	
5	Corrosive environment		High	
6	Dimensions			
	overall height	mm	State	
	overall length	mm	State	
	Overall width	mm	State	
	Total mass	kg	State	
7	Tank type		Breathing	
8	Tank sealing;		Bolted	
9	Under-base;		Flat	
10	Skids and Jacking lugs for concrete plinth mounting		40 mm diameter axle holes	
11	Details of jacking pads		State	
12	Details of Lifting lags			
	For cover		To provide	
	for tank		To provide	
	for core		To provide	
13	Terminations		Cable box	
14	Position of bushings		11kV: Top	
			LV: Cable Box	
15	Medium-voltage bushings			
	bushings colour		Brown	
	material		Porcelain	
	creepage distance	mm	25 mm/kV	
	phase to earth clearance	mm	Specify	
	phase to phase clearance	mm	Specify	
	Low-voltage bushings			
	bushings colour		Brown	
	material		Porcelain	
	creepage distance	mm	25 mm/kV	
	phase to earth clearance	mm	Specify	
	phase to phase clearance	mm	Specify	
	Terminal: stem & nuts or clamp		Clamp pad	
16	Cooling method		ONAN	
17	Core type		Laminated stackings	
18	Core clamping		Specify	
19	HV Winding		Full coils of electrolytic copper	
20	LV Winding		Electrolytic copper coils or copper foils	
21	Primary voltage	V	415	
	Secondary voltage	V	11000	
	Number of phases;		Three phase	
22	Rating of neutral terminal		As phase terminal	
23	Tap Changer		NLTC, □2X2.5% Tapping range	
24	Vector symbol		YNd11	
25	Losses corrected to 75°C			

ITEM	DESCRIPTION		REREC'S REQUIREMENT	BIDDER'S RESPONSE
	no-load losses	W	Specify	
	full load cu losses	W	Specify	
	full load total losses	W	Specify	
	Transformer efficiency at unity power factor, rated voltage and full load (75°C)	%	Specify	
26	Impedance voltage			
	maximum tap	%	Specify	
	nominal tap	%	Specify	
	minimum tap	%	Specify	
27	Insulation level			
	medium-voltage	kV	38	
	low-voltage	kV	3	
28	BIL Tests (IEC 60076)		To be done at 38kV during factory visit (clause 5.3)	
29	Temperature Rise Test(IEC 60076)		To be done during factory visit (clause 5.3)	
30	Routine Tests (IEC 60076)		To be done during factory visit (clause 5.3)	
31	Transformer Leakage Test		To be done during factory visit (clause 5.3)	
32	Tank Thickness		Specify(Not less than 6.40mm)	
33	Transformer Bachholz Relay fitting		To provide	
34	Transformer pressure relief valve		To provide	
35	Temperature gauge		To provide	
36	LV termination Box		To provide	
37	Warranty		5 Years	

PART V: Specification for 11 KV Circuit Breakers (Triple Pole)

FOREWORD

The specification is intended for use in procurement of the Circuit Breaker from manufacturers. The specification is based on IEC 56 and BS5311 and is subject to revision as and when required.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering Practices in the manufacture of the 11 KV Circuit Breaker. The manufacturer shall submit information, which confirms satisfactory service experience with products, which fall within the scope of this specification.

1.1 SCOPE

This specification covers design, engineering, manufacture, testing, inspection before dispatch packing, forwarding, transportation, insurance during transit, delivery to site of 11 KV Outdoor Vacuum Circuit Breakers together with controls, auxiliary equipment and support structure for use in 0.415/11KV substation, off grid Solar plant.

The specification is for triple pole operated circuit breaker.

REFERENCES

The following documents were referred to during the preparation of this specification; in case of conflict, the requirements of this specification shall take precedence.

IEC 60056: High Voltage alternating current circuit breakers.

IEC 2300: Designed and manufacturing of VCB.

IEC 144: Degree of protection of enclosures for low voltage switch gear and control gear.

BS 5311: Specification for A.C. circuit breakers of rated voltage above 1 kV.

This particular standard or recommendation in this specification does not relieve the Supplier of the necessity of providing the goods and services complying with other relevant standards or recommendation

TERMS AND DEFINITIONS

For the purpose of this specification the definitions given in the references mentioned in clause 4.2 shall apply.

REQUIREMENTS

SERVICE CONDITIONS

4.4.1.1 Operating conditions

4.1.1.1 The circuit breaker shall be suitable for continuous outdoor operation in tropical areas with the following atmospheric characteristics:

- a) Altitude: 2200m above means sea level
- b) Pollution: Heavy saline atmosphere
- c) Humidity: Up to 90%
- d) Ambient temperatures of +30o C average, (+45o C Max. and -1o C Min.)
- e) Isokeramic level: Up to 180 thunderstorm days.

4.4.1.2 The circuit breaker shall be connected to an overhead system which is generally unearthed (without aerial earth wire).

4.4.1.3 The circuit breakers shall be suitable for 3 phase 50Hz solidly grounded neutral system and shall have normal current carrying capacity and symmetrical short circuit current breaking capability as mentioned hereunder.

CONSTRUCTION

4.2.1 The circuit breakers shall be structure mounted open type with vacuum as interrupting media incorporating interrupter. There shall be a common drive mechanism actuating the interrupter, which must work in synchronism. These breaker shall be provided with suitable local control while provision shall be made for remote control.

4.2.2 The circuit breakers shall be three pole operated, out-door type, Vacuum insulated and shall comply with the requirements of IEC 60056 and/or BS 5311.

4.2.3 The circuit breakers shall be fitted with spring mechanism. The inherent design of these circuit breakers shall be such that they shall satisfactorily perform all test duties and interrupt out-of-phase current and produce very low over voltage ($<2.0p.u.$) on all switching circuits, capacitive and inductive to IEC:56, IS:13118 and other associated standards mentioned in the clause of this specification.

4.2.4 All the three poles shall be interconnected by a suitable shaft, linked to the operating mechanism so that poles are operated simultaneously with common gas pressure monitor.

4.2.5 All the three poles of circuit breaker shall be operated by local electrical from the mechanism in the housing and remote electrical from remote panel.

4.2.6 The mechanism box shall have a mechanical facility for manually operating the three poles.

4.2.7 Insulation creepage distance shall not be less than 25mm per kV of maximum operating voltage between phases.

OPERATING MECHANISM

4.3.1:

- a) The operating mechanism shall be suitable for mounting at the circuit breaker supporting structure, and below the circuit breaker in a weather-proof, dust- proof, vermin-proof and well ventilated housing.
- b) The degree of protection shall be class IP 54 as per the requirement of IEC 144.
- c) The housing shall be provided with padlocking facility.

4.3.2 Operating mechanism shall be trip free during the entire closing sequence.

4.3.3:

- a) Operating mechanism shall be provided with motor wound spring charging mechanism with provision for hand operated manual charging. Pressure actuated mechanism **shall not** be accepted.
- b) The Motor shall be universal with operating voltage of either 110 Volts d.c or 110 Volts a.c.

4.3.4 A set of at least five normally closed and five normally open spare potential free contacts shall be provided for remote electrical indication as well as electrical interlocking and shall be wired to a terminal block in the housing.

4.3.5 A minimum of twenty (20) spare terminals shall be provided for connection to the current and voltage transformers.

- a) Sixteen (16) of these spare terminals shall be specifically used for current transformers and shall be capable of carrying 10Amps continuously and have facilities for shorting terminals.
- b) Four (4) of these terminals shall be used for the voltage transformer and shall have facilities for isolation.

- 4.3.6 The circuit breaker shall be provided with Local/Remote selector switch. The selection of the local operation shall inhibit the operation of the circuit breaker from any remote source.
- 4.3.7 The circuit breaker shall be provided with a local switch for Open/Neutral/Close operation.
- 4.3.8 The breaker shall normally be operated by remote electrical control with electrical tripping by shunt trip coil. Provision shall be made for local electrical operation and mechanical operation. The following facilities shall be provided in the circuit breaker local control cabinet:
- LOCAL/ REMOTE selector switch of stay put type. The selection of 'local' operation shall inhibit the operation of the breaker from any remote source.
 - ON/NEUTRAL/ OFF control switch or ON and OFF push buttons. The push buttons shall be momentary contract type with rear terminal connections. The close push button shall be of green colour and the open push button red colour.
 - MECHANICAL EMERGENCY TRIP DEVICE: suitable for manual operation in the event of failure of electrical supplies. The device shall be accessible without opening any access doors and distinctly labelled. It shall be shrouded and protected against inadvertent operation.
 - Means shall be provided for manual operation of these circuit breakers during failure of auxiliary power in addition to electrical operation.
 - Means shall be provided to prevent the mechanism from responding to a close signal when the trip coil is energized or to reclosing from a sustained close signal either opening due to a trip signal or failure to hold in the closed position.
 - The circuit breaker shall be able to perform 10,000 operating cycles at no load in accordance with IEC: 17A/474/CD for circuit breakers for auto reclosing duties.
- 4.3.9 Mechanically operated indication to show the status of the circuit breaker operations (open/close and springs charged/discharged) shall be provided.
- 4.3.10 A mechanically operated circuit breaker position indicator of non corroding material shall be provided in a location visible from the operating side of the breaker without the necessity to open the mechanism door. The word 'OFF' in white letter on green background shall be used to indicate that the breaker is in the opening position and the word 'ON' in white letters on a red background to indicate that the breaker is in the closed position. The drive for the device shall be positive in both directions and provision shall be made for local and remote electrical indication.
- 4.3.11 Indication of spring charging condition shall be provided as mentioned in this specification. Mechanical counters to record the number of closing operations shall be provided for circuit breaker mechanism.
- 4.3.12 The circuit breaker shall be provided with suitable terminals for connecting 3" (outside diameter) tinned copper tubes.
- 4.3.13 The circuit breaker shall be provided with means to prevent contact pumping should the circuit be energized while tripping command is issued.
- 4.3.14 Mechanical interlock arrangement shall be provided on the mechanism such that it shall not be possible to withdraw the interlock with circuit breaker in closed position.

RATINGS

	Description	Rating
1	Nominal Voltage	11 kV
2	Highest Voltage	12 kV
3	Frequency	50 Hz
4	Normal Current	630 Amps
5	Rated short circuit Current	21KAmps
6	Duration of short circuit	3 Sec.
7	First pole to clear factor	1.5
8	Transient recovery voltage peak value	62 kV
9	Operating sequence	0-0.3 sec – CO – 3min – CO
10	Auxiliary D.C Voltage for closing & tripping coils	110 V d.c.
11	Motor charging supply	110 V d.c.
12	Auxiliary A.C. Voltage	415/240 V, 50 Hz
13	Impulse withstand voltage	75 kV peak
14	One minute power frequency withstand voltage	28 kV r.m.s.
15	Creepage distance of insulator	350 mm
16	Minimum clearance between phases	250 mm
17	Minimum clearance to earth	300 mm

CONTROL AND RELAY PANEL

6.1 The bidder to design and Manufacture control and relay panel for remote operation of the outdoor 11KV circuit breaker, it will be used for control and monitoring of Circuit breaker.

6.2 The control and relay panel shall be complete with all main and auxiliary relays, annunciation relay, fuses, links, switches, wiring, labels, terminal blocks, bolts, illumination, cable glands etc.

6.3 The indoor control panel for outdoor VCB should be equipped with the following:

- IDMT Numerical relay
- Master trip relay
- Trip Circuit Supervision relay.
- Indication
- Voltmeter
- Ammeter
- Switches

DRAWING AND MANUALS

- 7.1 Two sets of operational manuals and drawings detailing dimensions, panel layout, wiring and schematic shall be provided.

PACKING

- 8.1 The circuit breaker and associated components shall be packed in a manner as to protect it from any damage in transportation and repeated handling.
- 8.2 Each assembly and package of items associated with the circuit breaker shall be suitably marked.
- 8.3 Where an item includes a number of components to form a complete assembly, all components shall be included in one composite package which shall be firmly strapped and bound together.

TESTS

- 9.1 The manufacturer shall be responsible for performing or for having performed all the required tests specified in this specification. Tenderers shall confirm the manufacturer's capabilities in this regard when submitting tenders. Any limitation shall be clearly specified.
- 9.2 Tender documents shall be accompanied by copies of Type test and Routine test reports and certificates for similar rated equipment for the purpose of tender evaluation. Type test reports and certificates shall be certified by the National Standards and Testing Authority (NSTA) of the country of origin. Where a body other than NSTA is used to certify the type-test reports, a copy of the certificate of accreditation shall be attached. Current contact information of the testing and certification Authority shall be provided. Tenderers should note that this requirement is mandatory.
- 9.3 Upon completion of the manufacturing process, routine tests shall be carried out as per IEC 60056. In addition to these tests, Impulse and short circuit breaking tests shall be carried out on a sample of the circuit breakers and the results endorsed by the NSTA of the country of manufacture.
- 9.4 Routine test reports shall be completed for breaker and made available before the inspection by REREC representatives.
- 9.5 All circuit breakers shall be subjected to inspection by two REREC Engineers or her representative at place of manufacture and all routine tests on randomly picked breakers carried out in their presence. REREC representatives shall approve shipment of the equipment if they are satisfied that the requirements of the specification are fully met. The supplier shall quote separately for this inspection. The full cost of the visit, including air tickets shall however be borne by the supplier of the equipment.
- 9.6 A detailed list and contract addresses of previous customers shall be submitted with the tender. The manufacturer shall indicate a monthly and annual production capacity and experience in the production of the type and size of circuit breaker he is offering. List of workshop tools and equipment shall also be appended.

INFORMATION

- 10.1 Draft design and construction drawings shall be submitted to REREC before the manufacturing of breakers commence. REREC undertake to submit their comments or approval for the drawings within three weeks of receiving the draft copies.
- 10.2 Sufficient relevant technical details and drawings shall be submitted for the purpose of Tender Evaluation. Tenders which do not meet this requirement shall be considered non-responsive.
- 10.3 Before manufacturing commences, REREC engineers or her Agents will need to inspect the manufacturing facility at no extra cost to REREC, excepting the cost of their transportation to the

nearest major airport in the country. Such inspection shall not in any way prejudice the purchaser's rights and privileges throughout.

- 10.4 Manufacturers shall indicate any additional measure taken to mitigate electrical and mechanical stress resulting from system surges.

ANNEX D: TECHNICAL REQUIREMENTS FOR:

A. 11kV CIRCUIT BREAKER

Item	Particulars	REREC'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Service type	Outdoor	
4.	No of Poles	3	
5.	Interrupting Medium	Vacuum	
6.	Nominal Voltage	11 kV	
7.	Highest Voltage	12 kV	
8.	Frequency	50 Hz	
9.	Normal Current	630 Amps	
10.	Rated short circuit Current	21KAmps	
11.	Duration of short circuit	3 Sec.	
12.	First pole to clear factor	1.5	
13.	Transient recovery voltage peak value	62 kV	
14.	Operating sequence	0-0.3 sec – CO – 3min – CO	
15.	Auxiliary D.C Voltage for closing & tripping coils	110 V d.c.	
16.	Motor charging supply	110 V d.c.	
17.	Auxiliary A.C. Voltage	415/240 V, 50 Hz	
18.	Impulse withstand voltage	75 kV peak	
19.	One minute power frequency withstand voltage	28 kV r.m.s.	
20.	Creepage distance of insulator	350 mm	
21.	Minimum clearance between phases	250 mm	
22.	Minimum clearance to earth	300 mm	

Item	Particulars	REREC'S Requirement	Bidder's Response
23.	Auxiliary switch	At least 5No + 5NC	
24.	Degree of Protection	IP54	
25.	Applicable Standards	IEC62271-100,IS13118	
26.	Warranty	3 years	

B. NEUTRAL CURRENT TRANSFORMERS; RATIO 50-25/1, 0.2S CLASS

Item No.	Particulars	REREC'S Requirement	Bidder's Response
1.	Manufacturer's name	State	
2.	Model	State	
3.	Type.	Outdoor, Oil-Immersed live tank effectively earthed neutral Current transformers	
4.	Warranty	3 Years	
5.	Rated Voltage/Highest Voltage.	11KV/12KV	
6.	Frequency	50HZ	
7.	Rated primary Current.	50A and 25A	
8.	(i) Core 1	50-25A	
9.	(ii) Core 2	50-25A	
10.	Secondary Core details.		
11.	(a) Number of Cores.	2	
12.	(b) Rated secondary current.	1A	
13.	(i) Core 1	1A	
14.	(ii) Core 2	1A	
15.	(c) Rated output/Burden	5VA	
16.	(d) Class of accuracy	0.2S	
17.	(e) Accuracy limit factor.	<5	
18.	Turns Ratio.	50/1A and 25/1A	
19.	Short time thermal current & its duration	12.5 KA/ 1 Sec	
20.	i) Rated continuous thermal current.	1.2 times continuous 45 deg C, as per IS 2705	

Item No.	Particulars	RREC'S Requirement	Bidder's Response
	ii) Temperature rise over ambient.		
21.	One minute power frequency dry and wet withstand voltage on primary.	38 KV (rms)	
22.	One minute power frequency withstand test voltage on secondary.	2KV	
23.	Total creepage distance of the bushing.	>300 mm (min)	
24.	Live part to ground clearance.	>125 mm (min)	
25.	Warranty	3Years	

C. OUTDOOR CURRENT TRANSFORMER (CT) SPECIFICATIONS

Item No.	Particulars	RREC'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Transformation ratio	50-25/1	
4.	Standard reference	IEC	
5.	Rated Voltage (KV)	11	
6.	Frequency (Hz)	50	
7.	Rated Short time current for 1 min (kA)	25	
8.	Creepage Distance	>370	
9.	Rated Continuous Thermal current (A)	1, 2xIn	
10.	Number of Secondary windings	2	
11.	1st winding		
12.	Rated primary current, In (A)	50A and 25A	
13.	Rated Secondary current, (A)	1	
14.	Accuracy class	0.5	
15.	2nd winding		
16.	Rated primary current, In (A)	50A and 25A	
17.	Rated Secondary current, (A)	1	
18.	Accuracy class	5P10	

Item No.	Particulars	REREC'S Requirement	Bidder's Response
19.	Warranty	3 Years	

D. OUTDOOR VOLTAGE TRANSFORMER (VT) SPECIFICATIONS

Item No.	Particulars	REREC'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Transformation ratio	11000/110Vac	
4.	Standard reference	IEC	
5.	Rated Voltage (KV)	11	
6.	Frequency (Hz)	50	
7.	Thermal Burden, VA	450	
8.	Creepage Distance	>1000	
9.	Number of Secondary windings	2	
10.	Rated output, VA	50	
	1st winding		
11.	Rated primary voltage, KV	11	
12.	Rated Secondary Voltage, V	110	
13.	Accuracy class	0.5	
	2nd winding		
14.	Rated primary voltage, KV	11	
15.	Rated Secondary Voltage, V	110	
16.	Accuracy class	0.5	
17.	Warranty	3 Years	

E. 11KV SURGE DIVERTERS SPECIFICATIONS

Item No.	Particulars	REREC'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Standard Reference	IEC	
4.	Normal system voltage, KV	11	
5.	Highest system voltage, KV	12	
6.	System fault level, kA	20	
7.	Line Discharge Class	10	
8.	Lighting Impulse Residual voltage, KV	95	

F. ISOLATOR WITHOUT EARTH SWITCH

Item No.	Particulars	REREC'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Standard Reference	IEC	
4.	To be fitted with Earth Switch	To provide	
5.	Rated Voltage, KV	12	
6.	Rated Frequency, HZ	50	
7.	Rated lighting impulse withstand voltage, 1.2/50 μ S (KV)	95	
8.	Rated power frequency withstand voltage, 38 Wet, 50HZ, 60secs (KV)	38	
9.	Minimum creepage distance of insulators, mm	320	
10.	Rated normal current, A	800	
11.	Rated short time withstand current for 3secs, Ka	25	

G. ISOLATOR WITH EARTH SWITCH

Item.	Particulars	REREC'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Standard Reference	IEC	
4.	To be fitted with Earth Switch	To provide	
5.	Rated Voltage, KV	11	
6.	Rated Frequency, HZ	50	
7.	Rated lighting impulse withstand voltage, 1.2/50 μ S (KV)	95	
8.	Rated power frequency withstand voltage, Wet, 50HZ, 60secs (KV)	38	
9.	Minimum creepage distance of insulators, mm	320	
10.	Rated normal current, A	800	
11.	Rated short time withstand current for 3secs, kA	25	

H. Rectifier- Battery Charger Technical Specification

Item No.	Particulars	REREC'S Requirement	Bidder's Response
1.	Manufacturer	State	
2.	Model	State	
3.	Warranty	3 years	
	Input Data		
4.	Input Voltage	240VAC \pm 10%	
5.	Inrush Current	<15I _n	
6.	Power factor	0.8	
7.	Frequency range	47-63Hz	
	Output Data		
8.	Output Voltage range	110-125VDC	
9.	Nominal Output voltage	110VDC	

Item No.	Particulars	REREC'S Requirement	Bidder's Response
10.	Static Regulation	1%	
11.	Voltage ripple 3-phase	(Disconnected battery) <0.7%	
	General data		
12.	Rectifier efficiency	83%-94%	
13.	Operating temperature range	0 to 40 degrees	
14.	Storage temperature	-20 to +70 degrees Celsius	
15.	Relative humidity	<95% non-condensing at 20 degrees Celcius	
16.	Operating altitude	1000m without system duration	
17.	Cooling	Natural or fan assisted	
18.	Noise at 1m in front of the unit	1dB	
19.	Protection	Protection against battery reversed polarity	
20.	Compliance	IEC 61000-6-4	

SECTION V: DRAWINGS AND TOOLS

DRAWINGS

- NO DRAWINGS WILL BE PROVIDED BY THE CLIENT

TOOLS AND EQUIPMENT

The Bidder must demonstrate that it will have access to the key equipment required to perform the contract.

No.	Equipment Type and Characteristics	Minimum Number required
1	Insulation resistance test set	One per lot
2	Earth resistance test set (electronic)	One per lot
3	Primary injection Kit	One per lot
4	Secondary Injection kit	One per lot
5	CMEs	One per lot
6	Digital Multimeter	One per lot
7	Digital clamp on meter	One per lot
8	Polarity tester/ earth leakage meter	One per lot
9	Battery Analyzer	One per lot
10	Tool box (Solar PV technician tool box).	One per Lot
11	Loop impedance tester	One per Lot
12	Insulation resistance tester	One per Lot
13	Cordless drill	One per Lot
14	Electric hand air blower	One per Lot
15	PPE and safety gear for the commissioning team	One per Lot
16	Variable Dummy Load Tester (For testing Full Load and Surge Capability of the system)	One per Lot

NB:

- Bidder to fill form EQU for each of the tools and Equipment listed above.
- Successful bidder to avail the Tools necessary for system testing during commissioning exercise.
- Successful bidder to generate Test protocol and Test Sheet necessary for system testing and successful commissioning for employers approval. (Test should not be limited to Earth resistance test, Insulation Resistance test, Impedance Test, Earth Leakage current test, Load capacity test, Battery state of health test etc.).

SECTION VI: BILLS OF QUANTITIES

Introduction

The Bill of Quantities shall form part of the Contract Documents and is to be read in conjunction with the Instructions to Tenderers, Conditions of Contract Parts I and II, Specifications and Drawings.

The brief description of the items in the Bill of Quantities is purely for the purpose of identification, and in no way modifies or supersedes the detailed descriptions given in the conditions of Contract and Specifications for the full direction and description of work and materials.

The Quantities set forth in the Bill of Quantities are estimated and provisional, representing substantially the work to be carried out, and are given to provide a common basis for tendering and comparing of Tenders. There is no guarantee to the Contractor that he will be required to carry out all the quantities of work indicated under any one particular item or group of items in the Bill of Quantities. The basis of payment shall be the Contractor's rates and the quantities of work actually done in fulfillment of his obligation under the Contract.

The prices and rates inserted in the Bills of Quantities will be used for valuing work executed, and the Engineer will measure the whole of the works executed in accordance with this Contract.

A price or rate shall be entered in ink against every item in the Bill of Quantities with the exception of items, which already have provisional sums, affixed thereto. The Tenderers are reminded that no "nil" or "included" rates or "lump-sum" discounts will be accepted. The rates for various items should include discounts if any. Tenderers who fail to comply will be disqualified.

Provisional sums (including day works) in the Bill of Quantities shall be expended in whole or in part at the discretion of the Engineer in accordance with Sub-clause 52.4 and Clause 58 of part of the Conditions of Contract.

The price and rates entered in the Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional plant to be used, labour, insurance, supervision, compliance, testing, materials, erection, maintenance or works, overheads and profits, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract, transport, electricity and telephones, water, use and replenishment of all consumables, including those required under the Contract by the Engineer and his staff.

The Employer for any arithmetic errors in computation or summation will correct errors as follows:

Where there is a discrepancy between amount in words and figures, the amount in words will govern; and

Where there is a discrepancy between the unit rate and the total amount derived from the multiplication of the unit price and the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer, there is an obviously gross misplacement of the decimal point in the unit price, in which event the total amount as quoted will govern and the unit rate will be corrected.

If a Tenderer does not accept the correction of errors as outlined above, his Tender will be rejected.

The Bills of Quantities, unless otherwise expressly stated therein, shall be deemed to have been prepared in accordance with the principles of the latest edition of the Civil Engineering Standard Method of Measurement (CESMM).

"Authorized" "Directed" or "Approved" shall mean the authority, direction or approval of the Engineer.

Unless otherwise stated, all measurements shall be net taken on the finished work carried out in accordance with the details shown on the drawings or instructed, with no allowance for extra cuts or fills, waste or additional thickness necessary to obtain the minimum finished thickness or dimensions required in this Contract. Any work performed in excess of the requirements of the plans and specifications will not be paid for, unless ordered in writing by the Engineer.

Hard material, in this Contract, shall be defined as the material which, in the opinion of the Engineer, require blasting, or the use of metal wedges and sledgehammers, or the use of compressed air drilling for their removal, and which cannot be extracted by ripping with a dozer tractor of at least 150 brake horse power (112 kilowatt) with a single, rear-mounted, hydraulic ripper. Boulders of more than 0.2m³ occurring in soft material shall be classified as hard material. Soft material shall be all material other than hard material.

CIVIL WORKS SPECIFICATIONS AND BILL OF QUANTITIES

Tenderer to provide layout plans and drawings for approval by employer before commencement of construction.

ITEM	DESCRIPTION	
	<u>BILL NO 1</u>	
	<u>PRELIMINARIES</u>	
	<u>Scope of the Works</u>	
A	The civil works involve complete site preparation, construction of building structures, installation of drainage and access roads, and perimeter security infrastructure. It includes foundations, reinforced concrete works, walling, roofing, internal finishes, and external landscaping. The scope also covers fencing, sanitation facilities, transformer bases, and associated utilities to deliver a fully operational mini-grid site of the Proposed KIBUOGI Mini grid Project in Kubuogi Island, HomaBay County	
B	All works shall be carried out in accordance with MOW General Specification of Works, 1976 Edition including subsequent revisions and to the entire satisfaction of the Project Manager.	
	<u>Measurement</u>	
C	The Bills of Quantities have been prepared in accordance with the Standard Method of Measurement, of Building works for East Africa, Second Edition, 2008 Metric, 1987 Published by the Architectural Association of Kenya, Chapter of Quantity Surveyors.	
	In the event of any discrepancies arising between the Bills of Quantities and the actual works, the site measurements shall generally take precedence.	
	<u>Existing Property</u>	
D	In the execution of this contract the contractor shall take precautions to avoid damage to the existing and adjacent buildings. Care should also be taken to minimize damage to landscaped areas.	
	<u>Insurance</u>	
E	The Contractor shall be responsible for insurance against injury to persons and for insurance of the works.	
	<u>Government Acts</u>	
	The Contractor shall comply with all Government and Local Authority Acts, Orders, and regulations and payment of all taxes and levies including VAT.	

F	<u>Work Program</u> The Contractor shall provide a work program/progress chart within 1 week after date of possession of the site.	(Insert Amount)
G	<u>Site Diary</u> The Contractor shall provide a site diary in the form of a double foolscap size stiff covered ruled book which shall be kept available at all times upon the site.	
H	<u>Sanitation of the Works</u> The Contractor shall provide sanitation facilities on site to the satisfaction of the Government/Local Authorities and the Project Manager. He shall also be responsible for the proper hygienic maintenance and any damage whatsoever	
I		(Insert Amount)
	P/1 Carried to collection	

ITEM	DESCRIPTION	AMOUNT(KSHs)
	BILL NO.2 PRELIMINARIES	
	<u>Samples</u>	
A	The Contractor shall furnish at his own cost any samples of materials or workmanship required for the works.	
	<u>Security of the Works</u>	
B	The Contractor shall be responsible for general security of the works and the entire existing facilities and other valuables within the compound.	
	<u>Storage Facilities</u>	
C	The Contractor shall provide at his own risk and cost were directed on the site weatherproof lock- up sheds and make good damaged or disturbed surfaces upon completion to the satisfaction of the Project Manager. Nominated Sub-Contractors are to be made liable for the cost of any storage accommodation provided especially for their use.	
	<u>Water and electricity for the Works</u>	
D	The Contractor shall be responsible for bringing in the electricity and water necessary for the works to site. Nominated Sub-Contractors are to be made liable for the cost of any water or electricity used and for any installation whatsoever provided especially for their own use.	
	<u>Site Safety</u>	

E	The contractor is to adhere to strict safety measures. In this regard the contractor should ensure that all his workers, the consultants and his sub-contractors workmen are wearing Personal Protective Equipment (PPE) before commencement of any work where applicable including overalls with the company name clearly printed on the back each with clearly marked Identification Numbers stitched or imprinted on. The Contractor shall allow for providing all watching, lighting, barriers, signs, covering open trenches and protection of the works, including Sub-Contract works, as may be necessary for the safety of the works and for the protection of the public and his own and Sub- Contractors' employees.	
	<u>Plant, Tools and Equipment</u>	
F	The Contractor shall provide all scaffolding, plant, tools, and vehicles required for the works except in so far as may be stated otherwise herein and except for such items specifically and only required for the use of nominated Sub-Contractors as described herein.	
	<u>Sign board</u>	
G	The Contractor shall provide and erect were directed and maintain during the whole period of the building operation and remove at completion, one approved notice board to the Project Manager's standard design giving a brief description of the works and showing the names of the employer and the consultants, with sufficient space to append the names of the sub-contractors and suppliers when known	
	<u>Removal of rubbish</u>	
H	The Contractor shall allow for the removal of rubbish and debris from the buildings and site as it accumulates and at the completion of the works and remove all plant, scaffolding and unused materials at completion.	
	P/2 Carried to collection	

PRELIMINARIES COLLECTION

ITEM	DESCRIPTION	Amount
1	P/1	
2	P/2	
	TOTAL FOR PRELIMINARIES CARRIED TO SUMMARY	

CHAIN LINK FENCE AND GATES

ITEM	DESCRIPTION	UNITS	QTY	RATE	AMOUNT
6.1.1.1	Compound fence				
1	Provide all materials and install 2400mm high chain link fence above ground level consisting of 125x125x3000mm overall cranked precast concrete post (mix 1:2:4) to BS 1722 posts with 450mm long cranks at 3.0m centers reinforced with 4 No. 8mm diameter high tensile bars including 6mm diameter stirrups at 300mm centers complete with 14 1/2 gauge x6 strand galvanized barbed wire fencing and mortised in mass concrete surround 1:3:6 including all excavations, formwork and disposals	LM	310		
2	Extra over ditto; for 100x100mm precast concrete struts 2600mm long at every 50m interval and at corners	NO.	22		
6.1.1.2	Mini Grid Main Palisade Gate				
1	Design, fabricate, and install a double-leaf arched-top steel palisade gate measuring 5.0m wide by 2.1m high, constructed from a 100x50x4mm RHS frame and intermediate rails. The gate shall be infilled with 25x25x2mm RHS vertical pales spaced at 150mm centers, and fitted with heavy-duty hinges welded to 150x150x6mm SHS steel support posts embedded in reinforced concrete bases. Additional features include 80mm diameter caster rollers, a T-guide rail bedded in concrete, 300mm drop bolts with sockets cast in concrete, and a padlock eye. All steel components shall be primed with red oxide and finished with two coats of gloss paint, to the Engineer's approval.	ITEM	1		
6.1.1.3	Mini Grid Passenger Palisade Gate				
1	Supply and install a 900 × 2100 mm high arched-top steel palisade pedestrian gate fabricated from 100 × 50 × 4 mm RHS frame and intermediate rail, infilled with 25 × 25 × 2 mm RHS verticals at 150 mm centers. Include purpose-made hinges welded to MS posts, eye for padlock, 300 mm drop bolt with sockets cast in concrete, all complete with necessary	ITEM	1		

	excavation, disposal, and fixing to RHS columns.				
6.1.1.4	Solar PV Yard fence				
1	Provide all materials and install 1500mm high chain link fence above ground level consisting of 75x75x6mm Angle sections (2200mm long) as fencing posts with 450mm long cranks and having 7 No. Drilled Holes for line wires complete with 14 1/2 gauge x6 strand galvanized barbed wire fencing and mortised in mass concrete surround 1:3:6 including all excavations, formwork and disposals.	LM	200		
2	Extra over ditto; for 50x50x6mm Angle sections struts 1500mm long at every 30m interval and at corners	NO.	16		
6.1.1.5	Solar PV yard Gate				
1	Supply and install an arched top double-leaf steel palisade gate with an integrated pedestrian gate, including building-in of lugs and jambs to concrete columns.	LM	3		
6.1.1.6	Substation fence				
1	Provide all materials and install 2400mm high chain link fence above ground level consisting of 125x125x3000mm overall cranked precast concrete post (mix 1:2:4) to BS 1722 posts with 450mm long cranks at 3.0m centers reinforced with 4 No. 8mm diameter high tensile bars including 6mm diameter stirrups at 300 centers complete with 14 1/2 gauge x6 strand galvanized barbed wire fencing and mortised in mass concrete surround 1:3:6 including all excavations, formwork and disposals.	LM	60		
2	Extra over ditto; for 100x100mm precast concrete struts 2600mm long at every 30m and at corners	No.	8		
6.1.1.7	Substation Gate				
1	Supply and fix double leaf steel palisade gate with an integrated passenger gate, including building in lugs and jamb to concrete columns	LM	3		
TOTAL CARRIED TO SUMMARY					

GUARD HOUSE

ITEM	DESCRIPTION	UNITS	QTY	RATE	AMOUNT
6.1.2.1	GUARD HOUSE				
1	Design and construct a gate house with a minimum floor area of 16 square metres. The structure shall feature natural stone walling blocks and a roof comprising structural steel framing covered with gauge 30 pre-painted IT5 roofing sheets. Internal finishes shall include UPVC ceilings, lime plaster to walls, ceramic floor tiles, and the application of emulsion and bituminous paint. The works shall also include the supply and installation of Steel Panel Door and Frame, steel casement windows, and complete electrical installations, including lighting, power outlets, and fittings as per the Engineer's approval.	LOT	1		
TOTAL CARRIED TO SUMMARY					

ACCESS ROADS, PLANTERS, PARKING AND PAVEMENTS

ITEM	DESCRIPTION	UNITS	QTY	RATE	AMOUNT
6.1.3.1	PLANTERS OR THE LIKE				
1	Excavate circular pits average 900mm diameter commencing at existing ground level but not exceeding 1.2 metres and spread arising evenly around.	CM.	25		
2	Supply and plant well-established assorted ornamental and indigenous plant species, including initial soil preparation, watering, weeding, and general maintenance until the plants are fully established.	No.	40.00		
3	Backfill excavated planting pits with approved soil and manure mixture in 4:1 ratio	CM	15		
6.1.32	PEDESTRIAN PAVEMENTS (500M in length and 1.2m wide)				
1	Supply and fix concrete pavers of 210x100x60 mm or similar laid on 50mm sand bed, including all necessary excavations, formwork and disposals.	LM	500.00		
ACCESS ROAD, PLANTERS, PARKING AND PAVEMENTS - TO SUMMARY (KSHs.)					

EQUIPMENT ROOM

ITEM	DESCRIPTION	UNITS	QTY	RATE	TOTAL
1	Design and construct an air-conditioned Solar PV equipment room with a minimum floor area of 60 square metres to house batteries, inverters, and associated systems. The scope includes excavation, reinforced concrete foundation, natural stone walling, and structural steel roof framing with 30-gauge pre-painted IT5 roofing sheets, and timber or metal fascia boards. Internal finishes shall include UPVC ceilings, lime plastered walls, ceramic floor tiles with cement-sand screed and skirting, and application of emulsion and bituminous paints. The works shall also cover supply and installation of Steel Panel Door and Frame, steel casement or louvered windows, cable trays, electrical trunking, lighting, power sockets, ventilation openings, and air conditioning units to maintain ambient temperatures, all completed to the satisfaction and approval of the Engineer.	LOT	1		
EQUIPMENT ROOM - TO SUMMARY (KSHs.)					

TWO-DOOR VIP LATRINE

ITEM	DESCRIPTION	UNITS	QTY	RATE	TOTAL
1	Design and construct a two-door VIP latrine with privacy (screen) wall, minimum floor area and pit depth of 6 square metres and 5 metres respectively. The superstructure shall comprise natural stone walling blocks and a structural steel roof framing , finished with gauge 30 pre-painted IT5 box-profile roofing sheets, a timber barge board and Steel Panel Door and Frame. Ventilation shall be provided by two 110mm diameter vent pipes extending at least 300mm above the roofline. Internal finishes shall include 15mm thick wall plaster, cement and sand screed flooring with integrated skirting, and all necessary surface preparations. Final finishes shall consist of interior wall and floor tiling, three coats of silk emulsion paint on plastered exterior wall and matt enamel paint on all metal door surfaces, all completed to the satisfaction and approval of the Engineer.	LOT	1		
TOTAL CARRIED TO SUMMARY					

WATER SUPPLY

ITEM	DESCRIPTION	UNITS	QTY	RATE	TOTAL
1	Supply and install one ground-mounted 10,000-litre PVC water tank, including construction of a reinforced concrete base and protective shed.	Item	1.00		
2	Supply and install one ground-mounted 5,000-litre PVC water tank, including construction of a reinforced concrete base and protective shed.	Item	1.00		
3	Allow for water reticulation from the nearest water source to the site storage tank.	Item	1.00		
4	Allow for water reticulation from the storage tank to solar yard area and outside the office, Including installation of 2 taps.	Item	1.00		
WATER SUPPLY - TO SUMMARY (KSHs.)					

OFFICE BLOCK

ITEM	DESCRIPTION	UNITS	QTY	RATE	TOTAL
1	Design and construct an office block with a minimum floor area of 30 square metres. The structure shall comprise natural stone block walling and a roof made of structural steel framing, finished with gauge 30 pre-painted IT5 roofing sheets. Internal finishes shall include UPVC ceilings, lime plastered walls, ceramic floor tiles, and the application of emulsion and bituminous paint. The scope of works shall also include the supply and installation of Steel Panel Door and Frame, steel casement windows, and complete electrical installations; comprising lighting, power outlets, and fittings. All completed to the satisfaction and approval of the Engineer.	LOT	1		
OFFICE BLOCK - TO SUMMARY (KSHs.)					

FURNITURE AND FIRE EXTINGUISHERS

ITEM	DESCRIPTION	UNITS	QTY	RATE	TOTAL
6.1.8.1	FURNITURE				
1	Supply Office Table	No.	3.00		
2	Supply Chairs	No.	5.00		
3	Supply Storage Cabinet (Metal Drawers)	No.	1.00		
6.1.8.2	FIRE EXTINGUISHERS				
1	Supply and fix controlled discharge 9Kg carbon dioxide gas fire extinguisher manufactured to BS EN 3-9:2006, Bs 7863:2009, BS 5306-4:2001 and the cylinder manufactured to BS 5045 complete with the following: Charge and fixing bracket, pictorial instructions, colour code, serviceable on site, discharge horn and hose, Brass hot stamping, Operating valve, local Fire Bridge approval.	No.	1.00		
2	Ditto but DRY powder fire extinguishers	No	3.00		
FURNITURE & FIRE EXTINGUISHERS - TO SUMMARY (KSHs.)					

STORM WATER PROTECTION WORKS

ITEM	DESCRIPTION	UNITS	QTY	RATE	TOTAL
1	Allow for Design and Construction of stormwater diversion measures to protect the mini-grid site from hillside runoff. The works include excavation and formation of cut-off drains along elevated boundaries, concrete lining where required, stone pitching of drains and outlets, and reinstatement of disturbed areas. All completed to the satisfaction and approval of the Engineer.	LOT	1.00		
STORM WATER PROTECTION - TO SUMMARY (KSHs.)					

SOLAR YARD WORKS, TRANSFORMER BASE, ELECTRICAL FITTING SUPPORTS, GENERATOR BASE AND SHED

6.1.10.1 TRANSFORMER BASE

Item	Description	Qty	Unit	Rate	Amount (KES)
1	Design and construct transformer base foundation, complete with all associated works, as per the Engineer's approval.	1.0	LOT		
Total Carried to Collection (KSHs.)					

6.1.10.2 ELECTRICAL FITTINGS SUPPORTS

Item	Description	Qty	Unit	Rate	Amount (KES)
1	Design, supply, and construct reinforced concrete column bases and starter columns for substation equipment supports, including excavation, backfilling with compacted hardcore and murrum, blinding layers, insitu concrete works, reinforcement with high yield deformed steel bars, fair-faced formwork, and installation of structural steel columns and base plates with associated bolts and fittings for Current Transformers, Voltage Transformers and Disconnect Switches. All completed to the satisfaction and approval of the Engineer.	1.0	LOT		
Total Carried to Collection (KSHs.)					

6.1.10.3 50 KVA GENERATOR BASE

Item	Description	Qty	Unit	Rate	Amount (KES)
1	Design and construct generator base foundation, complete with all associated works, as per the Engineer's approval.	1.0	LOT		
Total Carried to Collection (KSHs.)					

6.1.10.4 50KVA GENERATOR SHED

Item	Description	Qty	Unit	Rate	Amount (KES)
1	Design, supply, and install a complete structural steel framework and roofing system, including all necessary fittings and connections, as per the Engineer's approval.	1.0	LOT		
Total Carried to Collection (KSHs.)					

6.1.10.5 SOLAR YARD WORKS

Item	Description	Qty	Unit	Rate	Amount (KES)
6.1.10.5.1	Foundation blocks				
1	Supply and install precast reinforced concrete blocks (150 × 150 × 900 mm) for use as bases for solar panel ground mounting structures.	1	LOT		
6.1.10.5.2	Cable trenches				
1	Excavate and construct cable trenches measuring 600 × 500 mm, approximately 100 metres long, at various locations as per the approved layout. Include supply and installation of precast "HATARI" warning slabs.	1	LOT		
Total Carried to Collection (KSHs)					

SOLAR YARD WORKS, TRANSFORMER BASE, ELECTRICAL FITTING SUPPORTS, GENERATOR BASE & SHED		
	<u>COLLECTION</u>	AMOUNT(KSH)
i.	TRANSFORMER BASE	
ii.	ELECTRICAL FITTINGS SUPPORTS	
iii.	50 KVA GENERATOR BASE	
iv.	50 KVA GENERATOR SHED	
v.	SOLAR PLANT WORKS	
TOTAL CARRIED TO SUMMARY		

CIVIL WORKS SUMMARY

SUMMARY FOR KIBUOGI MINIGRID CIVILWORKS		
ITEM	DESCRIPTION	AMOUNT (KSH)
P	PRELIMINARIES	
1	CHAIN LINK FENCES AND GATES	
2	GUARD HOUSE	
3	TWO DOOR PIT LATRINES	
4	EQUIPMENT ROOM	
5	WATER SUPPLY	
6	OFFICE BLOCK	
7	FURNITURE AND FIRE PROTECTION EQUIPMENT	
8	STORM WATER PROTECTION WORKS	
9	ACCESS ROAD, PAVEMENTS AND PARKING	
10	SOLAR YARD WORKS, TRANSFORMER BASE, ELECTRICAL FITTING SUPPORTS, GENERATOR BASE & SHED	
SUB TOTAL		
ADD 16% VAT		
SUBTOTAL		
TOTAL FOR CIVIL WORKS		

BILL OF QUANTITIES AND PRICE SCHEDULE FOR STEP UP SUBSTATION

Item	Description	Unit	Qty	Unit Price	Total Price
	CURRENCY: KSHS.				
1	Control Panels (Set with 1 Incomer and 1 Feeder) as per the requirement.	Set	1		
2	Energy Meter (Tariff type, 415Vthree phase meter) For Feeder	No.	1		
3	Cabling and Earthing for the step-uptransformer and the outdoor equipment. The Transformer will be approximately 35 meters from the control room. (Cable size 240mm sq)and associated cable tray or trenches.Control Panels will be placed inside the inverter room. The bidder will provide all control and power cables for all equipment's	No.	1		
4	Step-up transformer 315 KVA, 0.415/11 KV Step-up TX, fitted with Buchholz relay, and pressure relief valve (See specs)	No.	1		
5	11 KV Circuit Breaker (Triple Pole) complete with indoor Control and Protective relay panel and its accessories	No.	1		
6	Outdoor Neutral current transformer (NCT) as per the requirement	No.	1		
7	11Kv Outdoor Current Transformers (CT) as per the requirement	No.	3		
8	11Kv Outdoor Voltage Transformers (VT) as per the requirement	No.	3		
9	11kv Lighting Arrester (LA)/ Surge Diverters	No.	3		
10	11Kv Isolator without Earth Switch (DS)	Set	1		
11	11Kv Isolator with Earth Switch (DSE)	Set	1		
12	Mounting Structures for CT, VT, LA, DS and DSE	Set	1		
13	110VDC battery Bank supply	Set	1		
14	110VDC, 100AH Battery Charger	Set	1		
15	Laptop computer fully loaded with the relays software initially stated in the specs.	Lot	1		
	SUB-TOTAL				
	ADD 16% VAT				
	TOTAL COST				

BILL OF QUANTITIES AND PRICE SCHEDULE FOR 100 KWp SOLAR PV SYSTEM

Item	Description	Unit	Qty	Unit Price	Total
1.	Supply of Solar PV modules with junction box , BypassDiodes, cable and MC4 connector for inter connection with other module along with galvanized steel nuts & bolts for fixing up with module mounting structure as per the requirement & technical specification	KWp	100		
2.	Supply of hot dip galvanized MS steel/Aluminum Anodized made module-mounting structures(MMS) for above Modules of 100KWp capacity for holding modules including all necessary nuts and bolts as well as necessary clamps, foundations bolts etc as per requirements and technical specifications and duly approved design by REREC	Lot	1		
3.	Supply of 600/1000v DC Distribution Board for Power distribution /Accumulation at DC side with MCBS/MCCBS protection system/Surge protection System	Lot	1		
4.	Supply, and installation of 50kW Hybrid Inverters, for conversion of Solar generation along with all protections and controlling arrangement for integration with BESS and DG along with AC Distribution Board for accumulation on AC side and equipment for remote monitoring facilities as per the requirement & technical specification.	No	2		
5.	Supply and install a 3-phase 50KVA power output diesel generator with 415 V at 50 Hz. It should include a highly corrosion resistant enclosure, control panel and monitoring, fuel tank and circuit breaker protection. The diesel generator shall be suitable for indoor or outdoor installation and shall perform accordingly with the battery inverter and the system design. The diesel generator shall work in a fully automatic manner with the above stated component	Set	1		
6.	Supply and install 5,000 litres elevated external fuel tank complete with associated pipe work	Sum	1		

Item	Description	Unit	Qty	Unit Price	Total
7.	Supply of at least 371KWh(Usable) minimum Lithium-ion Battery Conforming to IEC62619 standard applicable to battery technology, Long life (10 years minimum) Complete in all respect and conforming to Requirement & technical specifications	KWh	371		
8.	Cabling complete with all necessary accessories for connection of solar modules to battery bank, inverter, to intelligent controller/manager and to agreed connection point at the station through an energy meter and generator to the battery bank. This to also include cabling from the diesel generator for integration with power from the solar plant.	Lot	1		
9.	Supply of galvanized steel trays for cabling installation including all necessary nuts and bolts for Installation as per requirement of approved design as per Employer's requirements and Technical specification	Lot	1		
10	Supply of Lightening arrestor system to engineers approval with fulfilment of Standards UNE21186 and NF c 17102 to protect the arrays yard area and buildings against lightning protection as per approved design along with clamps and masts of requisite height.	Lot	1		
11	Supply and install Security equipment including IP colour night vision 24 no's Long vision Telescopic Closed Circuit Television (CCTV),IR motion sensors and 2 no's short vision camera CCTV cameras with Video display at the control room	Lot	1		
	Sub-Total(Non Vatable Materials)				
	Sub-Total(Vatable Materials)				
	ADD 16% VAT (Only goods that attract VAT)				
	Total Cost For Solar Plant				

BILL OF QUANTITIES AND PRICE SCHEDULE FOR TOOLS AND CRITICAL SPARES

Item	Description	Unit	Qty	Unit Price	Total Price
	Tools				
1	Electrical Workshop 55+ Piece Inlay Tool Set with case	No	1		
2	Electric Hand Drill Chuck Capacity Of 1.5 – 13 Mm With Case	No	1		
3	Electric Blower 800w	No	1		
	Critical Spares				
1	Fan belt	No	2		
2	Air filter	No	4		
3	Thermostat	No	1		
4	Oil filter	No	10		
5	Fuel filter	No	10		
6	Engine Oil (litres)	No	210		
7	Engine additive (litres)	No	10		
8	Diodes set	No	I set		
9	AVR	No	1		
10	Electronic Fuel Control Units (Governor)	No	1		
	SUB-TOTAL				
	ADD 16% VAT (Only goods that attract VAT)				
Total For Tools And Critical Spares					

BILL OF QUANTITIES AND PRICE SCHEDULE FOR SERVICES

Item	Description	Unit	Qty	Unit Price	Total Price
1.	Transport all to the station, installation, testing and commissioning of all equipment under supervision of REREC	Lot	1		
2.	Operation for 1 month inclusive of 1 month operator training.				
3.	12 Months maintenance plus training of maintenance staff.	Lot	1		
4.	On site factory acceptance test at the respective manufacturing plants for Solar PV generation plant equipment (Solar panels, Inverters and battery), transformer, distribution board and outdoor Switchgear. The bidder to allow all costs including travelling, facilitation and accommodation for four (4) officers REREC/KPLC	Lot	1		
5.	Allow a Provisional Sum for the appointment of a Clerk of Works to be engaged by the Employer to supervise the works on site, ensure compliance with contract drawings and specifications, monitor workmanship and quality of materials, maintain site records, and report regularly to the Employer's Representative. This sum shall cover the all Clerk of Works' associated costs necessary for the effective execution of their duties throughout the construction period	Sum	1	600,000	
	Sub Total				
	Add 16% VAT				
	Total for Services				

COST SUMMARY TO BE TRANSFERRED TO FORM OF TENDER AND ITEM TAB IN SRM SYSTEM

KIBUOGI SOLAR POWER MINI GRID					
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	Total Civil Works,	Sum	1		
2	Total Substation works	Sum	1		
3	Total 100KW Solar Power Generation plant equipment	Sum	1		
4	Tools and Critical spares	Sum	1		
5	Total Services	Sum	1		
6	2.5% Contingency(to be used with the approval of the Project Manager)	Sum	1		
	GRAND TOTAL				

FORMS AND PROCEDURES

Form of Completion Certificate

Date: _____

ITT

No:

To:

Dear Ladies and/or Gentlemen,

Pursuant to GCC Clause 24 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Procuring Entity dated _____, relating to the _____, we hereby notify you that the following part (s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Procuring Entity hereby takes over the said part (s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part there of:
2. Date of Completion:

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This Form does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title (Project Manager)

FORM OF OPERATIONAL ACCEPTANCE CERTIFICATE

Date:_____

ITT

No:

To:

Dear Ladies and/or Gentlemen,

Pursuant to GCC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Procuring Entity dated_____

_____, relating to the_____, we hereby notify you that the Functional Guarantees of the following part (s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part there of:
2. Date of Operational Acceptance:

This Form does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title (Project Manager)

CHANGE ORDER PROCEDURE AND FORMS

Date:

ITT No:

CONTENTS

1. General
2. Change Order Log
3. References for Changes

ANNEXES

Annex 1: Request for Change Proposal

Annex 2: Estimate for Change Proposal

Annex 3: Acceptance of Estimate

Annex 4: Change Proposal

Annex 5: Change Order

Annex 6: Pending Agreement Change Order

Annex 7: Application for Change Proposal

Change Order Procedure

1. General

This section provides samples of procedures and forms for implementing changes in the Facilities during the performance of the Contract in accordance with GCC Clause 39 (Change in the Facilities) of the General Conditions.

2. *Change Order Log*

The Contractor shall keep an up-to-date Change Order Log to show the current status of Requests for Change and Changes authorized or pending, as Annex 8. Entries of the Changes in the Change Order Log shall be made to ensure that the log is up-to-date. The Contractor shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Procuring Entity.

3. *References for Changes*

- 1) Request for Change as referred to in GCC Clause 39 shall be serially numbered CR-X-nnn.
- 2) Estimate for Change Proposal as referred to in GCC Clause 39 shall be serially numbered CN-X-nnn.
- 3) Acceptance of Estimate as referred to in GCC Clause 39 shall be serially numbered CA-X-nnn.
- 4) Change Proposal as referred to in GCC Clause 39 shall be serially numbered CP-X-nnn.
- 5) Change Order as referred to in GCC Clause 39 shall be serially numbered CO-X-nnn.

Note:

- a) Requests for Change issued from the Procuring Entity's Home Office and the Site representatives of the Procuring Entity shall have the following respective references:
Home Office CR-H-nnn
Site CR-S-nnn
- b) The above number “nnn” is the same for Request for Change, Estimate for Change Proposal, Acceptance of Estimate, Change Proposal and Change Order.

ANNEX 1. REQUEST FOR CHANGE PROPOSAL

(Procuring Entity's Form head)

To: _____ Date _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to the captioned Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within _____ days of the date of this Form _____.

1. Title of Change: _____
2. Change Request No. _____
3. Originator of Change: _____
4. Procuring Entity: _____
5. Contractor (by Application for Change Proposal No. _____):
6. Brief Description of Change: _____
7. Facilities and/or Item No. of equipment related to the requested Change:
8. Reference drawings and/ or technical documents for the request of
Change: Drawing No./ Document No. Description
9. Detailed conditions or special requirements on the requested Change: _____
10. General Terms and Conditions:
 - a) Please submit your estimate to us showing what effect the requested Change will have on the Contract Price.
 - b) Your estimate shall include your claim for the additional time, if any, for completion of the requested Change.
 - c) If you have any opinion negative to the adoption of the requested Change in connection with the conformability to the other provisions of the Contractor the safety of the Plant or Facilities, please inform us of your opinion in your proposal of revised provisions.
 - d) Any increase or decrease in the work of the Contractor relating to the services of its personnel shall be calculated.
 - e) You shall not proceed with the execution of the work for the requested Change until we have accepted and confirmed the amount and nature in writing.

(Procuring Entity's Name)

(Signature).....

(Name of signatory)

(Title of signatory)

ANNEX 2. ESTIMATE FOR CHANGE PROPOSAL

(Contractor's Form head)

To: _____ Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost of preparing the below-referenced Change Proposal in accordance with GCC Sub-Clause 39.2.1 of the General Conditions. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with GCC Sub-Clause 39.2.2, is required before estimating the cost for change work.

1. Title of Change: _____

2. Change Request No./Rev.: _____

3. Brief Description of Change: _____

4. Scheduled Impact of Change: _____

5. Cost for Preparation of Change Proposal: _____⁹

a) Engineering (Amount)

i) Engineer _____ hrs x _____ rate/hr =

ii) Draftsperson _____ hrs x _____ rate/hr = Sub-total _____ hrs

iii) Total Engineering Cost _____

b) Other Cost

Total Cost (a) + (b)

(Contractor's Name) _____

(Signature) _____

(Name of signatory) _____

(Title of signatory) _____

ANNEX 3. ACCEPTANCE OF ESTIMATE

(Procuring Entity's Form head)

To: _____ Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby accept your Estimate for Change Proposal and agree that you should proceed with the preparation of the Change Proposal.

1. Title of Change: _____
2. Change Request No./ Rev.: _____
3. Estimate for Change Proposal No./ Rev.: _____
4. Acceptance of Estimate No./ Rev.: _____
5. Brief Description of Change: _____
6. Other Terms and Conditions: In the event that we decide not to order the Change accepted, you shall be entitled to compensation for the cost of preparation of Change Proposal described in your Estimate for Change Proposal mentioned in para. 3 above in accordance with GCC Clause 39 of the General Conditions.

(Procuring Entity's Name) _____

(Signature) _____

(Name and Title of signatory) _____

ANNEX 4. CHANGE PROPOSAL

(Contractor's Form head)

To: _____ Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

In response to your Request for Change Proposal No. _____, we hereby submit our proposal as follows:

1. Title of Change: _____
2. Change Proposal No./Rev.: _____
3. Originator of Change:
Procuring Entity: _____
Contractor: _____
4. Brief Description of Change: _____
5. Reasons for Change: _____
6. Facilities and/or Item No. of Equipment related to the requested Change: _____
7. Reference drawings and/ or technical documents for the requested Change: Drawing/ Document No. Description
8. Estimate of increase/ decrease to the Contract Price resulting from Change Proposal: (Amount)
 - a) Direct material
 - b) Major construction equipment
 - c) Direct field labor (Total hrs)
 - d) Subcontracts
 - e) Indirect material and labor
 - f) Site supervision
 - g) Head office technical staff salaries
Process engineer _____ hrs @ _____ rate/hr
Project engineer _____ hrs @ _____ rate/hr
Equipment engineer _____ hrs @ _____ rate/hr
Procurement _____ hrs @ _____ rate/hr
Drafts person _____ hrs @ _____ rate/hr
Total _____ hrs
 - h) Extraordinary costs (computer, travel, etc.)
 - i) Fee for general administration, _____ % of Items
 - j) Taxes and customs dutiesTotal lump sum cost of Change Proposal

(Sum of items (a) to (j))

Cost to prepare Estimate for Change

Proposal (Amount payable if Change is not
accepted)

9. Additional time for Completion required due to Change Proposal
10. Effect on the Functional Guarantees
11. Effect on the other terms and conditions of the Contract
12. Validity of this Proposal: within [Number] days after receipt of this Proposal by the Procuring Entity
13. Other terms and conditions of this Change Proposal:
 - a) You are requested to notify us of your acceptance, comments or rejection of this detailed Change Proposal within _____ days from your receipt of this Proposal.
 - b) The amount of any increase and/or decrease shall be taken into account in the adjustment of the Contract Price.
 - c) Contractor's cost for preparation of this Change Proposal:²

(Contractor's Name) _____

(Signature) _____

(Name of signatory)

_____ (

Title of signatory) _____

ANNEX 5. CHANGE ORDER

(Procuring Entity's Form head)

To: _____ Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We approve the Change Order for the work specified in the Change Proposal (No. _____), and agree to adjust the Contract Price, Time for Completion and/or other conditions of the Contract in accordance with GCC Clause 39 of the General Conditions.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Change Order No./ Rev.: _____
4. Originator of Change: _____ Procuring Entity: _____
Contractor: _____
5. Authorized Price: _____
Ref. No.: _____ Date: _____
Foreign currency portion _____ plus Local currency portion _____
6. Adjustment of Time for Completion
None Increase _____ Days Decrease _____ days
7. Other effects, if any

Authorized by: _____ Date: _____
(Procuring Entity)

Accepted by: _____ Date: _____
(Contractor)

ANNEX 6. PENDING AGREEMENT CHANGE ORDER

(Procuring Entity's Form head)

To: _____ Date: Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We instruct you to carry out the work in the Change Order detailed below in accordance with GCC Clause 39 of the General Conditions.

1. Title of Change: _____
2. Procuring Entity's Request for Change Proposal No./Rev.: _____ dated: _____
3. Contractor's Change Proposal No./Rev.: _____ dated: _____
4. Brief Description of Change: _____
5. Facilities and/or Item No. of equipment related to the requested Change: _____
6. Reference Drawings and/or technical documents for the requested Change:
Drawing/Document No. Description
7. Adjustment of Time for Completion:
8. Other change in the Contract terms:
9. Other terms and conditions:

(Procuring Entity's Name) _____

(Signature)) _____

(Name of signatory))

(Title of signatory)) _____

ANNEX 7. APPLICATION FOR CHANGE PROPOSAL

(Contractor's Form head)

To: _____ Date: Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby propose that the below-mentioned work be treated as a Change in the Facilities.

1. Title of Change: _____
2. Application for Change Proposal No./Rev.: _____ dated: _____
3. Brief Description of Change: _____
4. Reasons for Change:
5. Order of Magnitude Estimation (in the currencies of the Contract):
6. Scheduled Impact of Change:
7. Effect on Functional Guarantees, if any:
8. Appendix:

(Contractor's Name) _____

(Signature) _____

(Name of signatory) _____

(Title of signatory) _____

DRAWINGS

SUPPLEMENTARY INFORMATION

PART III - CONDITIONS OF CONTRACT AND CONTRACT FORMS

GENERAL CONDITIONS OF CONTRACT

A. *Contract and Interpretation*

1. *Definitions*

1.1 The following words and expressions shall have the meanings here by assigned to them:

“Contract” means the Contract Agreement entered into between the Procuring Entity and the Contractor, together with the Contract Documents referred to there in; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“GCC” means the General Conditions of Contract hereof. “SCC” means the Special Conditions of Contract.

“day” means calendar day. “year” means 365 days. “month” means calendar month.

“Party” means the Procuring Entity or the Contractor, as the context requires, and “Parties” means both of them.

“Procuring Entity” means the public entity named as such in the SCC and includes the legal successors or permitted assigns of the Procuring Entity.

“Project Manager” means the person appointed by the Procuring Entity in the manner provided in GCC Sub-Clause 17.1 (Project Manager) hereof and named as such in the SCC to perform the duties delegated by the Procuring Entity.

“Contractor” means the person(s) whose Tender to perform the Contract has been accepted by the Procuring Entity and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contractor's Representative” means any person nominated by the Contractor and approved by the Procuring Entity in the manner provided in GCC Sub-Clause 17.2 (Contractor's Representative and Construction Manager) here of to perform the duties delegated by the Contractor.

“Construction Manager” means the person appointed by the Contractor's Representative in the manner provided in GCC Sub-Clause 17.2.4.

“Subcontractor,” including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

“Dispute Board” (DB) means the person or persons named as such in the SCC appointed by agreement between the Procuring Entity and the Contractor to make a decision with respect to any dispute or difference between the Procuring Entity and the Contractor referred to him or her by the Parties pursuant to GCC Sub-Clause 46.1 (Dispute Board) hereof.

“Contract Price” means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such additions and adjustments there to or deductions there from, as may be made pursuant to the Contract.

“Facilities” means the Plant to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.

“Plant” means permanent plant, equipment, machinery, apparatus, materials, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under GCC Sub-Clause 7.3 here of), but does not include Contractor's Equipment.

“Installation Services” means all those services ancillary to the supply of the Plant for the Facilities, to be provided by the Contractor under the Contract, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation works (including the provision and use of Contractor's Equipment and the supply of all construction materials required), installation, testing, pre-commissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training, etc...as the case may require.

“Contractor's Equipment” means all facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant, or other things intended to form or forming part of the Facilities.

“Country of Origin” means the countries and territories eligible as elaborated in the SCC.

“Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, from which the Time for Completion shall be counted.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GCC Clause 8 and in accordance with the relevant provisions of the Contract.

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been completed operationally and structurally and put in a tight and clean condition, that all work in respect of Pre-commissioning of the Facilities or such specific part thereof has been completed, and that the Facilities or specific part thereof are ready for Commissioning as provided in GCC Clause 24 (Completion) hereof.

“Pre-commissioning” means the testing, checking and other requirements specified in the Procuring Entity's Requirements that are to be carried out by the Contractor in preparation for Commissioning as provided in GCC Clause 24 (Completion) hereof.

“Commissioning” means operation of the Facilities or any part thereof by the Contractor following Completion, which operation is to be carried out by the Contractor as provided in GCC Sub-Clause 25.1 (Commissioning) hereof, for the purpose of carrying out Guarantee Test(s).

“Guarantee Test(s)” means the test(s) specified in the Procuring Entity's Requirements to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, in accordance with the provisions of GCC Sub-Clause 25.2 (Guarantee Test) hereof.

“Operational Acceptance” means the acceptance by the Procuring Entity of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor's fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of GCC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with GCC Clause 25 (Commissioning and Operational Acceptance) hereof.

“Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in GCC Clause 27 (Defect Liability) hereof.

“Notice of Dissatisfaction” means the notice given by either Party to the other under Sub-Clause 46.4 indicating its dissatisfaction and intention to commence arbitration.

2. Contract Documents

- 2.1 Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

3. *Interpretation*

3.1 In the Contract, except where the context requires otherwise:

- a) Words indicating one gender include all genders;
- b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- c) provisions including the word “agree,” “agreed,” or “agreement” require the agreement to be recorded in writing;
- d) the word “tender” is synonymous with “Tender,” “tenderer,” with “Tenderer,” and “tender documents” with “Tendering Document,” and
- e) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

The marginal words and other headings shall not be taken in to consideration in the interpretation of these Conditions.

3.2 Incoterms

Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of Parties thereunder shall be as prescribed by Incoterms.

Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1^{er}, 75008 Paris, France.

3.3 Entire Agreement

3.3.1 Subject to GCC Sub-Clause 16.4 hereof, the Contract constitutes the entire agreement between the Procuring Entity and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of Parties with respect there to made prior to the date of Contract.

3.4 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

3.5 Independent Contractor

The Contractor shall be an independent contract or performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the Parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Procuring Entity, and nothing contained in the Contractor in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Procuring Entity.

3.6 Non-Waiver

3.6.1 Subject to GCC Sub-Clause 3.6.2 below, no relaxation, forbearance, delay or indulgence by either Party in enforcing any of the terms and conditions of the Contract or the granting of time by either Party to the other shall prejudice, affect or restrict the rights of that Party under the Contract, nor shall any waiver by either Party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.6.2 Any waiver of a Party's rights, powers or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the Party granting such waiver, and must specify the right and the extent to which it is being waived.

3.7 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, in validity or unenforced ability shall not affect the validity or enforce ability of any other provisions and conditions of the Contract.

3.8 Country of Origin

“Origin” means the place where the plant and component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

4 *Communications*

4.3 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- a In writing and delivered against receipt; and
- b Delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Project Manager, a copy shall be sent to the Project Manager or the other Party, as the case may be.

5 *Law and Language*

5.3 The Contract shall be governed by in accordance with laws of Kenya

5.4 The ruling language of the Contract shall be English Language.

5.5 The language for communications shall be the English language.

6 *Fraud and Corruption*

6.1 The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 as set forth in Section” Declaration not to engage in corruption”. The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.

6.2 Tenderers shall permit and shall cause their agents (where declared or not), subcontractors, sub-consultants, service providers, suppliers, and their personnel, to permit the PPRA to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, tender submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the PPRA.

B. *Subject Matter of Contract*

7 *Scope of Facilities*

7.1 Unless otherwise expressly limited in the Procuring Entity's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Pre-commissioning and delivery) of the Plant, and the installation, completion and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Procuring Entity's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts (as specified in GCC Sub-Clause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Procuring Entity, asset for thin the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity.

7.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.

- 7.3 In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the SCC and the provisions, if any, specified in the SCC. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply there of are to be agreed between the Procuring Entity and the Contractor, and the price of such spare parts shall be that given in Price Schedule No.6, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price there for and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

8 *Time for Commencement and Completion*

- 8.1 The Contractor shall commence work on the Facilities within the period specified in the SCC and without prejudice to GCC Sub-Clause 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in the Appendix to the Contract Agreement titled Time Schedule.
- 8.2 The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time stated in the SCC or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.

9 *Contractor's Responsibilities*

- 9.1 The Contractor shall design, manufacture including associated purchases and/or subcontracting, install and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.
- 9.2 The Contractor confirms that it has entered in to this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Procuring Entity, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access there to was available and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to Tender submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.
- 9.3 The Contractor shall acquire and pay for all permits, approvals and /or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which such authorities or undertakings require the Contractor to obtain in its name and which are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Procuring Entity under GCC Sub-Clause 10.3 hereof and that are necessary for the performance of the Contract.
- 9.4 The Contractor shall comply with all laws in force in the country where the Facilities are to be implemented. The laws will include all local, state, national or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Procuring Entity from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to GCC Sub-Clause 10.1 hereof.
- 9.5 Any Plant and Installation Services that will be incorporated in or be required for the Facilities and other supplies shall have their origin as specified under GCC Clause 1 (Country of Origin). Any subcontractors retained by the Contractor shall be from a country as specified in GCC Clause 1 Country of Origin).
- 9.6 If the Contractor is a joint venture, or association (JV) of two or more persons, all such persons shall be jointly and severally bound to the Procuring Entity for the fulfillment of the provisions of the Contract, and shall designate one of such persons to act as a leader with authority to bind the JV. The composition or the constitution of the JV shall not be altered without the prior consent of the Procuring Entity.
- 9.7 Pursuant to paragraph 2.2 e. of Appendix B to the General Conditions the Contractor shall permit and shall cause its subcontractors and sub-consultants to permit, PPRA and/or persons appointed by PPRA to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution, and to have such accounts and records audited by auditors appointed by PPRA. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Sub-Clause 6.1 which provides, inter alia, that acts intended to materially impede the exercise of the PPRA's inspection and audit rights constitute a prohibited practice subject to contract termination.
- 9.8 The Contractor shall conform to the sustainable procurement contractual provisions, if and as specified in the

SCC.

10 Procuring Entity's Responsibilities

- 10.1 All information and/or data to be supplied by the Procuring Entity as described in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity, shall be deemed to be accurate, except when the Procuring Entity expressly states otherwise.
- 10.2 The Procuring Entity shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity. The Procuring Entity shall give full possession of an accord all rights of access there to on or before the date (s) specified in that Appendix.
- 10.3 The Procuring Entity shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service under takings in the country where the Site is located which such authorities or under takings require the Procuring Entity to obtain in the Procuring Entity's name, (b) are necessary for the execution of the Contract, including those required for the performance by both the Contractor and the Procuring Entity of their respective obligations under the Contract, and (c) are specified in the Appendix (Scope of Works and Supply by the Procuring Entity).
- 10.4 If requested by the Contractor, the Procuring Entity shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service under takings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.
- 10.5 Unless otherwise specified in the Contract or agreed upon by the Procuring Entity and the Contractor, the Procuring Entity shall provide sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature, including those required by the Contractor to properly carry out Pre-commissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity, at or before the time specified in the program furnished by the Contractor under GCC Sub-Clause 18.2 hereof and in the manner thereupon specified or as otherwise agreed upon by the Procuring Entity and the Contractor.
- 10.6 The Procuring Entity shall be responsible for the continued operation of the Facilities after Completion, in accordance with GCC Sub-Clause 24.8, and shall be responsible for facilitating the Guarantee Test (s) for the Facilities, in accordance with GCC Sub-Clause 25.2.
- 10.7 All costs and expenses involved in the performance of the obligations under this GCC Clause 10 shall be the responsibility of the Procuring Entity, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GCC Sub-Clause 25.2.
- 10.8 In the event that the Procuring Entity shall be in breach of any of his obligations under this Clause, the additional cost incurred by the Contractor in consequence thereof shall be determined by the Project Manager and added to the Contract Price.

C. Payment

11 Contract Price

- 11.1 Contract as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 11.2 Unless an adjustment clause is provided for in the SCC, the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 11.3 Subject to GCC Sub-Clauses 9.2, 10.1 and 35 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

12 Terms of Payment

- 12.1 The Contract Price shall be paid as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement and in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which also outlines the procedures to be followed in making application for and processing payments.
- 12.2 No payment made by the Procuring Entity herein shall be deemed to constitute acceptance by the Procuring Entity of the Facilities or any part (s) thereof.

- 12.3 In the event that the Procuring Entity fails to make any payment by its respective due date or within the period set for thin the Contract, the Procuring Entity shall pay to the Contractor interest on the amount of such delayed payment at the rate(s) shown in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, for the period of delay until payment has been made in full, whether before or after judgment or arbitrage award.
- 12.4 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's Tender.

13 Securities

13.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Procuring Entity at the times, and in the amount, manner and form specified below.

13.2 Advance Payment Security

13.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix to the Contract Agreement titled Terms and Procedures of Payment, and in the same currency or currencies.

13.2.2 The security shall be in the form provided in the Tendering documents or in another form acceptable to the Procuring Entity. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Procuring Entity. The security shall be returned to the Contractor immediately after its expiration.

13.3 Performance Security

13.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security for the due performance of the Contract in the amount specified in the **SCC**.

13.3.2 The Performance Security shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Procuring Entity, and shall be in the form provided in Section X, Contract Forms, corresponding to the type of bank guarantee stipulated by the Procuring Entity in the **SCC**, or in another form acceptable to the Procuring Entity.

13.3.3 Unless otherwise specified in the **SCC**, the security shall be reduced by half on the date of the Operational Acceptance. The Security shall become null and void, or shall be reduced prorata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty five (365) days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GCC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GCC Sub-Clause 27.10, is liable for an extended defect liability obligation, the Performance Security shall be extended for the period specified in the **SCC** pursuant to GCC Sub-Clause 27.10 and up to the amount specified in the **SCC**.

13.3.4 The Procuring Entity shall not make a claim under the Performance Security, except for amounts to which the Procuring Entity is entitled under the Contract. The Procuring Entity shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Procuring Entity was not entitled to make the claim.

14 Taxes and Duties

14.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.

- 14.2 If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in Kenya, the Procuring Entity shall use its best endeavors to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.
- 14.3 For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of Tender submission in Kenya (hereinafter called "Tax" in this GCC Sub-Clause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor, Subcontractors or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take in to account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GCC Clause 36 hereof.

A. Intellectual Property

15 License/Use of Technical Information

- 15.1 For the operation and maintenance of the Plant, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Procuring Entity under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses there under, and shall also grant to the Procuring Entity a non-exclusive and non-transferable right (without the right to sub-license) to use the know-how and other technical information disclosed to the Procuring Entity under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other intellectual property right from the Contractor or any third Party to the Procuring Entity.
- 15.2 The copy right in all drawings, documents and other materials containing data and information furnished to the Procuring Entity by the Contractor here in shall remain vested in the Contractor or, if they are furnished to the Procuring Entity directly or through the Contractor by any third Party, including suppliers of materials, the copy right in such materials shall remain vested in such third Party.

16 Confidential Information

- 16.1 The Procuring Entity and the Contractor shall keep confidential and shall not, without the written consent of the other Party hereto, divulge to any third Party any documents, data or other information furnished directly or indirectly by the other Party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor (s) such documents, data and other information it receives from the Procuring Entity to the extent required for the Subcontractor (s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor (s) an under taking of confidentiality similar to that imposed on the Contractor under this GCC Clause 16.
- 16.2 The Procuring Entity shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Procuring Entity for any purpose other than the design, procurement of Plant, construction or such other work and services as are required for the performance of the Contract.
- 16.3 The obligation of a Party under GCC Sub-Clauses 16.1 and 16.2 above, however, shall not apply to that information which
- a Now or here after enters the public domain through no fault of that Party
 - b can be proven to have been possessed by that Party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other Party hereto
 - c Otherwise lawfully becomes available to that Party from a third Party that has no obligation of confidentiality.
- 16.4 The above provisions of this GCC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the Parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.
- 16.5 The provisions of this GCC Clause 16 shall survive termination, for whatever reason, of the Contract.

B. Execution of the Facilities

17 Representatives

17.1 Project Manager

If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Procuring Entity shall appoint and notify the Contractor in writing of the name of the Project Manager. The Procuring Entity may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the Facilities. Such appointment shall only take effect upon receipt of such notice by the Contractor. The Project Manager shall represent and act for the Procuring Entity at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as here in otherwise provided.

All notices, instructions, information and other communications given by the Contractor to the Procuring Entity under the Contract shall be given to the Project Manager, except as herein otherwise provided.

17.2 Contractor's Representative & Construction Manager

17.2.1 If the Contractor's Representative is not named in the Contract, then within fourteen (14) days of the Effective Date, the Contractor shall appoint the Contractor's Representative and shall request the Procuring Entity in writing to approve the person so appointed. If the Procuring Entity makes no objection to the appointment within fourteen (14) days, the Contractor's Representative shall be deemed to have been approved. If the Procuring Entity objects to the appointment within fourteen (14) days giving the reason therefor, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GCC Sub-Clause 17.2.1 shall apply thereto.

17.2.2 The Contractor's Representative shall represent and act for the Contractor at all times during the performance of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract.

17.2.3 All notices, instructions, information and all other communications given by the Procuring Entity or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided.

17.2.4 The Contractor shall not revoke the appointment of the Contractor's Representative without the Procuring Entity's prior written consent, which shall not be unreasonably withheld. If the Procuring Entity consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GCC Sub-Clause 17.2.1.

17.2.5 The Contractor's Representative may, subject to the approval of the Procuring Entity which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities there by delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Procuring Entity and the Project Manager.

17.2.6 Any actor exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GCC Sub-Clause 17.2.3 shall be deemed to be an actor exercise by the Contractor's Representative.

17.2.7 From the commencement of installation of the Facilities at the Site until Completion, the Contractor's Representative shall appoint a suitable person as the Construction Manager. The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as the Construction Manager's deputy.

17.2.8 The Procuring Entity may by notice to the Contractor object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Procuring Entity, may be have inappropriately, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under GCC Sub-Clause 22.4. The Procuring Entity shall provide evidence of the same, where upon the Contractor shall remove such person from the Facilities.

17.2.9 If any representative or person employed by the Contractor is removed in accordance with GCC Sub-Clause 17.2.5, the Contractor shall, where required, promptly appoint a replacement.

18 Work Program

18.1 Contractor's Organization

The Contractor shall supply to the Procuring Entity and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities within twenty-one (21) days of the Effective Date. The chart shall include the identities of the key personnel and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The Contractor shall promptly inform the Procuring Entity and the Project Manager in writing of any revision or alteration of such an organization chart.

18.2 Program of Performance

Within twenty-eight (28) days after the Effective Date, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and pre-commission the Facilities, as well as the date by which the Contractor reasonably requires that the Procuring Entity shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion, Commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix to the Contract Agreement titled Time Schedule, and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion specified in the SCC pursuant to Sub-Clause 8.2 and any extension granted in accordance with GCC Clause 40, and shall submit all such revisions to the Project Manager.

18.3 Progress Report

The Contractor shall monitor progress of all the activities specified in the program referred to in GCC Sub-Clause 18.2 above, and supply a progress report to the Project Manager every month.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

18.4 Progress of Performance

If at any time the Contractor's actual progress falls behind the program referred to in GCC Sub-Clause 18.2, or it becomes apparent that it wills of all behind, the Contractor shall, at the request of the Procuring Entity or the project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GCC Sub-Clause 8.2, any extension thereof entitled under GCC Sub-Clause 40.1, or any extended period as may otherwise be agreed upon between the Procuring Entity and the Contractor.

18.5 Procedures

The Contract shall be executed in accordance with the Contract Documents including the procedures given in the Forms and Procedures of the Procuring Entity's Requirements.

The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.

19 Subcontracting

19.1 The Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, specifies major items of supply or services and a list of approved Subcontractors against each item, including manufacturers. In so far as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Procuring Entity for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Procuring Entity for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties or responsibilities under the Contract.

- 19.2 The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in GCC Sub-Clause 19.1.
- 19.3 For items or parts of the Facilities not specified in the Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, the Contractor may employ such Subcontractors as it may select, at its discretion.
- 19.4 Each sub-contract shall include provisions which would entitle the Procuring Entity to require the sub-contract to be assigned to the Procuring Entity under GCC 19.5 (if and when applicable), or in event of termination by the Procuring Entity under GCC 42.2.
- 19.5 If a subcontractor's obligations extend beyond the expiry date of the relevant Defects Liability Period and the Project Manager, prior to that date, instructs the Contractor to assign the benefits of such obligations to the Procuring Entity, then the Contractor shall do so.

20` Design and Engineering

20.1 Specifications and Drawings

- 20.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.
- 20.1.2 The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Procuring Entity.
- 20.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Procuring Entity, by giving a notice of such disclaimer to the Project Manager.

20.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of Tender submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Procuring Entity and shall be treated in accordance with GCC Clause 39.

20.3 Approval/ Review of Technical Documents by Project Manager.

- 20.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the Project Manager the documents listed in the Appendix to the Contract Agreement titled List of Documents for Approval or Review, for its approval or review as specified and in accordance with the requirements of GCC Sub-Clause 18.2 (Program of Performance).
- 20.3.2 Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof.

GCC Sub-Clauses 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.

- 20.2.3 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed there on or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes. If the Project Manager fails to take such action within the said fourteen (14) days, then the said document shall be deemed to have been approved by the Project Manager.
- 20.3.4 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with the Contractor that it is contrary to good engineering practice.
- 20.3.5 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GCC Sub-Clause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification (s), where upon the document shall be deemed to have been approved.

20.3.6 If any dispute or difference occurs between the Procuring Entity and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification (s) there to that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be referred to a Dispute Board for determination in accordance with GCC Sub-Clause 46.1 hereof. If such dispute or difference is referred to a Dispute Board, the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the Dispute Board upholds the Contractor's view on the dispute and if the Procuring Entity has not given notice under GCC Sub-Clause 46.3 hereof, then the Contractor shall be reimbursed by the Procuring Entity for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Dispute Board shall decide, and the Time for Completion shall be extended accordingly.

20.3.7 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.

20.3.8 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GCC Sub-Clause 20.3.

If the Project Manager requests any change in any already approved document and/or in any document based there on, the provisions of GCC Clause 39 shall apply to such request.

21 Procurement

21.1 Plant

Subject to GCC Sub-Clause 14.2, the Contractor shall procure and transport all Plant in an expeditious and orderly manner to the Site.

21.2 Procuring Entity-Supplied Plant

If the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity, provides that the Procuring Entity shall furnish any specific items to the Contractor, the following provisions shall apply:

21.2.1 The Procuring Entity shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the Parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GCC Sub-Clause 18.2, unless otherwise mutually agreed.

21.2.2 Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Procuring Entity shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Procuring Entity, remedy such shortage, defect or default at the Procuring Entity's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this GCC Sub-Clause 21.2.2 shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply to defective items that have been repaired.

21.2.3 The foregoing responsibilities of the Contractor and its obligations of care, custody and control shall not relieve the Procuring Entity of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GCC Clause 27 or under any other provision of Contract.

21.3 Transportation

21.3.1 The Contractor shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

21.3.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment.

21.3.3 Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the

Procuring Entity by telex, cable, facsimile or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the Kenya, if applicable, and at the Site. The Contractor shall furnish the Procuring Entity with relevant shipping documents to be agreed upon between the Parties.

21.3.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Procuring Entity shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Procuring Entity from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site.

21.4 Customs Clearance

21.4.1 The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Procuring Entity's obligations under GCC Sub-Clause 14.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Procuring Entity, the Procuring Entity shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GCC Clause 40.

22 Installation

22.1 Setting Out/ Supervision

22.1.1 Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Procuring Entity.

If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forth with notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Procuring Entity, the expense of rectifying the same shall be borne by the Procuring Entity.

22.1.2 Contractor's Supervision: The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time super intendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

22.2 Labor:

22.2.1 Engagement of Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, housing, feeding and transport.

The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills.

The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into Kenya. The Procuring Entity will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's personnel.

The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Procuring Entity may provide the same to such personnel and recover the cost of doing so from the Contractor.

22.2.2 Persons in the Service of Procuring Entity

The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Procuring Entity's Personnel.

22.2.3 Labor Laws

The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.

The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor.

22.2.4 Rates of Wages and Conditions of Labor

The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by Procuring Entities whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

22.2.5 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the **SCC**, unless:

- a Otherwise stated in the Contract,
- b The Project Manager gives consent, or
- c The work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Project Manager.

If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Project Manager's consent thereto, the Project Manager shall not unreasonably withhold such consent.

This Sub-Clause shall not apply to any work which is customarily carried out by rotary or double-shifts.

22.2.6 Facilities for Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Procuring Entity's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

22.2.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Procuring Entity's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the

Contract, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Project Manager may reasonably require.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Subcontractors and Procuring Entity's and Project Manager's' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD) - or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program,(unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Facilities under Sub-Clause 18.2 an alleviation program for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.

22.2.8 Funeral Arrangements

In the event of the death of any of the Contractor's personnel or accompanying members of their families, the Contractor shall be responsible for making the appropriate arrangements for their return or burial, unless otherwise specified in the SCC.

22.2.9 Records of Contractor's Personnel

The Contractor shall keep accurate records of the Contractor's personnel, including the number of each class of Contractor's Personnel on the Site and the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the Project Manager and shall be available for inspection by the Project Manager until the Contractor has completed all work.

22.2.10 Supply of Food stuffs

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

22.2.11 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

22.2.12 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

22.2.13 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of Kenya, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal by Contractor's Personnel.

22.2.14 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

22.2.15 Prohibition of All Forms of Forced or Compulsory Labor

The contractor shall not employ “forced or compulsory labor” in any form. “Forced or compulsory labor” consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

22.2.16 Prohibition of Harmful Child Labor

The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

22.3 Contractor's Equipment

22.3.1 All Contractor's Equipment brought by the Contractor on to the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.

22.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor on to the Site and any surplus materials remaining there on.

22.3.3 The Procuring Entity will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.

22.4 Site Regulations and Safety

The Procuring Entity and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply there with. The Contractor shall prepare and submit to the Procuring Entity, with a copy to the Project Manager, proposed Site regulations for the Procuring Entity's approval, which approval shall not be unreasonably withheld.

Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.

22.5 Opportunities for Other Contractors

22.5.1 The Contractor shall, upon written request from the Procuring Entity or the Project Manager, give all reasonable opportunities for carrying out the work to any other contractors employed by the Procuring Entity on or near the Site.

22.5.2 If the Contractor, upon written request from the Procuring Entity or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Procuring Entity shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.

22.5.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Procuring Entity in regard to their work.

22.5.4 The Contractor shall notify the Project Manager promptly of any defects in the other contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

22.6 Emergency Work

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.

If the Contractor is unable or unwilling to do such work immediately, the Procuring Entity may cause such work to be done as the Procuring Entity may determine is necessary in order to prevent damage to the Facilities. In such event the Procuring Entity shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons there for. If the work done or caused to be done by the Procuring Entity is work that the Contractor was liable to do at its own expense under the Contract, the reasonable costs incurred by the Procuring Entity in connection therewith shall be paid by the Contractor to the Procuring Entity. Otherwise, the cost of such remedial work shall be borne by the Procuring Entity.

22.7 Site Clearance

22.7.1 Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

22.7.2 Clearance of Site after Completion: After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.

22.8 Watching and Lighting

The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and Where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

23 Test and Inspection

23.1 The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Plant and any part of the Facilities as are specified in the Contract.

23.2 The Procuring Entity and the Project Manager or their designated representatives shall be entitled to attend the afore said test and/or inspection, provided that the Procuring Entity shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

23.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Procuring Entity and the Project Manager or their designated representatives to attend the test and/or inspection.

23.4 The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection. If the Procuring Entity or Project Manager or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.

23.5 The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impede the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.

23.6 If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GCC Sub-Clause 23.3.

23.7 If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the Plant or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it may be referred to a Dispute Board for determination in accordance with GCC Sub-Clause 46.3.

23.8 The Contractor shall afford the Procuring Entity and the Project Manager, at the Procuring Entity's expense,

access at any reasonable time to any place where the Plant are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.

- 23.9 The Contractor agrees that neither the execution of a test and/ or inspection of Plant or any part of the Facilities, nor the attendance by the Procuring Entity or the Project Manager, nor the issue of any test certificate pursuant to GCC Sub-Clause 23.4, shall release the Contractor from any other responsibilities under the Contract.
- 23.10 No part of the Facilities or foundations shall be covered upon the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice there of shall be subject to the requirements of the Contract.
- 23.11 The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any parts of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GCC Sub-Clause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Procuring Entity, and the Time for Completion shall be reasonably adjusted to the extent that the contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

24 Completion of the Facilities

- 24.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Procuring Entity's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Procuring Entity in writing.
- 24.2 Within seven (7) days after receipt of the notice from the Contractor under GCC Sub-Clause 24.1, the Procuring Entity shall supply the operating and maintenance personnel specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity for Pre-commissioning of the Facilities or any part thereof.
- 24.3 Pursuant to the Appendix to the Contract Agreement titled Scope of Works and Supply by the Procuring Entity, the Procuring Entity shall also provide, within the said seven (7) day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Pre-commissioning of the Facilities or any part thereof.
- 24.4 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Procuring Entity and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters have been provided by the Procuring Entity in accordance with GCC Sub-Clause 24.2, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GCC Sub-Clause 25.5.
- 24.5 As soon as all works in respect of Pre-commissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the Project Manager in writing.
- 24.6 The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Procuring Entity's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice under GCC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.

If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GCC Sub-Clause 24.4.

If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.

If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure

shall be repeated.

24.7 If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under GCC Sub-Clause 24.5, or if the Procuring Entity makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Procuring Entity's use of the Facilities, as the case may be.

24.8 As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Procuring Entity will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.

24.9 Upon Completion, the Procuring Entity shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

25 Commissioning and Operational Acceptance

25.1 Commissioning

25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Project Manager, pursuant to GCC Sub-Clause 24.5, or immediately after the date of the deemed Completion, under GCC Sub-Clause 24.6.

25.1.2 The Procuring Entity shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.

25.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Procuring Entity.

25.2 Guarantee Test

25.2 Subject to GCC Sub-Clause 25.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees. The Procuring Entity shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof.

25.1.1 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion specified in the SCC or any other period agreed upon by the Procuring Entity and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GCC Sub-Clauses 28.2 and 28.3 shall not apply.

25.3 Operational Acceptance

25.3.1 Subject to GCC Sub-Clause 25.4 below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when

- a The Guarantee Test has been successfully completed and the Functional Guarantees are met; or
- b the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the SCC pursuant to GCC Sub-Clause 25.2.2 above or any other period agreed upon by the Procuring Entity and the Contractor; or
- c the Contractor has paid the liquidated damages specified in GCC Sub-Clause 28.3 hereof; and
- d any minor items mentioned in GCC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.

25.3.2 At any time after any of the events set out in GCC Sub-Clause 25.3.1 have occurred, the Contractor may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Procuring Entity's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof specified in such notice as of the date of such notice.

25.3.3 The Project Manager shall, after consultation with the Procuring Entity, and within seven (7) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.

- 25.3.4 If within seven (7) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.
- 25.4 Partial Acceptance
- 25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.
- 25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.
- 25.5 Delayed Pre-commissioning and/or Guarantee Test
- 25.5.1 In the event that the Contractor is unable to proceed with the Pre-commissioning of the Facilities pursuant to Sub-Clause 24.3, or with the Guarantee Test pursuant to Sub-Clause 25.2, for reasons attributable to the Procuring Entity either on account of non-availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Contractor's control, the provisions leading to "deemed" completion of activities such as Completion, pursuant to GCC Sub-Clause 24.6, and Operational Acceptance, pursuant to GCC Sub-Clause 25.3.4, and Contractor's obligations regarding Defect Liability Period, pursuant to GCC Sub-Clause 27.2, Functional Guarantee, pursuant to GCC Clause 28, and Care of Facilities, pursuant to GCC Clause 32, and GCC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.
- 25.5.2 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to above Sub-Clause 25.5.1, the Contractor shall be entitled to the following:
- a The Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GCC Sub-Clause 26.2;
 - b payments due to the Contractor in accordance with the provision specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which would not have been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Procuring Entity, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Sub-Clause 25.5.3 below;
 - c the expenses towards the above security and extension of other securities under the contract, of which validity needs to be extended, shall be reimbursed to the Contractor by the Procuring Entity;
 - d The additional charges towards the care of the Facilities pursuant to GCC Sub-Clause 32.1 shall be reimbursed to the Contractor by the Procuring Entity for the period between the notification mentioned above and the notification mentioned in Sub-Clause 25.5.4 below. The provision of GCC Sub-Clause 33.2 shall apply to the Facilities during the same period.
 - e Where the contract price is different from the corrected tender price, in order to ensure the contractor is not paid less or more relative to the contract price (which would be the tender price), payment valuation certificates and variation orders on omissions and additions valued based on rates in the Bill of Quantities or schedule of rates in the Tender, will be adjusted by a plus or minus percentage. The percentage already worked out during tender evaluation is worked out as follows: $(\text{corrected tender price} - \text{tender price}) / \text{tender price} \times 100$.
- 25.5.3 In the event that the period of suspension under above Sub-Clause 25.5.1 actually exceeds one hundred eighty (180) days, the Procuring Entity and Contractor shall mutually agree to any additional compensation payable to the Contractor.
- 25.5.4 When the Contractor is notified by the Project Manager that the plant is ready for Pre-commissioning, the Contractor shall proceed without delay in performing Pre-commissioning in accordance with Clause 24.

A. Guarantees and Liabilities

26 Completion Time Guarantee

- 26.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the **SCC** pursuant to GCC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.
- 26.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 40, the Contractor shall pay to the Procuring Entity liquidated damages in the amount specified in the **SCC** as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount specified as “Maximum” in the **SCC** as a percentage rate of the Contract Price. Once the “Maximum” is reached, the Procuring Entity may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2.
- 26.3 Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 40. The Contractor shall have no further liability whatsoever to the Procuring Entity in respect thereof.
- 26.4 However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract.
- 26.5 Save for liquidated damages payable under this GCC Sub-Clause 26.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix to the Contract Agreement titled Time Schedule, and/or other program of work prepared pursuant to GCC Sub-Clause 18.2 shall not render the Contractor liable for any loss or damage there by suffered by the Procuring Entity.
- 26.6 If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GCC Clause 40, the Procuring Entity shall pay to the Contractor a bonus in the amount specified in the **SCC**. The aggregate amount of such bonus shall in no event exceed the amount specified as “Maximum” in the **SCC**.

27 Defect Liability

- 27.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant supplied and of the work executed.
- 27.2 The Defect Liability Period shall be five hundred and forty (540) days from the date of Completion of the Facilities (or any part thereof) or one year from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the **SCC** pursuant to GCC Sub-Clause 27.10.

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Procuring Entity regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:

- a Improper operation or maintenance of the Facilities by the Procuring Entity;
- b Operation of the Facilities outside specifications provided in the Contract; or
- c Normal wear and tear.

- 27.3 The Contractor's obligations under this GCC Clause 27 shall not apply to:
- a any materials that are supplied by the Procuring Entity under GCC Sub-Clause 21.2, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein;
 - b any designs, specifications or other data designed, supplied or specified by or on behalf of the Procuring Entity or any matters for which the Contractor has disclaimed responsibility herein; or
 - c any other materials supplied or any other work executed by or on behalf of the Procuring Entity, except for the work executed by the Procuring Entity under GCC Sub-Clause 27.7.

- 27.4 The Procuring Entity shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Procuring Entity shall afford all reasonable opportunity for the Contractor to inspect any such defect.
- 27.5 The Procuring Entity shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 27.

The Contractor may, with the consent of the Procuring Entity, remove from the Site any Plant or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.

- 27.6 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Procuring Entity may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, where upon the Contractor shall carryout such tests.
- 27.7 If such part fails the tests, the Contractor shall carryout further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Procuring Entity and the Contractor.
- 27.8 If the Contractor fails to commence the work necessary to remedy such defector any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Procuring Entity may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Procuring Entity in connection there with shall be paid to the Procuring Entity by the Contractor or may be deducted by the Procuring Entity from any monies due the Contractor or claimed under the Performance Security.
- 27.9 If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Procuring Entity because of any of the aforesaid reasons.
- 27.10 Except as provided in GCC Clauses 27 and 33, the Contractor shall be under no liability whatsoever and how so ever arising, and whether under the Contractor at law, in respect of defects in the Facilities or any part thereof, the Plant, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, or criminal or willful action of the Contractor.
- 27.11 In addition, any such component of the Facilities, and during the period of time as may be specified in the SCC, shall be subject to an extended defect liability period. Such obligation of the Contractor shall be in addition to the defect liability period specified under GCC Sub-Clause 27.2.

28 Functional Guarantees

- 28.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, subject to and upon the conditions therein specified.
- 28.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/ or additions to the Plant or any part there of as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Procuring Entity upon completion of the necessary changes, modifications and/or additions, and shall request the Procuring Entity to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Procuring Entity may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2.
- 28.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either
- Make such changes, modifications and/or additions to the Facilities or any part there of that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Procuring Entity to repeat the Guarantee Test or
 - Pay liquidated damages to the Procuring Entity in respect of the failure to meet the Functional Guarantees

in accordance with the provisions in the Appendix to the Contract Agreement titled Functional Guarantees.

- c The payment of liquidated damages under GCC Sub-Clause 28.3, up to the limitation of liability specified in the Appendix to the Contract Agreement titled Functional Guarantees, shall completely satisfy the Contractor's guarantees under GCC Sub-Clause 28.3, and the Contractor shall have no further liability whatsoever to the Procuring Entity in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

29 Patent Indemnity

- 29.1 The Contractor shall, subject to the Procuring Entity's compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the Procuring Entity and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Procuring Entity may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copy right or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Contractor or the use of the Facilities in Kenya; and (b) the sale of the products produced by the Facilities in any country.
- 29.2 Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.
- 29.3 If any proceedings are brought or any claim is made against the Procuring Entity arising out of the matters referred to in GCC Sub-Clause 29.1, the Procuring Entity shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Procuring Entity's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.
- 29.4 If the Contractor fails to notify the Procuring Entity within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Procuring Entity shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Procuring Entity within the twenty- eight (28) day period, the Procuring Entity shall make no admission that may be prejudicial to the defense of any such proceedings or claim.
- 29.5 The Procuring Entity shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.
- 29.6 The Procuring Entity shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Procuring Entity.

30 Limitation of Liability

- 30.1 Except in cases of criminal negligence or willful misconduct,
 - a) Neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any in director consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and
 - b) the aggregate liability of the Contractor to the Procuring Entity, whether under the Contract, in tort or otherwise, shall not exceed the amount resulting from the application of the multiplier specified in the SCC, to the Contract Price or, if a multiplier is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Procuring Entity with respect to patent infringement.

B. Risk Distribution

31 Transfer of Ownership

- 31.1 Ownership of the Plant (including spare parts) to be imported in to Kenya shall be transferred to the Procuring Entity upon loading on to the mode of transport to be used to convey the Plant from the country of origin to that country.
- 31.2 Ownership of the Plant (including spare parts) procured in Kenya shall be transferred to the Procuring Entity when the Plant are brought on to the Site.
- 31.3 Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
- 31.4 Ownership of any Plant in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Procuring Entity and the Contractor agree that the Plant in question are no longer required for the Facilities.
- 31.5 Notwithstanding the transfer of ownership of the Plant, the responsibility for care and custody thereof together with the risk of loss or damage there to shall remain with the Contractor pursuant to GCC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part there of in which such Plant are incorporated.

32 Care of Facilities

- 32.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GCC Clause 24 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GCC Clause 27. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clauses 32.2 and 38.1.
- 32.2 If any loss or damage occurs to the Facilities or any part, thereof or to the Contractor's temporary facilities by reason of
 - a insofar as they relate to Kenya, nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contract or could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, in so far as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 34 hereof; or
 - b any use or occupation by the Procuring Entity or any third Party other than a Subcontractor, authorized by the Procuring Entity of any part of the Facilities; or
 - c any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Procuring Entity, or any such matter for which the Contractor has disclaimed responsibility herein, the Procuring Entity shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Procuring Entity requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Procuring Entity in accordance with GCC Clause 39. If the Procuring Entity does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Procuring Entity shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities there by lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Procuring Entity shall terminate the Contract pursuant to GCC Sub-Clause 42.1 hereof.
- 32.3 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Sub-Clause 32.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Sub-Clauses 32.2 (b) and (c) and 38.1.
- 32.4 With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GCC Sub-Clause 38.1, the provisions of GCC Sub-Clause 38.3 shall apply.

33 Loss of or Damage to Property; Accident or Injury to Workers; Indemnification

- 33.1 Subject to GCC Sub-Clause 33.3, the Contractor shall indemnify and hold harmless the Procuring Entity and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Procuring Entity, its contractors, employees, officers or agents.
- 33.2 If any proceedings are brought or any claim is made against the Procuring Entity that might subject the Contractor to liability under GCC Sub-Clause 33.1, the Procuring Entity shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Procuring Entity's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.
- 33.8 If the Contractor fails to notify the Procuring Entity within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Procuring Entity shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Procuring Entity within the twenty-eight (28) day period, the Procuring Entity shall make no admission that may be prejudicial to the defense of any such proceedings or claim.
- 33.9 The Procuring Entity shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.
- 33.10 The Procuring Entity shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Procuring Entity, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 34, provided that such fire, explosion or other perils were not caused by any actor failure of the Contractor.
- 33.11 The Party entitled to the benefit of an indemnity under this GCC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the Party fails to take such measures, the other Party's liabilities shall be correspondingly reduced.

34 Insurance

- 34.1 To the extent specified in the Appendix to the Contract Agreement titled Insurance Requirements, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Procuring Entity, who should not unreasonably withhold such approval.
- a. **Cargo Insurance During Transport**
Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts therefor) and to the Contractor's Equipment.
 - b. **Installation All Risks Insurance**
Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.
 - c. **Third Party Liability Insurance**
Covering bodily injury or death suffered by third Parties including the Procuring Entity's personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.
 - d. **Automobile Liability Insurance**
Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.

c. Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

d. Procuring Entity's Liability

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

e. Other Insurances

Such other insurances as may be specifically agreed upon by the Parties here to as listed in the Appendix to the Contract Agreement titled Insurance Requirements.

- 34.2 The Procuring Entity shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Procuring Entity's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1 except for the Cargo Insurance During Transport, Workers' Compensation and Procuring Entity's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.
- 34.3 The Contractor shall, in accordance with the provisions of the Appendix to the Contract Agreement titled Insurance Requirements, deliver to the Procuring Entity certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Procuring Entity by insurers prior to cancellation or material modification of a policy.
- 34.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.
- 34.5 The Procuring Entity shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix to the Contract Agreement titled Insurance Requirements, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers' rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Procuring Entity shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Procuring Entity shall provide copies of the policies taken out by the Procuring Entity under this GCC Sub-Clause 34.5.
- 34.6 If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 34.1, the Procuring Entity may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Procuring Entity shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Procuring Entity fails to take out and/or maintain in effect the insurances referred to in GCC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Procuring Entity under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Procuring Entity. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Procuring Entity, and the Contractor shall have full recourse against the Procuring Entity for any and all liabilities of the Procuring Entity herein.
- 34.7 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 34, and all monies payable by any insurers shall be paid to the Contractor. The Procuring Entity shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Procuring Entity's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Procuring Entity. With respect to insurance claims in which the Contractor's interest is involved, the Procuring Entity shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

35. Unforeseen Conditions

- 35.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Procuring Entity, and on the basis of information that it could have obtained from a visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Plant or Contractor's Equipment, notify the Project Manager in writing of
- a) The physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;
 - c) The additional work and/or Plant and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;
 - d) The extent of the anticipated delay; and
 - d) The additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this GCC Sub-Clause 35.1, the Project Manager shall promptly consult with the Procuring Entity and Contractor and decide upon the actions to be taken to overcome the physical

- 35.2 If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with GCC Clause 40.

36. Change in Laws and Regulations

- 36.1 *If, after the date twenty-eight (28) days prior to the date of Tender submission, in Kenya, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the SCC pursuant to GCC Sub-Clause 11.2.*

37. Force Majeure

- 37.1 "Force Majeure" shall mean any event beyond the reasonable control of the Procuring Entity or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the Party affected, and shall include, without limitation, the following:
- a) War, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war
 - b) Rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts
 - c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority
 - d) Strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague
 - e) Earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster
 - f) Shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

- 37.2 *If either Party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.*
- 37.3 *The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such Party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GCC Clause 40.*
- 37.4 *The Party or Parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either Party's right to terminate the Contract under GCC Sub-Clauses 37.6 and 38.5.*
- 37.5 *No delay or nonperformance by either Party hereto caused by the occurrence of any event of Force Majeure shall*
- a) *constitute a default or breach of the Contract, or*
 - b) *Give rise to any claim for damages or additional cost or expense occasioned thereby, subject to GCC Sub-Clauses 32.2, 38.3 and 38.4*
- if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.*
- 37.6 *If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other, but without prejudice to either Party's right to terminate the Contract under GCC Sub-Clause 38.5.*
- 37.7 *In the event of termination pursuant to GCC Sub-Clause 37.6, the rights and obligations of the Procuring Entity and the Contractor shall be as specified in GCC Sub-Clauses 42.1.2 and 42.1.3.*
- 37.8 *Notwithstanding GCC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the Procuring Entity to make payments to the Contractor herein.*
- 38. War Risks**
- 38.1 *"War Risks" shall mean any event specified in paragraphs (a) and (b) of GCC Sub-Clause 37.1 and any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.*
- 38.2 *Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to*
- a) *destruction of or damage to Facilities, Plant, or any part thereof;*
 - b) *destruction of or damage to property of the Procuring Entity or any third Party; or*
 - c) *injury or loss of life*
- if such destruction, damage, injury or loss of life is caused by any War Risks, and the Procuring Entity shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.*
- 38.3 *If the Facilities or any Plant or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the Procuring Entity shall pay the Contractor for*
- a) *any part of the Facilities or the Plant so destroyed or damaged to the extent not already paid for by the Procuring Entity and so far as may be required by the Procuring Entity, and as may be necessary for completion of the Facilities*
 - b) *replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged*
 - c) *replacing or making good any such destruction or damage to the Facilities or the Plant or any part thereof.*
- If the Procuring Entity does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Procuring Entity shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GCC Sub-Clause 42.1.*

If the Procuring Entity requires the Contractor to replace or make good on any such destruction or damage to the Facilities, the Time for Completion shall be extended in accordance with GCC 40.

- 38.4 *Notwithstanding anything contained in the Contract, the Procuring Entity shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War Risks, provided that the Contractor shall as soon as practicable notify the Procuring Entity in writing of any such increased cost.*
- 38.5 *If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other.*
- 38.6 *In the event of termination pursuant to GCC Sub-Clauses 38.3 or 38.5, the rights and obligations of the Procuring Entity and the Contractor shall be specified in GCC Sub-Clauses 42.1.2 and 42.1.3. A. Change in Contract Elements.*

A. Change in Contract Elements

39. Change in the Facilities

39.1 Introducing a Change

- 39.1.1 *Subject to GCC Sub-Clauses 39.2.5 and 39.2.7, the Procuring Entity shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities here in after called "Change", provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.*
- 39.1.2 Value Engineering: The Contractor may prepare, at its own cost, a value engineering proposal at any time during the performance of the contract. The value engineering proposal shall, at a minimum, include the following:
- The proposed change (s), and a description of the difference to the existing contract requirements;
 - a full cost/benefit analysis of the proposed change(s) including a description and estimate of costs (including life cycle costs) the Procuring Entity may incur in implementing the value engineering proposal; and
 - a description of any effect (s) of the change on performance/ functionality.

The Procuring Entity may accept the value engineering proposal if the proposal demonstrates benefits that:

- accelerates the delivery period; or
- reduces the Contract Price or the life cycle costs to the Procuring Entity; or
- improves the quality, efficiency, safety or sustain ability of the Facilities; or
- Yields any other benefits to the Procuring Entity, without compromising the necessary functions of the Facilities.

If the value engineering proposal is approved by the Procuring Entity and results in:

- a reduction of the Contract Price; the amount to be paid to the Contractor shall be the percentage specified in the **SCC** of the reduction in the Contract Price; or
- an increase in the Contract Price; but results in a reduction in life cycle costs due to any benefit described in (a) to (d) above, the amount to be paid to the Contractor shall be the full increase in the Contract Price.

- 39.1.3 Notwithstanding GCC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.
- 39.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Sub-Clauses 39.2 and 39.3, and further details and forms are provided in the Procuring Entity's Requirements (Forms and Procedures).

39.2 Changes Originating from Procuring Entity

39.2.1 If the Procuring Entity proposes a Change pursuant to GCC Sub-Clause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:

- a) Brief description of the Change
- b) Effect on the Time for Completion
- c) Estimated cost of the Change
- d) Effect on Functional Guarantees (if any)
- e) Effect on the Facilities
- f) Effect on any other provisions of the Contract.

39.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Procuring Entity shall do one of the following:

- Accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal
- Advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
- Advise the Contractor that the Procuring Entity does not intend to proceed with the Change.

39.2.3 Upon receipt of the Procuring Entity's instruction to proceed under GCC Sub-Clause 39.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Sub-Clause 39.2.1.

39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties there to shall agree on specific rates for the valuation of the Change.

39.1.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance there with and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set for thin Article 2 (Contract Price) of the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection there to prior to furnishing the Change Proposal as aforesaid. If the Procuring Entity accepts the Contractor's objection, the Procuring Entity shall withdraw the proposed Change and shall notify the Contractor in writing thereof.

The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders here in, nor affect its right to take in to account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

39.1.6 Upon receipt of the Change Proposal, the Procuring Entity and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Procuring Entity shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Procuring Entity is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Procuring Entity decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GCC Sub-Clause 39.2.2.

39.1.7 If the Procuring Entity and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Procuring Entity may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order."

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The Parties shall there after attempt to reach agreement on the outstanding issues under the Change Proposal.

If the Parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Dispute Board in accordance with the provisions of GCC Sub-Clause 46.1.

39.1.8 Changes Originating from Contractor

39.1.9 If the Contractor proposes a Change pursuant to GCC Sub-Clause 39.1.2, the Contractor shall submit to the Project Manager a written "Application for Change Proposal," giving reasons for the proposed Change and including the information specified in GCC Sub-Clause 39.1.2.

39.1.10 Upon receipt of the Application for Change Proposal, the Parties shall follow the procedures outlined in GCC Sub-Clauses 39.2.6 and 39.2.7. However, the Contractor shall not be entitled to recover the costs of preparing the Application for Change Proposal.

40. Extension of Time for Completion

40.1 The Time(s) for Completion specified in the SCC pursuant to GCC Sub-Clause 8.2 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- a) Any Change in the Facilities as provided in GCC Clause 39
- b) any occurrence of Force Majeure as provided in GCC Clause 37, unforeseen conditions as provided in GCC Clause 35, or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clause 32.2
- c) Any suspension order given by the Procuring Entity under GCC Clause 41 here of or reduction in the rate of progress pursuant to GCC Sub-Clause 41.2 or
 - Any changes in laws and regulations as provided in GCC Clause 36 or
 - Any default or breach of the Contract by the Procuring Entity, Appendix to the Contract Agreement titled, or any activity, actor omission of the Procuring Entity, or the Project Manager, or any other contractors employed by the Procuring Entity, or
 - Any delay on the part of a Subcontractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this sub-clause, or
 - Delays attributable to the Procuring Entity or caused by customs, or
- h) Any other matter specifically mentioned in the Contract by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

40.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Procuring Entity and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Procuring Entity's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to GCC Sub-Clause 46.1.

40.3 The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

40.4 In all cases where the Contractor has given a notice of a claim for an extension of time under GCC 40.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall there after comply with all reasonable instructions which the Project Manager shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GCC 40.1, the amount of such extra costs shall be added to the Contract Price.

41 Suspension

- 41.1** *Procuring Entity may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the Project Manager.*

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time there after and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Procuring Entity shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Clause 39, excluding the performance of the suspended obligations from the Contract.

- 41.2** If the Procuring Entity fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects apart only of the Facilities, as a deletion of such part in accordance with GCC Clause 39 or, where it affects the whole of the Facilities, as termination of the Contract under GCC Sub-Clause.

- 41.3** If

- a. Procuring Entity has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Procuring Entity that requires payment of such sum, with interest there on as stipulated in GCC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Procuring Entity to remedy the same, as the case may be. If the Procuring Entity fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or
- b. The Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Procuring Entity, including but not limited to the Procuring Entity's failure to provide possession of or access to the Site or other areas in accordance with GCC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities, then the Contractor may by fourteen (14) days' notice to the Procuring Entity suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

- 41.3** If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GCC Clause 41, then the Time for Completion shall be extended in accordance with GCC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Procuring Entity to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.

- 41.4** During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Procuring Entity.

42 Termination

42.1 Termination for Procuring Entity's Convenience

- 42.1.1** *The Procuring Entity may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GCC Sub-Clause 42.1.*

- 42.1.2** Upon receipt of the notice of termination under GCC Sub-Clause 42.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination

- a) cease all further work, except for such work as the Procuring Entity may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work

required to leave the Site in a clean and safe condition,

- b) terminate all subcontracts, except those to be assigned to the Procuring Entity pursuant to paragraph (d) (ii) below,
- c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition, and
- d) subject to the payment specified in GCC Sub-Clause 42.1.3,
 - i. deliver to the Procuring Entity the parts of the Facilities executed by the Contractor up to the date of termination
 - ii. to the extent legally possible, assign to the Procuring Entity all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Procuring Entity, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - iii. Deliver to the Procuring Entity all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under GCC Sub-Clause 42.1.1, the Procuring Entity shall pay to the Contractor the following amounts:

- a The Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination,
- b the costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the Site and in the repatriation of the Contractor's and its Subcontractors' personnel,
- c any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges,
- d costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.1.2
- e the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third Parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

42.2 Termination by the Contractor

42.2.1 The Procuring Entity, without prejudice to any other rights or remedies it may possess, may terminate the Contract forth within the following circumstances by giving a notice of termination and its reasons there for to the Contractor, referring to this GCC Sub-Clause 42.2:

- a If the Contractor becomes bankrupt or in solvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up, other than a voluntary liquidation for the purposes of amalgamation or reconstruction, a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt
- b If the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 43.
- c If the Contractor, in the judgment of the Procuring Entity has engaged in Fraud and Corruption, as defined in paragraph 2.2a. of Appendix B to the GCC, in competing for or in executing the Contract.

42.2.2 If the Contractor

- a Has abandoned or repudiated the Contract
- b Has without valid reason failed to commence work on the Facilities promptly or has suspended, other than pursuant to GCC Sub-Clause 41.2, the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Procuring Entity to proceed
- c Persistently fails to execute the Contract in accordance with the Contractor persistently neglects to carry out its obligations under the Contract without just cause
- d Refuses or is unable to provide sufficient materials, services or labor to execute and complete the

Facilities in the manner specified in the program furnished under GCC Sub-Clause 18.2 at rates of progress that give reasonable assurance to the Procuring Entity that the Contractor can attain Completion of the Facilities by the Time for Completion as extended, then the Procuring Entity may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Procuring Entity may terminate the Contract forth with by giving a notice of termination to the Contractor that refers to this GCC Sub-Clause 42.2.

- 42.2.3 Upon receipt of the notice of termination under GCC Sub-Clauses 42.2.1 or 42.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination,
- a cease all further work, except for such work as the Procuring Entity may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition.
 - b Terminate all subcontracts, except those to be assigned to the Procuring Entity pursuant to paragraph (d) below,
 - c deliver to the Procuring Entity the parts of the Facilities executed by the Contractor up to the date of termination,
 - d to the extent legally possible, assign to the Procuring Entity all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Procuring Entity, in any subcontracts concluded between the Contractor and its Subcontractors,
 - e deliver to the Procuring Entity all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.
- 42.2.4 The Procuring Entity may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third Party. The Procuring Entity may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Procuring Entity and with an indemnification by the Procuring Entity for all liability including damage or injury to persons arising out of the Procuring Entity's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Procuring Entity considers expedient for the supply and installation of the Facilities.
- 42.2.5 Upon completion of the Facilities or at such earlier date as the Procuring Entity thinks appropriate, the Procuring Entity shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.
- 42.2.6 Subject to GCC Sub-Clause 42.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination, the value of any unused or partially used Plant on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.2.3. Any sums due the Procuring Entity from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.
- 42.2.7 If the Procuring Entity completes the Facilities, the cost of completing the Facilities by the Procuring Entity shall be determined.
- 42.2.8 If the sum that the Contractor is entitled to be paid, pursuant to GCC Sub-Clause 42.2.5, plus the reasonable costs incurred by the Procuring Entity in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.
- 42.2.9 If such excess is greater than the sums due the Contractor under GCC Sub-Clause 42.2.5, the Contractor shall pay the balance to the Procuring Entity, and if such excess is less than the sums due the Contractor under GCC Sub-Clause 42.2.5, the Procuring Entity shall pay the balance to the Contractor. The Procuring Entity and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

42.3 Termination by the Contractor

42.3.1 If

- a The Procuring Entity has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Procuring Entity that requires payment of such sum, with interest there on as stipulated in GCC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Procuring Entity to remedy the same, as the case may be. If the Procuring Entity fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or
- b The Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Procuring Entity, including but not limited to the Procuring Entity's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities, then the Contractor may give a notice to the Procuring Entity thereof, and if the Procuring Entity has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Procuring Entity within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Procuring Entity referring to this GCC Sub-Clause 42.3.1, forth with terminate the Contract.

42.3.2 The Contractor may terminate the Contract forth with by giving a notice to the Procuring Entity to that effect, referring to this GCC Sub-Clause 42.3.2, if the Procuring Entity becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Procuring Entity takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, then the Contractor shall immediately

- a) Cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- b) Terminate all subcontracts, except those to be assigned to the Procuring Entity pursuant to paragraph (d) (ii)
- c) Remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractors' personnel from the Site, and
- d) subject to the payment specified in GCC Sub-Clause 42.3.4,
 - i) Deliver to the Procuring Entity the parts of the Facilities executed by the Contractor up to the date of termination
 - ii) to the extent legally possible, assign to the Procuring Entity all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Procuring Entity, in any subcontracts concluded between the Contractor and its Subcontractors, and
 - iii) Deliver to the Procuring Entity all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, the Procuring Entity shall pay to the Contractor all payments specified in GCC Sub-Clause 42.1.3, and reasonable compensation for all loss, except for loss of profit, or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Contractor pursuant to this GCC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GCC Sub-Clause 42.3.

42.4 In this GCC Clause 42, the expression "Facilities executed" shall include all work executed, Installation

Services provided, and all Plant acquired, or subject to a legally binding obligation to purchase, by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.

- 42.5 In this GCC Clause 42, in calculating any monies due from the Procuring Entity to the Contractor, account shall be taken of any sum previously paid by the Procuring Entity to the Contractor under the Contract, including any advance payment paid pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment.

43. Assignment

- 43.1 Neither the Procuring Entity nor the Contractor shall, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld, assign to any third Party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

44. Export Restrictions

- 44.1 Notwithstanding any obligation under the Contract to complete all export formalities, any export restrictions attributable to the Procuring Entity, to Kenya or to the use of the Plant and Installation Services to be supplied which arise from trade regulations from a country supplying those Plant and Installation Services, and which substantially impede the Contractor from meeting its obligations under the Contract, shall release the Contractor from the obligation to provide deliveries or services, always provided, however, that the Contractor can demonstrate to the satisfaction of the Procuring Entity and of the Bank that it has completed all formalities in a timely manner, including applying for permits, authorizations and licenses necessary for the export of the Plant and Installation Services under the terms of the Contract. Termination of the Contract on this basis shall be for the Procuring Entity's convenience pursuant to Sub-Clause 42.1.

B. Claims, Disputes and Arbitration

45. Contractor's Claims

- 45.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- 45.2 If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.
- (a) The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.
 - (b) The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Procuring Entity's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.
- 45.3 Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:
- a) This fully detailed claim shall be considered as interim;
 - b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay

and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and

- c) The Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.

- 45.4 Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.
- 45.5 Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.
- 45.6 The Project Manager shall agree with the Contractor or estimate: (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GCC Clause 40, and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.
- 45.7 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.
- 45.8 In the event that the Contractor and the Procuring Entity cannot agree on any matter relating to a claim, either Party may refer the matter to the Dispute Board pursuant to GCC 46 hereof.

46. Claims, Disputes and Arbitration

46.1 Contractor's Claims

- 46.1.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- 46.1.2 If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply. The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.
- 46.1.3 The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Procuring Entity's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.
- 46.1.4 Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:
 - a) this fully detailed claim shall be considered as interim;
 - b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require;

and

- c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.

46.1.5 Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within the above defined time period.

46.1.6 Within the above defined period of 42 days, the Project Manager shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

46.1.7 Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

46.1.8 If the Project Manager does not respond within the timeframe defined in this Clause, either Party may consider that the claim is rejected by the Project Manager and any of the Parties may refer the matter to Arbitration in accordance with Sub-Clause 46.4.

46.1.9 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

46.2 Issuing a Notice of Dissatisfaction

If a dispute (of any kind whatsoever) arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Project Manager, either Party may refer the dispute in writing to the Project Manager by issuing a Notice of Dissatisfaction and requesting the matter be referred to Arbitration.

46.3 Amicable Settlement

Where a Notice of Dissatisfaction has been given, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a Notice of Dissatisfaction should move to commence arbitration after the fifty-sixth day from the day on which a Notice of Dissatisfaction was given, even if no attempt at an amicable settlement has been made.

46.4 Arbitration

46.4.1 Any dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 46.3 above shall be finally settled by arbitration. Arbitration shall be conducted as follows:

- a) If the contract is with foreign contractors, the dispute shall be referred to international arbitration either:
 - i) with proceedings administered by the arbitration institution designated in the Special Conditions of Contract, and conducted under the rules of arbitration of such institution; or, if so specified in the Special Conditions of Contract, or
 - ii) International arbitration in accordance with the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL), unless specified otherwise in the **SCC**;
- b) If the Contract is with domestic contractors, arbitration with proceedings conducted in accordance with

the Arbitration Laws of Kenya.

- 46.4.2 The place of arbitration shall be the neutral location specified in the Special Conditions of Contract; and the arbitration shall be conducted in the English Language for all communications.
- 46.4.3 The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Project Manager. Nothing shall disqualify representatives of the Parties and the Project Manager from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.
- 46.4.4 Neither Party shall be limited in the proceedings before the arbitrators to the evidence to obtain its decision, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction.
- 46.4.5 Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties and the Project Manager shall not be altered by reason of any arbitration being conducted during the progress of the Works.
- 46.4.6 The Decision of the Arbitration proceedings will be final and binding on both parties.

SECTION IX - SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract shall supplement the General Conditions of Contract in Section VIII. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions.

Special Conditions of Contract (SCC)

The following Special Conditions (SCC) shall supplement the General Conditions (GCC). Whenever there is a conflict, the provisions here in shall prevail over those in the GCC. The clause number of the SCC is the corresponding clause number of the GCC.

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
SCC 1. Definitions	<p>The Procuring Entity is: Rural Electrification and Renewable Energy Corporation P.O Box 34585-00100 Nairobi</p> <p>The Project Manager is: Manager, Alternative Energy Rural Electrification and Renewable Energy Corporation P.O Box 34585-00100 Nairobi</p> <p>Country of Origin: Kenya</p>
SCC 5. Law and Language	<p>SCC 5.1 The Contract shall be interpreted in accordance with the laws of: Kenya</p> <p>SCC 5.2 The ruling language is: English</p> <p>SCC 5.3 The language for communications is: English</p>
SCC 7. Scope of Facilities [Spare Parts] (GCC Clause 7)	<p>SCC 7.3 The Contractor agrees to supply spare parts for a period of years: <u>N/A</u></p> <p>Sample Addition to SCC 7.3</p> <p>The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the Plant. Other spare parts and components shall be supplied as promptly as possible, but at the most within six (6) months of placing the order and opening the Form of credit. In addition, in the event of termination of the production of spare parts, advance notification will be made to the Procuring Entity of the pending termination, with sufficient time to permit the Procuring Entity to procure the needed requirement. Following such termination, the Contractor will furnish to the extent possible and at no cost to the Procuring Entity the blueprints, drawings and specifications of the spare parts, if requested.-N/A</p>
SCC 8. Time for Commencement and Completion	<p>SCC 8.1 The Contractor shall commence work on the Facilities within 14 days after signing the contract from the Effective Date for determining Time for Completion as specified in the Contract Agreement.</p> <p>SCC 8.2 The Time for Completion of the whole of the Facilities shall be Forty (40) weeks from the Effective Date as described in the Contract Agreement.</p>
SCC 9. Contractor's Responsibilities	<p>The following sustainable procurement contractual provisions apply:</p> <p>The contractor shall not interfere with plantations at the site. If the contractor will be forced to cut trees to implement the contract they must plant replacement within the area.</p> <p>The contractor shall take due care not to pollute the environment in the course of their working.</p>
SCC 11. Contract Price	<p>SCC 11.2 Contract Price shall be a firm lump sum not subject to any alteration.</p>
SCC 12. Terms of Payment	<p>a) The payment for all works, equipment and services shall be based on interim payment certificate. The IPC certificate value shall be determined by the project engineer and shall be based on the value of work executed by the contractor.</p> <p style="padding-left: 40px;">Payment milestones</p> <p style="padding-left: 40px;">IPC 1 – Site clearance, access roads, fencing and 50% of value of materials inspected and accepted on site</p> <p style="padding-left: 40px;">IPC 2 – Foundation bases and 50% of value of materials inspected and accepted on site</p> <p style="padding-left: 40px;">IPC 3 – Station buildings, supporting infrastructure and 50% of value of materials inspected and accepted on site</p>

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
	<p>IPC 4 – Equipment Installations, integration, testing and commissioning</p> <p>b) In the event that an advance payment is paid to the contractor, the Corporation shall recover the same by making deductions from the first payment referred to in paragraph (a) above.</p> <p>c) For EVERY amount certified as payable to the contractor as per paragraph (a) a foregoing, the corporation shall retain ten percent (10%) of the amount payable in the certificate of payment until the completion of whole of the works.</p> <p>d) The minimum amounts of each interim certificate shall be twenty percent (20%) of the contract price.</p> <p>e) On completion of the whole of the works, half the total amount retained as per paragraph (c) a foregoing shall be paid to the contractor and the remaining half shall be paid after the defects liability period.</p> <p>1. The Employer shall pay promptly as specified in the contract.</p> <p>2. Payment shall be through EFT/RTGS/Company cheque after the delivery and submission of invoice and other relevant documents.</p> <p>3. There shall be no interest chargeable on delayed payments.</p> <p>4. The contract price is inclusive of all duties and VAT taxes and all taxes arising in connection with and in execution of the Contract shall be borne by the contractor.</p>
SCC 13. Securities	<p>SCC 13.3.1 The amount of Performance Security, as a percentage of the Contract Price for the Facility or for the part of the Facility for which a separate Time for Completion is provided, shall be: 10% of the contract amount</p> <p>SCC 13.3.2 The Performance Security shall be in the form of bank guarantee attached hereto in Section X, Contract Forms.</p> <p>SCC 13.3.3 The Performance Security shall not be reduced on the date of the Operational Acceptance.</p>
SCC 22 Installation	<p>SCC22.2.5 Working Hours</p> <p>Normal working hours are: Mon to Fri as from 8.00am to 5.00pm</p> <p>SCC 22.2.8 Funeral Arrangements: Contractor shall be responsible for making the appropriate arrangements for their return or burial</p>
SCC 25. Commissioning and Operational Acceptance	<p>SCC 25.2.2 The Guarantee Test of the Facilities shall be successfully completed within 14 days from the date of Completion.</p>
SCC 26. Completion Time Guarantee	<p>SCC 26.2</p> <p>Applicable rate for liquidated damages: The liquidated damages for the whole of the Works are 0.05 % per day. The maximum amount of liquidated damages for the whole of the Works is 10 Percent of the final Contract Price.</p> <p>The above rate applies to the price of the part of the Facilities, as quoted in the Price Schedule, for that part for which the Contractor fails to achieve Completion within the particular Time for Completion.</p> <p>Maximum deduction for liquidated damages: 5% of contract price</p> <p>SCC 26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.</p>
SCC 27. Defect Liability	<p>SCC 27.10 The critical components covered under the extended defect liability are: N/A</p>
SCC 30. Limitation of Liability	<p>Sample Clause</p> <p>SCC 30.1 (b) The multiplier of the Contract Price is: N/A</p>
SCC 39. Value Engineering	<p>SCC 39.1.2 If the value engineering proposal is approved by the Procuring Entity the amount to be paid to the Contractor shall be ___% (insert appropriate percentage. The percentage is normally up to 50%) of the reduction in the Contract Price-N/A</p>
SCC 46.4(a)(ii) Arbitration	<p><i>International Chamber of Commerce</i></p>

SECTION VIII - CONTRACT FORMS

Notification of Award - Form of Acceptance

Contract Agreement

Appendix 1. Terms and Procedures of Payment

Appendix 2. Price Adjustment

Appendix 3. Insurance Requirements

Appendix 4. Time Schedule

Appendix 5. List of Major Items of Plant and Installation Services and List of Approved Subcontractors

Appendix 6. Scope of Works and Supply by the Procuring Entity

Appendix 7. List of Documents for Approval or Review

Appendix 8. Functional Guarantees

Performance Security Form OPTION 1 – Demand Bank Guarantee

Performance Security Form OPTION 2 – Performance Bond

Advance Payment Security- Demand Bank Guarantee

Beneficial Ownership Disclosure

1. NOTIFICATION OF INTENTION TO AWARD

[This Notification of Intention to Award shall be sent to each Tenderer that submitted a Tender.] [Send this Notification to the Tenderer's Authorized Representative named in the Tenderer Information Form]

1) For the attention of Tenderer's Authorized Representative Name:*[insert Authorized Representative's name]*

Address: *[insert Authorized Representative's Address]*

Telephone/Fax numbers: *[insert Authorized Representative's telephone /fax numbers]*

Email Address: *[insert Authorized Representative's email address]*

[IMPORTANT: insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]

DATE OF TRANSMISSION: This Notification is sent by: *[email/fax]* on *[date]* (local time)

Notification of Intention to Award

Procuring Entity:*[insert the name of the Procuring Entity]*

Project:*[insert name of project]*

Contract title:*[insert the name of the contract]*

ITT No: *[insert ITT reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

- a) Request a debriefing in relation to the evaluation of your Tender, and/or
- b) Submit a Procurement-related Complaint in relation to the decision to award the contract.

2) The successful Tenderer

Name:	<i>[insert name of successful Tenderer]</i>
Address:	<i>[insert address of the successful Tenderer]</i>
Contract price:	<i>[insert contract price of the successful Tender]</i>

3) **Other Tenderers** *[INSTRUCTIONS: insert names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out.]*

Name of Tenderer	Tender price	Evaluated Cost
<i>[insert name]</i>	<i>[insert Tender price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Tender price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Tender price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Tender price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Tender price]</i>	<i>[insert evaluated cost]</i>

4) Reason/s why your Tender was unsuccessful

[INSTRUCTIONS: State the reasons/why this Tenderer's Tender was unsuccessful. Do NOT include: (a) appoint by point comparison with another Tenderer's Tender, or (b) information that is marked "Confidential" by the Tenderer in its Tender.]

5) How to request a debriefing?

DEADLINE: The deadline to request a debriefing expires at midnight on [insert date] (local time). You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing, your written request must be made within three (3) Business Days of receipt of this Notification of Intention to Award. Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:

Attention:[insert full name of person, if applicable]
Title/position:[insert title/position]
Agency:[insert name of Procuring Entity] Email address:[insert email address]
Fax number:[insert fax number] delete if not used

If your request for a debriefing is received within the 3 Business Days deadline, we will provide the debriefing within five (5) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (5) Business Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.

The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of the Contract Award Notice.

6) How to make a complaint

Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [insert date] (local time). Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement- related Complaint as follows:

Attention:[insert full name of person, if applicable]
Title/position:[insert title/position]
Agency:[insert name of Procuring Entity]
Email address:[insert email address]
Fax number:[insert fax number] delete if not used

At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

Further information:

Further information: For more information refer to the Public Procurement and Disposals Act 2015 and its Regulations available from the Website: info@ppra.go.ke or complaints@ppra.go.ke.

In summary, there are four essential requirements:

1. You must be an 'interested party'. In this case, that means a Tenderer who submitted a Tender in this Tendering process, and is the recipient of a Notification of Intention to Award.
2. The complaint can only challenge the decision to award the contract.
3. You must submit the complaint within the period stated above.
4. You must include, in your complaint, all of the information required by the Procurement Regulations (as described in Annex III).

7) Standstill Period

DEADLINE: *The Standstill Period is due to end at midnight on [insert date] (local time).
The Standstill Period lasts ten (10) Business Days after the date of transmission of this Notification of Intention to Award.
The Standstill Period may be extended as stated in Section 4 above.*

If you have any questions regarding this Notification please do not hesitate to contact us.

On behalf of the Procuring Entity:

Signature: _____

Name: _____

Title/position: _____

Telephone: _____

Email: _____

2 REQUEST FOR REVIEW

FORM FOR REVIEW (r.203(1))

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 ofdated the...day of20.....in the matter of Tender No.....of20..... for(Tender description).

REQUEST FOR REVIEW

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

- 1.
- 2.

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

- 1.
- 2.

SIGNED(Applicant) Dated on.....day of/...20.....

FOR OFFICIAL USE ONLY Lodged with the Secretary Public Procurement Administrative Review Board on.....day of20.....

SIGNED

Board Secretary

3 LETTER OF AWARD

To:_____

This is to notify you that your Tender dated_____for execution of the_____for the Contract Price in the aggregate of_____, as corrected and modified in accordance with the Instructions to Tenderers is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section X, - Contract Forms, of the Tendering document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement:

4 CONTRACT AGREEMENT

THIS AGREEMENT is made the _____ day of _____, _____,
BETWEEN

- 1)a corporation incorporated under the laws of _____ and having its principal place of business at (hereinafter called “the Procuring Entity”), and (2) _____, a corporation incorporated under the laws of _____ and having its principal place of business at _____ (herein after called “the Contractor”).

WHEREAS the Procuring Entity desires to engage the Contractor to design, manufacture, test, deliver, install, complete and commission certain Facilities, viz. _____ (“the Facilities”), and the Contractor has agreed to such engagement upon and subject to the terms and conditions herein after appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1. Contract Documents

1.1 Contract Documents (Reference GCC Clause2)

The following documents shall constitute the Contract between the Procuring Entity and the Contractor, and each shall be read and construed as an integral part of the Contract:

- a) This Contract Agreement and the Appendices hereto
- b) Form of Tender and Price Schedules submitted by the Contractor
- c) Special Conditions of Contract
- d) General Conditions of Contract
- e) Specification
- f) Drawings
- g) Other completed Tendering forms submitted with the Tender
- h) Any other documents forming part of the Procuring Entity's Requirements
- i) Any other documents shall be added here

1.2 Order of Precedence (Reference GCC Clause2)

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

1.3 Definitions (Reference GCC Clause1)

Capitalized words and phrases used here in shall have the same meanings as ascribed to them in the General Conditions.

Article 2. Contract Price and Terms of Payment

2.1 Contract Price (Reference GCC Clause11)

The Procuring Entity hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of:as specified in Price Schedule No 5 (Grand Summary), and _____, or such other sums as may be determined in accordance with the terms and conditions of the Contract.

2.2 Terms of Payment (Reference GCC Clause 12)

The terms and procedures of payment according to which the Procuring Entity will reimburse the Contractor are given in the Appendix (Terms and Procedures of Payment) hereto.

The Procuring Entity may instruct its bank to issue an irrevocable confirmed documentary credit made available to the Contractor in a bank in the country of the Contractor. The credit shall be for an amount of _____; and shall be subject to the Uniform Customs and Practice for Documentary Credits 2007 Revision, ICC Publication No.600.

In the event that the amount payable under Schedule No.1 is adjusted in accordance with GCC 11.2 or with any of the other terms of the Contract, the Procuring Entity shall arrange for the documentary credit to be amended accordingly.

Article 3. Effective Date

3.1 Effective Date (Reference GCC Clause1)

The Effective Date from which the Time for Completion of the Facilities shall be counted is the date when all of the following conditions have been fulfilled:

- a) This Contract Agreement has been duly executed for and on behalf of the Procuring Entity and the Contractor;
- b) The Contractor has submitted to the Procuring Entity the Performance Security and the advance payment guarantee;
- c) The Procuring Entity has paid the Contractor the advance payment
- d) The Contractor has been advised that the documentary credit referred to in Article 2.2 above has been issued in its favor.

Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.

- 3.2 If the conditions listed under 3.1 are not fulfilled within two (2) months from the date of this Contract notification because of reasons not attributable to the Contractor, the Parties shall discuss and agree on an equitable adjustment to the Contract Price and the Time for Completion and/or other relevant conditions of the Contract.

Article 4. Communications

4.1 The address of the Procuring Entity for notice purposes, pursuant to GCC 4.1is:

4.2 The address of the Contractor for notice purposes, pursuant to GCC 4.1is:_____.

Article 5. Appendices

- 5.1 The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement.
- 5.2 Reference in the Contract to any Appendix shall mean the Appendices attached here to, and the Contract shall be read and construed accordingly.

IN WITNESS WHEREOF the Procuring Entity and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Procuring Entity

.....
[Signature]

.....
[Title]

in the presence of

Signed by, for and on behalf of the Contractor

.....
[Signature]

.....[Title]

in the presence of

APPENDICE

APPENDIX 1: TERMS AND PROCEDURES OF PAYMENT

In accordance with the provisions of GCC Clause12 (Terms of Payment), the Procuring Entity shall pay the Contractor in the following manner and at the following times, on the basis of the Price Break down given in the section on Price Schedules. Payments will be made in the currencies quoted by the Tenderer unless otherwise agreed between the Parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

TERMS OF PAYMENT

Schedule No. 1. Plant and Equipment Supplied from Abroad

In respect of plant and equipment supplied from abroad, the following payments shall be made:

Ten percent (10%) of the total CIP amount as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Procuring Entity. The advance payment security may be reduced in proportion to the value of the plant and equipment delivered to the site, as evidenced by shipping and delivery documents.

Eighty percent (80%) of the total or pro rata CIP amount upon Incoterm “CIP”, upon delivery to the carrier within forty- five (45) days after receipt of documents.

Five percent (5%) of the total or pro rata CIP amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata CIP amount upon issue of the Operational Acceptance Certificate, within forty- five (45) days after receipt of invoice.

Schedule No. 2. Plant and Equipment Supplied from within Kenya

In respect of plant and equipment supplied from Kenya, the following payments shall be made:

Ten percent (10%) of the total EXW amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Procuring Entity. The advance payment security may be reduced in proportion to the value of the plant and equipment delivered to the site, as evidenced by shipping and delivery documents.

Eighty percent (80%) of the total or pro rata EXW amount upon Incoterm “Ex-Works,” upon delivery to the carrier within forty-five (45) days after receipt of invoice and documents.

Five percent (5%) of the total or pro rata EXW amount upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata EXW amount upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

Schedule No. 3. Design Services

In respect of design services for both the foreign currency and the local currency portions, the following payments shall be made:

Ten percent (10%) of the total design services amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Procuring Entity.

Ninety percent (90%) of the total or pro rata design services amount upon acceptance of design in accordance with GCC Clause 20 by the Project Manager within forty-five (45) days after receipt of invoice.

Schedule No. 4. Installation Services

In respect of installation services for both the foreign and local currency portions, the following payments shall be made:

Ten percent (10%) of the total installation services amount as an advance payment against receipt of invoice, and an irrevocable advance payment security for the equivalent amount made out in favor of the Procuring Entity. The advance payment security may be reduced in proportion to the value of work performed by the Contractor as evidenced by the invoices for installation services.

Eighty percent (80%) of the measured value of work performed by the Contractor, as identified in the said Program of Performance, during the preceding month, as evidenced by the Procuring Entity's authorization of the Contractor's application, will be made monthly within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Procuring Entity's authorization of the Contractor's monthly applications, upon issue of the Completion Certificate, within forty-five (45) days after receipt of invoice.

Five percent (5%) of the total or pro rata value of installation services performed by the Contractor as evidenced by the Procuring Entity's authorization of the Contractor's monthly applications, upon issue of the Operational Acceptance Certificate, within forty-five (45) days after receipt of invoice.

In the event that the Procuring Entity fails to make any payment on its respective due date, the Procuring Entity shall pay to the Contractor interest on the amount of such delayed payment at the rate of _____
_____] percent (%) per month for period of delay until payment has been made in full.

PAYMENT PROCEDURES

The procedures to be followed in applying for certification and making payments shall be as follows:_____

APPENDIX 2. PRICE ADJUSTMENT

Where the Contract Period (excluding the Defects Liability Period) exceeds eighteen (18) months, it is normal procedure that prices payable to the Contractor shall be subject to adjustment during the performance of the Contract to reflect changes occurring in the cost of labor and material components. In such cases the Tendering document shall include in this Appendix 2 a formula of the following general type, pursuant to GCC Sub-Clause 11.2.

Where Contracts are of a shorter duration than eighteen (18) months or in cases where there is to be no Price Adjustment, the following provision shall not be included. Instead, it shall be indicated under this Appendix 2 that the prices are to remain firm and fixed for the duration of the Contract.

Sample Price Adjustment Formula

If in accordance with GCC 11.2, prices shall be adjustable, the following method shall be used to calculate the price adjustment:

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components, in accordance with the following formula:

$$P_1 = P_0 \left(a + b \frac{L_1}{L_0} + c \frac{M_1}{M_0} \right) - P_0$$

in which:

P_1 = adjustment amount payable to the Contractor

P_0 = Contract price (base price)

a = percentage of fixed element in Contract price ($a = \%$)

b = percentage of labor component in Contract price ($b = \%$)

c = percentage of material and equipment component in Contract price ($c = \%$)

L_0, L_1 = labor indices applicable to the appropriate industry in the country of origin on the base date and the date for adjustment, respectively

M_0, M_1 = material and equipment indices in the country of origin on the base date and the date for adjustment, respectively

N.B. $a+b+c = 100\%$.

Conditions Applicable to Price Adjustment

The Tenderer shall indicate the source of labor and materials indices, source of exchange rates and the base date indices in its Tender.

Item Source of Indices Used Base Date Indices

The base date shall be the date twenty-eight (28) days prior to the Tender closing date.

The date of adjustment shall be the mid-point of the period of manufacture or installation of component or Plant.

The following conditions shall apply:

(a) No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Procuring Entity under the terms of the Contract. No price increase will be allowed for periods of delay for which

the Contractor is responsible. The Procuring Entity will, however, be entitled to any price decrease occurring during such periods of delay.

(b) If the currency in which the Contract price, P_0 , is expressed is different from the currency of the country of origin of the labor and/or materials indices, a correction factor will be applied to avoid incorrect adjustments of the Contract price. The correction factor shall be: Z_0 / Z_1 , where,

Z_0 = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Base date, and

Z_1 = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Date of Adjustment.

(c) No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.

APPENDIX 3. INSURANCE REQUIREMENTS

Insurances to be Taken Out by the Contractor

In accordance with the provisions of GCC Clause 34, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Procuring Entity, such approval not to be unreasonably withheld.

a) *Cargo Insurance*

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefor) and to the construction equipment to be provided by the Contractor or its Subcontractors.

Amount Deductible Limits Parties insured from To

b) *Installation All Risks Insurance*

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

Amount Deductible Limits Parties insured from To

c) *Third Party Liability Insurance*

Covering bodily injury or death suffered by third parties (including the Procuring Entity's personnel) and loss of or damage to property (including the Procuring Entity's property and any parts of the Facilities that have been accepted by the Procuring Entity) occurring in connection with the supply and installation of the Facilities.

Amount Deductible Limits Parties insured from To

d) *Automobile Liability Insurance*

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.

e) *Workers' Compensation*

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

f) *Procuring Entity's Liability*

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

g) *Other Insurances*

The Contractor is also required to take out and maintain at its own cost the following insurances:

Details:

Amount Deductible Limits Parties insured from To The Procuring Entity shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Third-Party Liability, Workers' Compensation and Procuring Entity's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Cargo,

Workers' Compensation and Procuring Entity's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

Insurances to Be Taken Out by The Procuring Entity

The Procuring Entity shall at its expense take out and maintain in effect during the performance of the Contract the following insurances.

Details:

Amount Deductible Limits Parties insured from _____ To _____

APPENDIX 4. TIME SCHEDULE

APPENDIX 5. LIST OF MAJOR ITEMS OF PLANT AND INSTALLATION SERVICES AND LIST OF APPROVED SUBCONTRACTORS

A list of major items of Plant and Installation Services is provided below.

The following Subcontractors and/or manufacturers are approved for carrying out the items of the Facilities indicated below. Where more than one Subcontractor is listed, the Contractor is free to choose between them, but it must notify the Procuring Entity of its choice in good time prior to appointing any selected Subcontractor. In accordance with GCC Sub-Clause 19.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Procuring Entity and their names have been added to this list of Approved Subcontractors.

Major Items of Plant and Installation Services	Approved Subcontractors/Manufacturers	Nationality

APPENDIX 6. SCOPE OF WORKS AND SUPPLY BY THE PROCURING ENTITY

The following personnel, facilities, works and supplies will be provided/supplied by the Procuring Entity, and the provisions of GCC Clauses 10, 21 and 24 shall apply as appropriate.

All personnel, facilities, works and supplies will be provided by the Procuring Entity in good time so as not to delay the performance of the Contractor, in accordance with the approved Time Schedule and Program of Performance pursuant to GCC Sub-Clause 18.2.

Unless otherwise indicated, all personnel, facilities, works and supplies will be provided free of charge to the Contractor.

Personnel	Charge to Contractor (if any)
-----------	-------------------------------

Facilities	Charge to Contractor (if any)
------------	-------------------------------

Works	Charge to Contractor (if any)
-------	-------------------------------

Supplies	Charge to Contractor (if any)
----------	-------------------------------

APPENDIX 7. LIST OF DOCUMENTS FOR APPROVAL OR REVIEW

Pursuant to GCC Sub-Clause 20.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of GCC Sub-Clause 18.2 (Program of Performance), the following documents for

A. Approval

- 1.
- 2.
- 3.

B. Review

- 1.
- 2.
- 3.

APPENDIX 8. FUNCTIONAL GUARANTEES

1. *General*

This Appendix sets out

- a) The functional guarantees referred to in GCC Clause 28 (Functional Guarantees)
- b) The pre-conditions to the validity of the functional guarantees, either in production and/or consumption, set forth below
- c) The minimum level of the functional guarantees
- d) The formula for calculation of liquidated damages for failure to attain the functional guarantees.

2. *Preconditions*

The Contractor gives the functional guarantees (specified herein) for the facilities, subject to the following preconditions being fully satisfied:

3. *Functional Guarantees*

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

3.1 Production Capacity

and/or

3.2 Raw Materials and Utilities Consumption

4. *Failure in Guarantees and Liquidated Damages*

4.1 Failure to Attain Guaranteed Production Capacity

If the production capacity of the facilities attained in the guarantee test, pursuant to GCC Sub-Clause 25.2, is less than the guaranteed figure specified in para. 3.1 above, but the actual production capacity attained in the guarantee test is not less than the minimum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Procuring Entity in lieu of making changes, modifications and/or additions to the Facilities, pursuant to GCC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of..... for every complete one percent (1%) of the deficiency in the production capacity of the Facilities, or at a proportionately reduced rate for any deficiency, or part thereof, of less than a complete one percent (1%).

4.2 Raw Materials and Utilities Consumption in Excess of Guaranteed Level_____

If the actual measured figure of specified raw materials and utilities consumed per unit (or their average total cost of consumption) exceeds the guaranteed figure specified in para.3.2 above (or their specified average total cost of consumption), but the actual consumption attained in the guarantee test, pursuant to GCC Sub-Clause 25.2, is not more than the maximum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Procuring Entity in lieu of making changes, modifications and/or additions to the Facilities pursuant to GCC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of [amount in the contract currency] for every complete one percent (1%) of the excess consumption of the Facilities, or part thereof, of less than a complete one percent (1%).

4.3 Minimum Levels

Notwithstanding the provisions of this paragraph, if as a result of the guarantee test(s), the following minimum levels of performance guarantees (and consumption guarantees) are not attained by the Contractor, the Contractor shall at its own cost make good any deficiencies until the Facilities reach any of such minimum performance levels, pursuant to GCC Sub-Clause 28.2:

- a) production capacity of the Facilities attained in the guarantee test: ninety-five percent (95%) of the

guaranteed production capacity (the values offered by the Contractor in its Tender for functional guarantees represents 100%).

and/or

- b) average total cost of consumption of all the raw materials and utilities of the Facilities: one hundred and five percent (105%) of the guaranteed figures (the figures offered by the Contractor in its Tender for functional guarantees represents 100%).

4.4 Limitation of Liability

Subject to para.4.3 above, the Contractor's aggregate liability to pay liquidated damages for failure to attain the functional guarantees shall not exceed _____percent (_____%) of the Contract price.

PERFORMANCE SECURITY FORM

OPTION 1 – Demand Bank Guarantee

[Guarantor Form head or SWIFT identifier code]

Beneficiary: _____ *[insert name and Address of Procuring Entity]*

Date: _____ *[Insert date of issue]*

PERFORMANCE GUARANTEE No.: _____ *[Insert guarantee reference number]*

Guarantor: _____ *[Insert name and address of place of issue, unless indicated in the Form head]*

We have been informed that _____ (herein after called “the Applicant”) has entered into Contract No. _____ dated _____ with the Beneficiary, for the execution of _____ (herein after called “the Contract”).

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____)¹, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation (s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified there in.

This guarantee shall be reduced by half upon our receipt of:

- a) A copy of the Operational Acceptance Certificate; or
- b) a registered Form from the Applicant (i) attaching a copy of its notice requesting issuance of the Operational Acceptance Certificate and (ii) stating that the Project Manager has failed to issue such Certificate within the time required or provide in writing justifiable reasons why such Certificate has not been issued, so that Operational Acceptance is deemed to have occurred.

This guarantee shall expire no later than the earlier of:²

- a) twelve months after our receipt of either (a) or (b) above; or
- b) eighteen months after our receipt of:
 - i) a copy of the Completion Certificate; or
 - ii) a registered Form from the Applicant, attaching a copy of the notice to the Project Manager that the Facilities are ready for commissioning, and stating that fourteen days have elapsed from receipt of such notice (or seven days have elapsed if the notice was a repeated notice) and the Project Manager has failed to issue a Completion Certificate or in form the Applicant in writing of any defects or deficiencies; or
 - iii) a registered Form from the Applicant stating that no Completion Certificate has been issued but the Procuring Entity is making use of the Facilities; or
- c) the ____ day of ____, 2____.³

Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No.758, except that the supporting statement under Article15 (a) is hereby excluded.

[signature(s)] _____

PERFORMANCE SECURITY OPTION 2 – (Performance Bond)

[Note: Procuring Entities are advised to use Performance Security–Unconditional Demand Bank Guarantee instead of Performance Bond due to difficulties involved in calling Bond holder to action]

[Guarantor Form head or SWIFT identifier code]

Beneficiary: _____ *[insert name and Address of Procuring Entity]*

Date: _____ *[Insert date of issue]*

PERFORMANCE BOND No.: _____

Guarantor: _____ *[Insert name and address of place of issue, unless indicated in the Form head]*

1. By this Bond _____ as Principal (herein after called “the Contractor”) and _____] as Surety (herein after called “the Surety”), are held and firmly bound unto _____] as Obligated (herein after called “the Procuring Entity”) in the amount of _____ for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.
2. WHEREAS the Contractor has entered in to a written Agreement with the Procuring Entity dated the day of, 20, for _____ in accordance with the documents, plans, specifications, and amendments there to, which to the extent herein provided for, are by reference in a part here of and are herein after referred to as the Contract.
3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments there to), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations there under, the Surety may promptly remedy the default, or shall promptly:
 - 1) Complete the Contract in accordance with its terms and conditions; or
 - 2) Obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable here under, the amount set for in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or
 - 3) Pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.
4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.
5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named here in or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.
6. In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this day _____ of _____ 20_____.

SIGNED ON _____ on behalf of

By _____ in the capacity

of in the presence of

SIGNED ON _____ on behalf of

By _____ in the capacity

of in the presence of

ADVANCE PAYMENT SECURITY - Demand Bank Guarantee

[Guarantor Form head or SWIFT identifier code]

Beneficiary: _____ *[Name and Address of Procuring Entity]*

Date: _____ *[Insert date of issue]*

Advance Payment Guarantee No.: _____ *[Insert guarantee reference number]*

Guarantor: _____ *[Insert name and address of place of issue, unless indicated in the Form head]*

We have been informed that _____ (herein after called “the Applicant”) has entered into Contract No. _____ dated _____ with the Beneficiary, for the execution of, _____ (herein after called “the Contract”).

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum ____ (_____) is to be made against an advance payment guarantee.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of (_____)⁴ upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the applicant:

- a) Has used the advance payment for purposes other than the costs of mobilization in respect of the Facilities; or
- b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Applicant on its account number _____ at _____.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of documentation indicating full repayment by the Applicant of the amount of the advance payment, or on the _____ day of _____, _____⁵, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15 (a) is hereby excluded.

_____ *[signature(s)]*

BENEFICIAL OWNERSHIP DISCLOSURE FORM**(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)****INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM**

This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer pursuant to Regulation 13 (2A) and 13 (6) of the Companies (Beneficial Ownership Information) Regulations, 2020. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.

For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the legal person (tenderer) or arrangements or a natural person on whose behalf a transaction is conducted, and includes those persons who exercise ultimate effective control over a legal person (Tenderer) or arrangement.

Tender Reference No.: _____ [insert identification no] Name of the Tender Title/Description: _____ [insert name of the assignment] to: _____ [insert complete name of Procuring Entity]

In response to the requirement in your notification of award dated ___ [insert date of notification of award] to furnish additional information on beneficial ownership: ___ [select one option as applicable and delete the options that are not applicable]

I) We here by provide the following beneficial ownership information.

Details of beneficial ownership

	Details of all Beneficial Owners		% of shares a person holds in the company Directly or indirectly	% of voting rights a person holds in the company	Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer (Yes / No)	Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)
1.	Full Name		Directly----- ----- % of shares	Directly.....% of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes -----No----- 2. Is this right held directly or indirectly?: Direct..... Indirect.....	1. Exercises significant influence or control over the Company body of the Company (tenderer) Yes -----No-- -- 2. Is this influence or control exercised directly or indirectly? Direct..... Indirect.....
	National identity card number or Passport number					
	Personal Identification Number (where applicable)		Indirectly---- ----- % of shares			
	Nationality					
	Date of birth [dd/mm/yyyy]					
	Postal address					
	Residential address					
	Telephone number					
	Email address					
	Occupation or profession					

	Details of all Beneficial Owners		% of shares a person holds in the company Directly or indirectly	% of voting rights a person holds in the company	Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer (Yes / No)	Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)
						...
2.	Full Name		Directly----- ----- % of shares	Directly.....% of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes -----No----	1. Exercises significant influence or control over the Company body of the Company (tenderer) Yes -----No-- --
	National identity card number or Passport number					
	Personal Identification Number (where applicable)		Indirectly---- ----- % of shares	Indirectly----- % of voting rights	2. Is this right held directly or indirectly?:	2. Is this influence or control exercised directly or indirectly?
	Nationality(ies)				Direct.....	Direct.....
	Date of birth [dd/mm/yyyy]				Indirect.....	Indirect.....
	Postal address					
	Residential address					
	Telephone number					
	Email address					
	Occupation or profession					
3.						
e.t						
.c						

II) Am fully aware that beneficial ownership information above shall be reported to the Public Procurement Regulatory Authority together with other details in relation to contract awards and shall be maintained in the Government Portal, published and made publicly available pursuant to Regulation 13(5) of the Companies (Beneficial Ownership Information) Regulations, 2020. (Notwithstanding this paragraph Personally Identifiable Information in line with the Data Protection Act shall not be published or made public). *Note that Personally Identifiable Information (PII) is defined as any information that can be used to distinguish one person from another and can be used to deanonymize previously anonymous data. This information includes National identity card number or Passport number, Personal Identification Number, Date of birth, Residential address, email address and Telephone number.*

III) In determining who meets the threshold of who a beneficial owner is, the Tenderer must consider a natural person who in relation to the company:

- (a) holds at least ten percent of the issued shares in the company either directly or indirectly;

- (b) exercises at least ten percent of the voting rights in the company either directly or indirectly;
- (c) holds a right, directly or indirectly, to appoint or remove a director of the company; or
- (d) exercises significant influence or control, directly or indirectly, over the company.

IV) What is stated to herein above is true to the best of my knowledge, information and belief.

Name of the Tenderer:[insert complete name of the Tenderer]_____*

*Name of the person duly authorized to sign the Tender on behalf of the Tenderer: ** [insert complete name of person duly authorized to sign the Tender]*

Designation of the person signing the Tender: [insert complete title of the person signing the Tender]

Signature of the person named above: [insert signature of person whose name and capacity are shown above]

Date this [insert date of signing] day of..... [Insert month], [insert year]

Bidder Official Stamp