AROR UNIVERSITY OF ART, ARCHITECTURE DESIGN & HERITAGE ROHRI

BIDDING DOCUMENT

FOR

SELECTION OF CONTRACTORS FOR SUPPLY, INSTALLATION, CONSTRUCTION & COMMISSIONING OF 1664 KWP SOLAR SYSTEM ALONG WITH 2MWH BESS UNDER B.O.T MODEL

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INSTRUCTIONS TO USERS OF THIS DOCUMENT

As stated in Clause IB.5 of Instructions to Bidders, the complete Bidding Documents shall comprise ten (10) items listed therein including any addendum to Bidding Documents issued in accordance with Clause IB.7. The Standard Form of Bidding Documents, in addition to "Invitation for Bids" include the following

1. Instructions to Bidders with Appendices
2. Forms of Bid & Schedules to Bid. Schedules to Bid are the following

    i. Schedule A: Specific Works Data
    ii. Schedule B: Work to be Performed by Subcontractors
    iii. Schedule C: Proposed Programme of Works
    iv. Schedule D: Deviations from Technical Provisions
    v. Schedule E: Deviations from Contractual Conditions
    vi. Schedule F: Method of Performing Works
    vii. Schedule G: Proposed Organization
    viii. Schedule H: Integrity Pact
3. Schedule of Prices
4. Preamble to Conditions of Contract
5. General Conditions of Contract
6. Particular Conditions of Contract
7. Standard Forms. Forms include the following:

    i. Form of Bid Security
    ii. Form of Contract Agreement
    iii. Form of Performance Security
    iv. Form of Bank Guarantee/Bond for Advance Payment
    v. Undertaking by principal that they will be responsible to replace Solar panels during life of the equipment incase its efficiency falls less than 80% in 25 years.
    vi. Undertaking by principal that in case of change in distributor, they will be responsible to provide warranty and replacement of Solar panels during life of the equipment incase its efficiency falls less than 80% in 25 years. The cost of both way transportation will be borne by the manufacturer.
8. Specifications - Special Provisions
9. Specifications - Technical Provisions
10. Drawings

The General Conditions of Contract is governed by Pakistan Engineering Council (PEC)

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I- INVITATION FOR BIDS

INVITATION FOR BIDS

(AROR University to paste the advertisment)

II- INSTRUCTIONS TO BIDDERS

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INSTRUCTIONS TO BIDDERS

A. GENERAL

IB.1 Scope of Bid and Source of Funds

1.1 Scope of Bid

AROR University Sukkur (hereinafter called "the Employer") wishes to receive bids for the following scope of work:

Selection of Contractors for Engineering, Procurement and Construction of 1664 kW_P Solar Power System along with 2MWH BESS under BOT Model. The above scope of work is funded by the AROR University Sukkur. Any bid covering partial scope of work will be rejected as non-responsive, pursuant to Clause IB.24.

1.2 BOT Model Framework

- Build: Developer constructs the project
- Own: Developer retains ownership during contract period
- Operate: Developer responsible for operations & maintenance
- Transfer: Ownership transferred to Aror University at end of term

IB.2 Eligible Bidders

2.1 **Mandatory Requirement (documentary evidence must be submitted at the time of submission)**

a) Duly registered by the Pakistan Engineering Council (PEC) in category C2 or above of the Works is required (Valid Certificate is Required)
b) Registration with FBR, STRN, NTN, SRB on Active Taxpayer List.
c) Registration with PPIB in the relevant category (C1). Valid registration Certificate is required.
d) Provide affidavit on Stamp Paper of not blacklisting by any Organization.
e) A single, unified Manufacturer's Authorization Form (MAF) from the principal covering the Inverter, Battery with BMS/ BESS, and EMS.
f) Average annual turnover 1500 million in last 3 year.
g) Bank Facility letter / Credit lines minimum of 1000 million should be submitted.
h) The Successful Bidder shall deliver a comprehensive project design presentation and submit the presentation and technical details in USB.
i) A valid manufacturer's authorization letter must be submitted for the solar PV modules

IB.3 Eligible Goods and Services

3.1 All Goods and ancillary Services to be supplied under this Contract shall have their origin in eligible countries listed in Appendix 'A' to Instructions to Bidders and all expenditures made under the Contract will be limited to such Goods and Services.

3.2 For purpose of this Clause, "origin" means the place where the Goods are mined, grown or produced or from where the ancillary services are supplied. Goods are produc

when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

3.3 The origin of Goods and Services is distinct from the nationality of the Bidder.

IB.4 Cost of Bidding

4.1 The bidder shall bear all costs associated with the preparation and submission of its bid and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

B. BIDDING DOCUMENTS

IB.5 Contents of Bidding Documents

5.1 In addition to Invitations for Bids, the Bidding Documents are those stated below and should be read in conjunction with any Addendum issued in accordance with Clause IB.7.

1. Instructions to Bidders with Appendices
2. Form of Bid & Schedules to Bid

Schedules to Bid are the following:

(i) Schedule A: Specific Works Data
(ii) Schedule B: Work to be Performed by Subcontractors
(iii) Schedule C: Proposed Programme of Works
(iv) Schedule D: Deviations from Technical Provisions
(v) Schedule E: Deviations from Contractual Conditions
(vi) Schedule F: Method of Performing Works
(vii) Schedule G: Proposed Organization
(viii) Schedule H: Integrity Pact

3. Schedule of Prices
4. Preamble to Conditions of Contract
5. General Conditions of Contract
6. Particular Conditions of Contract
7. Standard Forms

Forms include the following:

(i) Form of Bid Security
(ii) Form of Contract Agreement
(iii) Form of Performance Security
(iv) Form of Bank Guarantee/Bond for Advance Payment(N/A)

8. Specifications - Special Provisions
9. Specifications - Technical Provisions
10. Drawings

5.2 The bidders are expected to examine carefully the contents of all the above documents. Failure to comply with the requirements of bid submission will be at the bidders own

risk. Pursuant to Clause IB.24, bids which are not substantially responsive to the requirements of the Bidding Documents will be rejected.

IB.6 Clarification of Bidding Documents

6.1 A prospective bidder requiring any clarification(s) in respect of the Bidding Documents may notify the Employer in writing or by telex at the address:

Assistant Engineer Electrical,
AROR University,
Bypass Road Sukkur,
Phone +92-071-5651900,
E-mail: info@aror.edu.pk/iftikhar.ahmed@aror.edu.pk

Employer will examine the request for clarification of the Bidding Documents which it receives before one week time prior to the deadline for the submission of bids. If needed will issue the clarification/amendment of the Bidding Documents at least 5 days before the date of submission of Bids (without identifying the source of enquiry) to all prospective bidders who have purchased the Bidding Documents.

IB.7 Amendment of Bidding Documents

7.1 At any time prior (at least 5 days) to the deadline for submission of bids, the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents by issuing addendum.

7.2 Any addendum thus issued shall be part of the Bidding Documents pursuant to Sub-Clause 7.1 hereof, and shall be communicated in writing to all purchasers of the Bidding Documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer. The bidder shall also confirm in the Form of Bid that the information contained in such addenda have been considered in preparing his bid.

7.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may at its discretion extend the deadline for submission of bids in accordance with Clause IB.19.

C. PREPARATION OF BIDS

IB.8 Language of Bid

8.1 The Bid prepared by the Bidder and all correspondence and documents relating to the Bid, exchanged by the Bidder and the Engineer shall be written in the English language, provided that any printed literature furnished by the Bidder may be written in another language so long as accompanied by an English translation of its pertinent passages in which case, for purposes of interpretation of the Bid, the English translation shall govern.

IB.9 Documents Comprising the Bid

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9.1 The bid prepared by the bidder shall comprise the following components:

i. Covering Letter

ii. Form of Bid duly filled, signed and sealed, in accordance with Clause IB.17.

iii. Schedules (A to H) to Bid duly filled and signed, in accordance with the instructions contained therein.

iv. Schedule of Prices completed in accordance with Clauses IB.11 and 12.

v. Bid Security furnished in accordance with Clause IB.15. Undertaking (as per sample attached) is to be provided with Technical Bid confirming that CDR @ 3% of the estimated amount is enclosed with Financial Bid.

vi. Joint Venture is not allowed.

vii. Documentary evidence established in accordance with Clause IB.13 that the bidder is eligible to bid and is qualified to perform the contract if its bid is accepted.

viii. Documentary evidence established in accordance with Clause IB.14 that the Goods and ancillary Services to be supplied by the bidder are eligible Goods and Services and conform to the Bidding Documents.

ix. Evidence of bidder's capability performa (Appendix B to Instructions to Bidders)

x. Any other documents prescribed in Particular Conditions of Contract or Technical Provisions to be submitted with the bid.

xi. Legal & Commercial documents shall be submitted by the successful bidder at the time of execution of the contract agreement:
   i. Draft BOT structure
   ii. Risk allocation
   iii. Proposed contractual terms
   iv. Define concession period clearly
   v. Include asset transfer conditions
   vi. Ensure system performance at transfer

xii. Financial Proposal comprises of following details enclosed with the bid:
   i. Annual installment amount including all applicable taxes and O&M Charges
   ii. Total repayment period in years

IB.10 Form of Bid and Schedules

10.1 The bidder shall complete, sign and seal the Form of Bid, Schedules (A to H, or as modified) to Bid and Schedule of Prices furnished in the Bidding Documents and shall also enclose other information as detailed in Clause IB.9.

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IB.11 Bid Prices

11.1 The bidder shall fill up the Schedule of Prices attached to these documents indicating the unit rates and total prices of the Works to be performed under the Contract. Prices on the Schedule of Prices shall be entered keeping in view the instructions contained in the Preamble to the Schedule of Prices. The price shall be FOR destination inclusive of installation and warranties.

11.2 N/A.
Points

11.3 N/A

11.4 Unless otherwise stipulated in the Conditions of Contract, prices quoted by the bidder shall remain fixed during the bidder's performance of the Contract and not subject to variation on any account. When the bidders are required to quote only fixed price(s) a bid submitted with an adjustable price quotation will be treated as non-responsive and rejected, pursuant to Clause IB.24.

IB.12 Currencies of Bid

12.1 Prices shall be quoted in the following currencies:

(a) The prices shall be quoted in the Pak. Rupees. Bids in other currencies will not be acceptable and will be considered non responsive.

IB.13 Documents Establishing Bidder's Eligibility and Qualifications

13.1 Pursuant to Clause IB.9, the bidder shall furnish, as part of its bid, documents establishing the bidder's eligibility to bid and its qualifications to perform the Contract if its bid is accepted.

13.2 The documentary evidence of the bidder's eligibility to bid shall establish to the Employer's satisfaction that the bidder, at the time of submission of its bid is from an eligible source country as defined under Clause IB.2.

13.3 The documentary evidence of the bidder's qualification to perform the Contract if its bid is accepted, shall establish to the Employer's/Engineer's satisfaction:

(a) that, in the case of a bidder offering to supply Goods under the Contract which the bidder did not manufacture or otherwise produce, the bidder has been duly authorized by the Goods manufacturer or producer to supply the Goods to Pakistan;

(b) that the Bidder/Manufacturer has the financial, technical and production capability necessary to perform the Contract; and

(c) that, in the case of a bidder not doing business within Pakistan the bidder is or will be (if successful) represented by an agent in Pakistan equipped and able to carry out the Supplier's maintenance, repair and spare parts stocking obligations prescribed by the Conditions of Contract and/or Technical Provisions.

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13.4 (a) Bidder must possess and provide evidence of the experience as required for technical evaluation of the firm

The Bidder shall certify the capacity and capability of the plant (from which Goods are now offered) for manufacturing, quality assurance and testing facilities, qualified man-power and production / delivery of quality materials according to bid specifications and delivery requirements. Besides, such plant should have produced same items for at least 05 years and such Goods shall have proven successful in the field for at least 05 years and the bidder shall submit with the bid all necessary documentation in this regard. The Engineer will have the right to verify the particulars regarding the plant and other related information furnished with the bid shall be liable for disqualification in the event of any mis-statement/mis-representation on their part.

The bidder shall furnish documentary evidence of qualification on the Form "Evidence of Bidder's Capability" (Appendix B to these Instructions)

13.5 Joint Venture

Joint Venture Not Allowed in this Bid.

13.6 The Bidder shall propose best quality of plant, equipment or goods of well reputed Manufacturers. Employer at his own jurisdiction will evaluate the plant, equipment or goods.

IB.14 Documents Establishing Goods' Eligibility and Conformity to Bidding Documents

14.1 Pursuant to Clause IB.9, the bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the Bidding Documents of all Goods and Services which the bidder proposes to perform under the Contract.

14.2 The documentary evidence of the Goods and Services eligibility shall establish to the Employer's satisfaction that they will have their origin in an eligible source country as defined under Clause IB.3. A certificate of origin issued at the time of shipment will satisfy the requirements of the said Clause.

14.3 The documentary evidence of the Goods and Services' conformity to the Bidding Documents may be in the form of literature, drawings and data and shall furnish:

(a) A detailed description of the Goods, essential technical and performance characteristics.

(b) Complete set of technical information, description data, literature and drawings as required in accordance with Schedule A to Bid, Specific Works Data. This will include but not be limited to the following:

(i) A sufficient number of drawings, photographs, catalogues, illustrations and such other information as are necessary to illustrate clearly the significant characteristics such as general construction dimensions and

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other relevant information about the Goods to be furnished.

(ii) Details of equipment and machinery with capacity.

(iii) Any other information which is required for evaluation purposes.

(c) A clause-by-clause commentary on Technical Provisions, provided with the Bidding Documents, demonstrating the Goods' and Services' substantial responsiveness to those Specifications or a statement of deviations and exceptions to the provisions of the Technical Provisions as required in Schedule D to Bid.

14.4 For purpose of the commentary to be furnished pursuant to Sub-Clause 14.3(c) above, the Bidder shall note that standards for workmanship, material and equipment, and references to brand names or catalogue numbers, designated by the Engineer in the Technical Provisions are intended to be descriptive only and not restrictive. The bidder may substitute alternative standards, brand names and/or catalogue numbers in its bid, provided that it demonstrates to the Engineer's satisfaction that the substitutions are substantially equivalent or superior to those designated in the Technical Provisions. Copies of the standards proposed by the bidder other than those specified in the Bidding Documents shall be furnished.

IB.15 Bid Security

15.1 Bid will be accompanied by earnest money @ 3% of the quoted price in shape of CDR /DD in favor of, The AROR University OF ART, ARCHITECTURE, DESIGN & HERITAGE SUKKUR. CDR / DD will be placed with Financial Bid. Undertaking (as per sample attached) is to be provided with Technical Bid that CDR/DD @ 3% is enclosed with Financial Bid. Bids without earnest money will be straightaway considered as non-responsive. The bidders should ensure that the offered price including amount of earnest money is not reflected in the Technical Bid otherwise the bid will be rejected. The Bid Security of the Successful Bidder shall be returned after the Successful Bidder has signed the Contract Agreement. The Bid Security of unsuccessful bidders shall be returned promptly after the successful execution of the Tender.

IB.16 Validity of Bids

16.1 Bids shall remain valid for 90 days from date of financial bid date of bid opening as prescribed in Clause IB.19.

16.2 In exceptional circumstances prior to expiry of original bid validity period, the Employer may request the bidders to extend the period of validity for a specified additional period which shall in no case be more than the original bid validity period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiture of his Bid Security. A bidder agreeing to the request will be required to extend the validity of his Bid Security for the period of the extension.

IB.17 Format and Signing of Bid

17.1 Bidders are particularly directed that the amount entered on the Form of Bid shall be for performing the Contract strictly in accordance with the Bidding Documents.

17.2 All Schedules to Bid are to be properly completed and signed.

17.3 No alteration is to be not made in the Form of Bid nor in the Schedules thereto except in filling up the blanks as directed. If any alteration be made or if these instructions be not fully complied with, the bid may be rejected.

17.4 Each bidder shall prepare and submit one (1) Original (softcopy) of the Technical Bid before OR by the time stipulated in the bidding document. To avoid the event of discrepancy, bidders are requested to submit the documents through One drive Link (which is monitored for time stamp aligned with bid submission date) and a USB with bidding documents to be courier on the registered address of AROR University.

17.5 The bid shall contain no alterations, omissions or additions, except to comply OR otherwise attach a deviation document which covers all such points that needs to be consider as exception with instructions issued by the Employer, or as are necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

17.6 Bidders shall indicate in the space provided in the Form of Bid their full and proper addresses at which notices may be legally served on them and to which all correspondence in connection with their bids and the Contract is to be sent.

17.7 Bidders should retain a copy of the Bidding Documents as their file copy.

D. SUBMISSION OF BIDS

IB.18 Sealing and Marking of Bids

18.1 Each bidder shall submit his bid as under:

(a) Applications must be applied online on EPADS at https://portalsindh.eprocure.gov.pk.

18.2 The inner and outer envelopes shall;

(a) be addressed to the Employer at the address given in Sub-Clause 6.1 heretofore.
(b) bear the Project name, Bid No. and Date of opening of Bid.
(c) provide a warning not to open before the time and date for bid opening.

18.3 The Bid with CDR/DD of 3% of the estimated amount shall be delivered in person or sent by registered mail at the address to Employer as given in Sub-Clause 6.1 heretofore.

18.4 In addition to the identification required in Sub-Clause 18.2 hereof, the inner envelope shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared "late" pursuant to Clause IB.20.

18.5 If the outer envelope is not sealed and marked as above, the Employer will assume no

responsibility for the misplacement or premature opening of the bid.

IB.19 Deadline for Submission of Bids

19.1 (a) Bidders are required to visit the project site to familiarize themselves with the existing conditions and the scope of work prior to submitting their bids. Site visits may be conducted Monday through Friday between 9:00 a.m. and 3:00 p.m. Any requests for clarification or technical queries shall be submitted in writing to Mr. Iftikhar Ahmed, Assistant Engineer (Electrical) via email at iftikhar.ahmed@aror.edu.pk.

A Pre-Bid Meeting will be held on **18th November 2026 @02:30 a.m** at AROR Univeristy. Prospective bidders are encouraged to attend the meeting to seek clarifications regarding the tender requirements. Any clarifications or amendments arising from the Pre-Bid Meeting shall be communicated to all prospective bidders.

(b) Technical and Financial Bids must be received by the Employer and to be uploaded on SPPRA EPAD at the address specified in Sub-Clause 6.1 hereof not later than the date stipulated in the Invitation for Bids which is **26^{1h} November, 2026 @ 01:30 noon.**

(c) Bids with charges payable will not be accepted, nor will arrangements be undertaken to collect the bids from any delivery point other than that specified above. Bidders shall bear all expenses incurred in the preparation and delivery of bids.

19.2 Bids submitted through telegraph, telex, fax or e-mail shall not be considered.

19.3 The Employer may, at his discretion, extend the deadline for submission of bids by issuing an addendum in accordance with Clause IB.7, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.

IB.20 Late Bids

20.1 (a) Any bid received by the Employer after the deadline for submission of bids prescribed in Clause IB.19 will be returned unopened to such bidder.

(b) Delays in the mail, delays of person in transit, or delivery of a bid to the wrong office shall not be accepted as an excuse for failure to deliver a bid at the proper place and time. It shall be the bidder's responsibility to determine the manner in which timely delivery of his bid will be accomplished either in person, by messenger or by mail.

IB.21 Modification, Substitution and Withdrawal of Bids are not allowed

E. BID OPENING AND EVALUATION

IB.22 Bid Opening

22.1 A committee consisting of nominated members by the Employer will open the bids

the presence of bidders' representatives who choose to attend, at the time, date and location stipulated in the Invitation for Bids.
The bidders' representatives who are present shall sign in a register evidencing their attendance.
Technical bids will be opened on i.e. 26th November, 2026 @ 01:30 noon.

22.2 The bidder's name, Bid Prices, unit rates, total bid price and price of any Alternate Proposal(s) and such other details as the Employer at its discretion may consider appropriate, will be announced by the Employer at the Financial Bid opening. The Employer will record minutes of bid opening. Any Bid Price which is not read out and recorded at bid opening will not be taken into account in the evaluation of bid.

IB.23 Clarification of Bids

23.1 To assist in the examination, evaluation and comparison of Bids the Engineer may, at its discretion, ask the Bidder for a clarification of its Bid. The request for clarification and the response shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

IB.24 Preliminary Examination & Determination of Responsiveness of Bids

24.1 Prior to the detailed evaluation of bids, pursuant to Clause IB.26,

(a) the Engineer will examine the Bids to determine whether;

(i) The Bid is complete and does not deviate from the scope,
(ii) Any computational errors have been made,
(iii) Required sureties have been furnished,
(iv) The documents have been properly signed,
(v) The Bid is valid till required period,
(vi) The Bid prices are firm during currency of contract if it is a fixed price bid,
(vii) Completion period offered is within specified limits,
(viii) The Bidder/Manufacturer is eligible to Bid and possesses the requisite experience,
(ix) The Bid does not deviate from basic technical requirements and the Bids are generally in order.

(b) A bid is likely not to be considered, if;

(i) it is unsigned,
(ii) its validity is less than specified,
(iii) it is submitted for incomplete scope of work,
(iv) it indicates completion period later than specified,
(v) it indicates that Works and materials to be supplied do not meet eligibility requirements,
(vi) it indicates that Bid prices do not include the amount of applicable taxes,
(vii) The bid price is less than 20% of the Engineer estimated cost of the project.

(c) A bid will not be considered, if;

(i) It is not accompanied with bid security,
(ii) It is not submitted through EPADS
(iii) it is received after the deadline for submission of bids,
(iv) it is submitted through fax, telex, telegram or email,
(v) it indicates that prices quoted are not firm during currency of the contract whereas the bidders are required to quote fixed price(s),
(vi) the bidder refuses to accept arithmetic correction,
(vii) it is materially and substantially different from the Conditions/Specifications of the Bidding Documents.

24.2 Arithmetical errors will be rectified on the following basis:

If there is a discrepancy between the unit price and total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If unit price and reevaluated total price is correct and there is a discrepancy between the words and figures the amount in words shall prevail. If there is a discrepancy between the total Bid price entered in Form of Bid and the total shown in Schedule of Prices Summary, the amount stated in the Form of Bid will be corrected by the Employer/Engineer in accordance with the Corrected Schedule of Prices.

If the Bidder does not accept the corrected amount of Bid, his Bid shall be rejected and his Bid Security forfeited.

24.3 Prior to the detailed evaluation, pursuant to Clause IB.26 the Employer/Engineer will determine the substantial responsiveness of each Bid to the Bidding Documents. For purpose of these Clauses, a substantially responsive Bid is one which conforms to all the terms and conditions of the Bidding Documents without material deviations.

A material deviation or reservation is one

(i) which affects in any substantial way the scope, quality or performance of the Works.
(ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the bidder's obligations under the Contract; or
(iii) whose rectification/adoption would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

The Employer's/Engineer's determination of a Bid's responsiveness will be based on the contents of the Bid itself without recourse to extrinsic evidence.

24.4 A Bid determined as substantially non-responsive will be rejected and will not subsequently be made responsive by the Bidder by correction of the non-conformity.

24.5 Any minor informality or non-conformity or irregularity in a Bid which does not constitute a material deviation may be waived by Employer/Engineer, provided such waiver does not prejudice or affect the relative ranking of any Bidder.

IB.25 Conversion to Single Currency

25.1 The Bid Price is to be in Pak. Rupees. Bids in other currency will be rejected.

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IB.26 Detailed Evaluation of Bids

26.1 The Employer/Engineer will evaluate and compare only the bids previously determined to be substantially responsive pursuant to Clause IB.24 as per requirements given hereunder.

26.2 Evaluation and Comparison of Bids

The Technical Bids will be evaluated on the basis of evaluation criteria and the Firm(s) scoring at least 70 % marks shall be consi dered technically graded. Financial Bids of only those firms will be opened, who at least secured 70 % marks in their Technical Bids.

The contractor will be selected on the basis of Quality Cost Based Selection (QCBS). The minimum technical score (TS) required to qualify for entry into financial bid round is seventy (70) Points. Each responsive Proposal will be given a technical score (TS). Proposal(s) shall be rejected at this stage if it does not respond to important aspects of the RFP, or if it fails to achieve the minimum technical score.

The lowest evaluated Financial Proposal (Fm) will be given the maximum financial score (FS) of 100 points. The financial scores (FS) of the other Financial Proposals will be computed by applying the following formula:

FS = 100 x Fm / F, in which FS is the financial score,

Fm is the lowest price and F the price of the proposal under consideration.

The weights given to the Technical and Financial Proposals are:

T = 80% and P = 20%

Proposals will be ranked according to their combined weighted score (CWS) of technical (TS) and financial (FS) scores using the weights (T = the weight given to the Technical Proposal; P = the weight given to the Financial Proposal; T + P = 1).

CWS = TS x T% + FS x P%. The firm achieving the highest combined weighted technical and financial score will be invited for negotiations.

The Client shall have the right to negotiate the Lump-sum price quoted by the highest scorer, if the Client feels that the quoted Negotiations Lump-sum price is beyond reasonableness. Negotiation shall not be conducted on any other part of the Contract or process. In case, the negotiations fail, the Client shall have the right to invite the Contractor whose Proposal received the second highest score to negotiate a lump-sum price. Thereof, if need be third and subsequent highest scorers may be invited.

TECHNICAL EVALUATION CRITERIA

The technical bids will be evaluated on the basis of following criteria: -

Sr.	Description	Explanation	Marks
1	Solar PV Module	As per Clause I, Schedule – A	4
2	PV Inverters	As per Clause II, Schedule - A	4
3	-BESS	As per Clause XI, Schedule - A	4
4	Cabling and accessories	As per Clause IV, & VI, Schedule - A	4
5	Proposed Design and layout of Civil and Metallic structure All Drawing shall be prepared according to best Engineering practices.	1. PVSYST Report (Loss Analysis, Variance Analysis, Shading Analysis etc complete in all respect including best PR) 2. Energy Generation @P90 3. General Layout 4. PV Placement 5. AC & DC Cabling layout 6. DC & AC Cable losses 7. Lightning Layout Calculation 8. Earthing Drawing and details 9. Structure Drawing and wind speed calculation report ASCE 7-10, Considering 150 KM/hr. This report shall be approved by any structural consultant. 10. A single, unified Manufacturer's Authorization Form (MAF) from the principal covering the Inverter, Battery, and EMS.	25
6	Experience. (Project details, including the project name, contact person's name, contact number, and email address.)	A. Large-Scale Completed Projects (15 Marks) • Requirement: At least 2000 kWp or above Solar System completed within the last 5 years on a BOT or PPA basis. (02 Marks for each completed project, maximum 10 marks) • At least one (1) of these projects must include a 1 MWh Battery Energy Storage System (BESS).(5 Marks) • Required Documentation: Completion certificates and corresponding PPA/BOT agreements. B. Mid-Scale Completed Projects (5 Marks) • Requirement: At least five (5) projects of 1000 kWp or above Solar System completed within the last 5 years.(• (01 Marks for each completed project, maximum 5 marks) • Required Documentation: Completion certificates. C. Ongoing Projects / In Hand (5 Marks) • Requirement: Current, ongoing projects of 2000 kWp or above Solar system projects .At least 5 projects • (01 Marks for each in hand project, maximum 5 marks)	25

		• Required Documentation: Copies of official work orders. All the Details of officials with their email, contact no., address and location on separate page should be provided of each completed or ongoing projects separately with respect to their completed / ongoing projects.	
7	Financial Strength	Average annual turnover 1500 million at least for last 3 years supported by the audited financial statements	20
8	Project Team	EPC company should have following staff, at least: a. 5 x Electrical/Mechanical Engineers b. 3 x Project Supervisors (Electrical/ Mechanical) c. O&M Team Detail (Minimum 30 Persons) d. Asset Performance Management Team	05
9	Work Schedule	Timeline in the form of Gantt chart	05
10	Integrity Pact	As per Schedule-H	04
		TOTAL	**100**

26.3 Evaluation Methods

Pursuant to Sub-Clause 26.2,

Bids indicating project completion period beyond 06 months (Import plus installation) later than the dates set out in Preamble to Conditions of Contract, shall not be considered and rejected as non-responsive.

26.4 If the bid of the successful bidder is seriously unbalanced in relation to the Employer's estimate of the cost of work to be performed under the Contract, the Employer may require the bidder to produce detailed price analyses for any or all items of the Schedule of Prices to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the Performance Security set forth in Clause IB.34 be increased at the expense of the successful bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the Contract.

IB.27 Domestic Preference

27.1 N/A

IB.28 Process to be Confidential

28. 1 Subject to Clause 23 heretofore, no Bidder shall contact Employer and/or Engineer on any matter relating to its Bid from the time of the Bid opening to the time the bid evaluation result is announced by the Employer. The evaluation result shall be announced at least ten (10) days prior to award of Contract.

28.2 Any effort by a Bidder to influence Employer and/or Engineer in the Bid evaluation, bid comparison or Contract Award decisions may result in the rejection of his Bid. Whereas any bidder feeling aggrieved may lodge a written complaint not later than fifteen (15) days after the announcement of the bid evaluation result; however, mere fact of lodging a complaint shall not warrant suspension of the procurement process.

F. AWARD OF CONTRACT

IB.29 Post-Qualification

29.1 The Employer, at any stage of the bid evaluation, having credible reasons for or *prima facie* evidence of any defect in supplier's or contractor's capacities, may require the suppliers or contractors to provide information concerning their professional, technical, financial, legal or managerial competence being already mentioned in technical bid:

Provided that such qualification shall only be laid down after recording reasons therefor in writing. They shall form part of the records of that bid evaluation report.

29.2 The determination will take into account the bidder's financial and technical capabilities. It will be based upon an examination of the documentary evidence of the bidder's qualification submitted under Appendix B to Instructions to Bidders "Evidence of Bidder's Capability" by the bidder pursuant to Clause IB.13, as well as such other information as required under the Bidding Documents.

29.3 An affirmative determination will be a pre-requisite for award of the Contract to the highest ranked bidder. A negative determination will result in rejection of that bidder's bid in which event; Employer will proceed to undertake a similar determination of the next highest evaluated bidder's capabilities to perform the Contract satisfactorily.

IB.30 Award Criteria

30.1 Subject to Clause IB.32, the Employer will award the Contract to the successful bidder on the basis of Quality Cost base selection (QCBS) as discussed in IB.26.2. The contract of the project will be subject to "Force Majure" provisions of PEC.

IB.31 Employer's Right to Vary Quantities

31.1 Employer reserves the right at the time of award of Contract to increase by upto 15% the quantity of goods and services specified in the Schedule of Prices without any change in the unit price or other terms and conditions.

IB.32 Employer's Right to Accept any Bid and to Reject any or all Bids

32.1 Notwithstanding Clause IB.30, the Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidders or any obligation to inform the affected bidders of the grounds for the Employer's action except that the grounds for its rejection shall upon request be communicated, to any bidder who submitted a bid, without justification of grounds. Rejection of all bids shall be notified to all bidders promptly.

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IB.33 Notification of Award

33.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder in writing ("Letter of Acceptance") that his bid has been accepted. This letter shall name the sum which the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called the "Contract Price").

33.2 The Letter of Acceptance and its acceptance by the bidder will constitute the formation of the Contract, binding the Employer and the Bidder till signing of the formal Contract Agreement.

33.3 Upon furnishing by the successful bidder of a Performance Security, the Employer will promptly notify the other bidders that their bids have been unsuccessful and return their bid securities.

IB.34 Performance Security

34.1 The successful bidder shall furnish to the Employer a Performance Security equal to 10% of the contract amount in the form of bank guarantee within a period of twenty-eight (28) working days after the receipt of Letter of Acceptance. The performance security will be refunded after satisfactory completion of defect liability period (DLP) / completion of contract. However, the contract will be legally bound through an affidavit on stamp paper of requisite amount as to the warranty of all the components of the solar system as laid down in bidding document even after DLP, failing which AROR University Sukkur reserves the right to black list the firm/contractor. OR in case of deferred EPC arrangement, Aror University can provide a bankable security to bidder equivalent to bidding amount till the proposed time period of complete recovery.

34.2 Failure of the successful bidder to comply with the requirements of Sub-Clause IB.34.1 or Clause IB.35 or Clause IB.43 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.

IB.35 Signing of Contract Agreement

35.1 Within Seven (7) days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Employer will send to the successful bidder the Form of Contract Agreement provided in the Bidding Documents, duly filled in and incorporating all agreements between the parties for signing and return it to the Employer.

35.2 The formal Agreement between the Employer and the successful bidder shall be executed within fifteen (15) working days of the receipt of such Form of Contract Agreement by the successful bidder from the Employer.

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G. ADDITIONAL INSTRUCTIONS

IB.36 Instructions not Part of Contract

36.1 Bids shall be prepared and submitted in accordance with these Instructions which are provided to assist bidders in preparing their bids, and do not constitute part of the Bid or the Contract Documents.

IB.37 Contract Documents

37.1 The Documents which will be included in the Contract are listed in the Form of Contract Agreement set out in these Bidding Documents.

IB.38 Sufficiency of Bid

38.1 Each bidder shall satisfy himself before Bidding as to the correctness and sufficiency of his Bid and of the rates and prices entered in the Schedule of Prices. Except insofar as it is otherwise expressly provided in the Contract, the rates and prices entered in the Schedule of Prices shall cover all his obligations under the Contract and all matters and things necessary for the proper completion of the Works.

IB.39 One Bid per Bidder

39.1 Each bidder shall submit only one bid. A bidder who submits or participates in more than one bid will be disqualified and bids submitted by him shall not be considered for evaluation and award.

IB.40 Bidder to Inform Himself

40.1 The bidder is advised to obtain for himself at his own cost and responsibility all information that may be necessary for preparing the bid and entering into a Contract for execution of the Works. This shall include but not be limited to the following:

(a) inquiries on Pakistani Income Tax/Sales tax.

(b) inquiries on customs duties and other import taxes, to the concerned authorities of Customs and Excise Department.

(c) information regarding port clearance facilities, loading and unloading facilities, storage facilities, transportation facilities and congestion at Pakistan seaports.

(d) investigations regarding transport conditions and the probable conditions which will exist at the time the Goods will be actually transported.

IB.42 Local Conditions

42.1 Bidder must verify and supplement by his own investigations the information about site and local conditions. However, Employer will assist the Bidder wherever practicable and possible.

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IB.43 Integrity Pact

The Bidder shall sign and stamp the Integrity Pact provided at Schedule-H to Bid in the Bidding Document for Government procurement contracts exceeding Rupees ten million. Failure to provide such Integrity Pact shall make the bid non-responsive.

UNDERTAKING

I, _____, CNIC No. _____, [Position]_____ of M/s [Company Full Name & Address], do hereby solemnly affirm that our company has provided 3 % bid security in shape of CDR no: _____ dated: _____ issued by [Bank] _____. The CDR has been prepared in favor of Project Director AROR University Sukkur against our technical and financial bid for the project **SUPPLY, INSTALLATION, CONSTRUCTION & COMMISSIONING OF 1664 KWP SOLAR SYSTEM ALONG WITH 2MWH BESS UNDER BOT MODEL.**

I declare that the contents of this undertaking are true to the best of my knowledge and belief.

Dated:_____ Deponent: _____

[Name and Signature]

Appendix A to
Instructions to Bidders

NAME OF ELIGIBLE COUNTRIES

[As per list allowed by Government of Pakistan]

Appendix B to
Instructions to Bidders

EVIDENCE OF BIDDER'S CAPABILITY

[Note: Bidders to provide the following information with the bid separately and indicate herein its references where this information is available.]

Sr.No.	Information to be Supplied	Bid References
1.	Name of bidder, business address and country of incorporation.	
2.	Type of firm whether individually owned, partnership or corporation	
3.	The annual reports or qualification statements giving general description of the firm, sort of business carried out, balance sheets, profit and loss statements, turn over and business done by the firm, duly authenticated, for the last three (3) years. Audited Balance Sheets for the preceding 3 years and projected assets and liabilities for the next 2 years shall be provided.	
4.	Location and address of manufacturing facilities.	
5.	Full description of factories owned and the annual manufacturing capacities of various items made therein.	
6.	Details of the factory or factories where the offered equipment is proposed to be manufactured. This description should include the facilities and capacities of the particular factories including testing facilities and the processes used in manufacturing and testing. Where parts or components are purchased from outside, the details of equipment purchased and the names and experience record of the suppliers.	

Sr.No. Information to be Supplied Bid References

7. Detailed description of the quality control testing and research facilities. If the equipment is manufactured under license, the name of the licenser and details of the licensing arrangements, such as the duration of the license, the facilities provided to the bidder by the licenser and whether future improvements are available or not etc. A copy of the license agreement may be attached.

8. Names, qualifications and experience of the key technical personnel.

9. The time since the manufacturer has been in this business and the time since he has been doing work of similar nature.

10. The time since the particular equipment offered has been manufactured and the time for which it has been in service. The manufacturer shall have the following experience.

_____

_____

_____

(List the equipment and experience required)

11. Reference lists of similar works done by the bidder in its country and abroad indicating the name of customer, description and quantity of product, year of supply and the approximate value.

12. Details of projects under execution and future contractual commitments.

13. Banking reference, names of banks and addresses may be given to whom reference regarding financial capability of the bidder may be made, with authority to make inquiries from the bidder's bankers and clients regarding any financial and technical aspects.

Sr.No.	Information to be Supplied	Bid References

14. Information on any litigation or arbitration

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resulting from contracts completed or under execution by the bidder over the last ten (10) years. The information shall indicate the parties concerned, the matter of dispute, the disputed amounts and the result thereof .

Appendix C to
Instructions to Bidders

Domestic Goods (Value added in Pakistan) N/A

[Bidders claiming eligibility for domestic preference should fill in for supply items only, all columns hereunder and provide necessary documentation to substantiate their claim]

Sr. No.	Description of Indigenous Goods	Unit	Qty	Total Price of Goods Ex-Factory (Pak Rs.)	Domestic value added in the manufacturing cost as percentage of Ex-Factory Price	Amount of value addition (Pak Rs.)
1	2	3	4	5	6	7
Total in columns 5 & 7						

Computations:

A. Total amount of Value Addition (from Col.7) Rs_____
B. Total Ex-Factory Price of Indigenous Goods (from Col.5) Rs_____
C. Total DDP Price of imported supply items Eqv.Rs_____
D. Total Price of supply items [B+C] Eqv.Rs_____
E. % of value addition = [(A/D)x100] _____%
F. Domestic Preference =(15,20 or 25)% of B Rs_____

III- FORM OF BID AND SCHEDULES TO BID

FORM OF BID
(LETTER OF OFFER)

Bid Reference No. _____

_____
_____
(Name of Works)

To:

_____
_____
_____

Gentlemen,

1. Having examined the Bidding Documents including Instructions to Bidders, Conditions of Contract, Specifications, Drawings, Schedule of Prices and Addenda Nos. _____ for the execution of the above-named Works, we, the undersigned, being a company doing business under the name of and address _____ and being duly incorporated under the laws of _____ hereby offer to execute and complete such Works and remedy any defects therein in conformity with the said Documents including Addenda thereto for the Total Bid Price as indicated in the Schedule of Prices placed in our Technical Bid envelop.

2. We understand that all the Schedules attached hereto form part of this Bid.

3. We undertake, if our Bid is accepted, to commence the Works and to deliver and complete the whole of the Works comprised in the Contract within the time(s) stated in Preamble to the Conditions of Contract.

4. We agree to abide by this Bid for the period of 90 days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

5. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.

6. We undertake, if our Bid is accepted, to execute the Performance Security referred to Sub Clause 10.1 of Particular Conditions of Contract for the due performance of the Contract.

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

8. We do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other person or persons making a Bid for the Works.

Dated this _____day of _____20_____

Signature _____in the capacity of _____duly

authorized to sign bids for and on behalf of _____
(Name of Bidder in Block Capitals)



(Seal)

Address

_____

_____

_____

Witness:

(Signature)_____

(Name)_____

Address:

_____

_____

Occupation_____

SCHEDULES TO BID INCLUDE THE FOLLOWING:

- Schedule A to Bid: Specific Works Data
- Schedule B to Bid: Work to be Performed by Sub Contractors/ firm
- Schedule C to Bid: Proposed Programme of Works
- Schedule D to Bid: Deviations from Technical Provisions
- Schedule E to Bid: Deviations from Contractual Conditions
- Schedule F to Bid: Method of Performing Works
- Schedule G to Bid: Proposed Organization
- Schedule H to Bid: Integrity Pact

SPECIFIC WORKS DATA

Selection of Contractors for Engineering, Procurement and Construction of 1664 KWP Solar Power System along with 2MWH BESS

GENERAL REQUIREMENTS OF WORKS

The contractor shall be responsible for visiting the site to familiarize him with the scope of work, preparation of shop drawings and obtaining approval from the various authorities prior to execution of work. The contractor shall also be responsible for obtaining all materials and workmanship approval during execution and on completion of works. All costs and charges required by the various authorities shall be included in the scope of work.

Scope of Work

The selected bidder shall be responsible for:

- Project financing
- Engineering, Procurement, and Construction (EPC)
- Overall Operation & Maintenance during B.O.T period
- Performance assurance
- Handover to Aror University after concession period

1. STANDARDS, CODES, NOTICES, RULES & REGULATIONS

The entire electrical installation/work shall be carried out by a registered Contractor, authorized to undertake such work by the Pakistan Engineering Council.
All works shall be carried out in accordance with the latest edition of the Regulations of the Electrical Equipment of Buildings issued by the Institute of Electrical Engineers, the Contract Documents, The Electricity Rules and bye-laws that are in force from time to time. Any discrepancy between these Specifications and any other rules and regulations shall be brought to the notice of Engineer for his instructions and the decision of the Engineer shall be final and conclusive.

The Contractor shall be responsible for completing all formalities and submitting the test certificates as per prevailing rules and regulations. All standard requirements of NEPRA, AEDB and DISCO of that region shall be complied with.

The latest standards, codes and recommendations of reputable institutions shall be applicable for the material and equipment specified herein and for installation work. Such organizations to be BSS, IEC, NFPA etc. In case the Specifications lay down herein differ from those given in the standards, then the equivalent or better specifications shall govern.
Contractor shall maintain at the site office one copy of the standards/ codes/recommendations as applicable to the works and will furnish the same as and when required by the Engineer / Employer.

2. INTENT

It is the intent of the Electrical Drawings, Specification and BOQ that all work, Solar Panels, Inverters, BESS, Mounting Structure, Earthing, Lightening Arrestors, Monitoring Systems, Otl

equipment, DBs, conduits, wiring, Civil works and accessories shall be provided complete, commissioned, tested, adjusted and ready for operation.
The drawings, specifications BOQ shall be taken as whole and not separately since they are intended to explain and illustrate each other. Any item or work mentioned in drawings and missed in BOQ (vice versa) but necessary for completion of the work should be carried out by contractor without additional expense to the employer. Any apparatus, appliance, material or work which in BOQ or in drawing not shown but mentioned in the Specification, or Vice Versa, complete in all respects and ready for operation, even if not particularly specified, shall be provided by the contractor without additional expense to the Employer.

3. EXAMINATION OF SITE

Visit the site of the proposed works and obtain all information as to existing conditions and limitations and all proposed works on adjacent sites and in adjacent areas which might affect the works on this site.

Examine the documents including the Specifications and Drawings of all other Divisions before bidding and again before commencing any portion of the works.
Neither the employer nor the Engineer will be responsible for any claim for extra work or expense resulting from the failure of the Contractor to be fully aware of Site Conditions.

4. SHOP DRAWINGS AND MATERIAL SUBMITTALS

After the award of Contract, submit program of works. Along with the program, submit a schedule detailing proposed submission dates for all Material Submittals and Shop drawings.

Prepare and submit for approval working drawings showing full details of Solar Power System like Panel Placement, AC/DC wiring Layout, Structure Layout, Civil Foundations detail, DB's detail drawings, Earthing & Lightening Protection drawings, Remote monitoring detail with detail layout, Single Line Diagrams with Injections points which is clearly shows the injection with the existing system, wiring routes & space for placement of inverters. After final approval by the employer/consultant a sufficient number of copies as directed shall be furnished for distribution.

- Submit to the EMPLOYER for approval samples of Solar Panels, Mounting Structure material, DC Cable, AC Cable, Breakers, communication Cable, Earthing & Lightening protection material, Wiring Devices & necessary accessories to complete the project and of any other items as may be requested by the EMPLOYER/Consultant.

Assume responsibility for accuracy of equipment dimensions related to space available, accessibility for maintenance and service, compliance with inspection authorities' codes. Ensure that shop drawings indicate working weights of all equipment.

Import documents must be submitted before delivery of the imported items.

5. CO-ORDINATION

The Contract documents have been carefully coordinated to avoid overlapping or conflictions. However, should any discrepancies be noted between contract documents within a trade or between trades, they shall be immediately reported to the Consultant/Employer so that the required revisions or work directives may issue to all parties concerned, at the earliest possible date and no claim to be made to the principal for any such discrepancy.



6. ACCURACY OF DATA

The layout of Solar Panel etc. shown on the drawings is generally diagrammatic unless specifically dimensioned. The layout, which shall finally include all approved materials to be used on the job should be checked for interference with work of other trades and with existing conditions before installation. The right is reserved by the Consultant/Employer to make any reasonable change during the construction in location of equipment etc. its size as shown on the drawings in order to conform to the site conditions at no additional cost.

7. RECORD / AS-BUILT DRAWINGS

As the job progresses, mark on one set of prints to accurately indicate the status of installed work. Have the prints available for inspection at the site at all times. Before commissioning, finalize the As-Built drawings and submit 2 sets as draft to the engineer for checking and approval. Upon approval, submit three sets of prints and soft copies in auto cad format to the engineer for onward transmission to the employer.

8. OPERATION AND MAINTENANCE MANUALS

Upon successful commissioning, submit one draft of Operation and Maintenance Manuals for review and approval of Engineer. Separate binders shall be used as follows:

The minimum information required is as follows:

1. Catalogs highlighting the Make, Model and other necessary details for all Material and Equipment installed.

2. List of Local Agents / Suppliers for all Materials and Equipment with Telephone, Fax and Email address.

3. Detailed description of systems operation.

4. Procedures for Preventive, regular and the breakdown maintenance, with Manufacturer's Operation and Maintenance Catalog for all Systems / Equipment.

5. Commissioning data for all Systems / Equipment.

6. List of recommended spares.

7. Country of Origin Certificate

Upon approval of the draft by the Engineer, submit 3 set of manuals to Engineers for onward submission to the Employer.

9. SUPERVISION.

The contractor will maintain at site, as necessary for the performance of the Contract, qualified personnel and supporting staff, with proven experience in Installation, testing & Commissioning of Solar Power Project of the same nature and complexity.

10. CLEANING.

Each day as the work proceeds and on completion, clean up and remove from the premises all rubbish, surplus material, equipment, machinery, tools, scaffolds and other items used in

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the installation of the work. Clean out dirt and debris and leave the site clean with no stains and in a condition acceptable to the Engineer.

Where electrical items form part of the visible finish in the rooms, protect from over painting, etc. and give all items a final cleaning before handing over of the project.

11. ACCESSIBILITY, ACCESS PANELS AND DOORS.

Any item of equipment requiring maintenance shall be located so as to be accessible for maintenance or repair without removing adjacent structures, equipment, or other materials.

12. SITE CONDITIONS

All electrical equipment and components shall be selected and installed such as to operate satisfactorily and safely under the existing climatic conditions.

13. TESTING AND COMMISSIONING AT SITE

Upon completion of the installation or part of the installation, the Contractor shall carry out and be responsible for the installation, testing and commissioning of all equipment and integral systems, in stages if required, to ensure that it is in proper working order and capable of performing all of its functions in accordance with the specification and to the satisfaction of the Engineer. The Contractor shall be fully responsible for all equipment until each item of plant, equipment or system or part thereof has been tested, commissioned and accepted by the Engineer.
Any equipment damaged during installation & commissioning shall be replaced by new equipment by the Contractor at his own expense.
All testing and commissioning shall be carried out according to the requirements of the relevant Standards and regulations as may be stated or implied in this specification.

14. TAGGING & IDENTIFICATIONS

Solar Power System installation including DC strings, AC Cables, Communication cables, circuit breakers, switchgears, panels, equipment, isolators, should be neatly and clearly labeled internally and externally corresponding to the drawings and site conditions. The tags shall be Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Permanent adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch or as approve by Engineer.

The distribution panels shall be designated in accordance with the reference letters or number used in the specifications and/or shown on the drawing and the legend and description shall clearly spell out the full name of the equipment. Every circuit in DB's shall be marked with relevant circuit number as per single line diagram before performance of insulation test a) All distribution panels shall be provided with a substantial circuit sheet fixed by screws to the inside of the front cover with Chart under the respective circuit number. Spare circuit breakers shall not be printed "Spare" but left blank.

The particular phase connected to a circuit breaker and bus-bar shall be clearly indicated by marking with the appropriate color. Every DB should have an "as built load schedule" showing each circuit number and its serving pasted on the inner side of opening door to offer ease for maintenance.

15. EQUIPMENT PROTECTIONS

Unless otherwise noted, all equipment supply shall conform as a minimum to the following protection classes, in accordance with the BS standard.

With the exception of material specified to be hot dip galvanized after fabrication all metal works including conduits, outlets, boxes, hangers, frames etc. shall be given a protective treatment consisting of degreasing, de-rusting, two coats of zinc chromate / red lead primer and resin bonded powder coat during manufacture.

16. ASSOCIATED CIVIL WORKS

Except where separately stated in the Bill of Quantities the cost of all civil works associated with any BOQ item of electrical works, such as excavation and backfilling of earth, compaction of the earth, foundation pads, thrust boring, chiseling, making openings, etc. shall deemed to be included in the price quoted against respective items. No separate payment for such works will be made. Such works will also include repair of any damage to civil works caused by the Contractor during electrical installation.

17. STANDARD SYSTEM PARAMETERS

Unless otherwise specified elsewhere, all equipment and material shall be designed to operate satisfactorily with the following minimum requirements without any de-rating.

a) Voltage rating of equipment: 400 V, 3 phases + 10%
230 V, 1 phase + 10%

In general, the electrical color coding of switchgear cubicles, control panels, desks etc., shall be in accordance with the respective IEC Recommendations.

Live parts of electrical connections shall be color coded according to IEC as follows:

	Conductor Designation	Coding Alphanumeric	Color
A.C. Network	Phase 1	L 1	Red
	Phase 2	L 2	Yellow
	Phase 3	L 3	Blue
	Neutral	N	Black
D.C. Network	Positive	L+	Red
	Negative	L-	Black
Earthing	Protective Earth	PE	Green/yellow
	Earth	E	Green/yellow

18. GUARANTEE

The Contractor shall furnish written guarantee of the manufacturer or supplier with respect to satisfactory performance of each equipment. Guarantee shall be given for replacement and repair of part or whole of the equipment, which may be found defective in material or workmanship. The guarantee shall cover the duration of Defects Liability Period as defined in the Conditions of Contract. This guarantee shall not relieve the Contractor of his obligations and he will be fully responsible for the repair or replacement of any defective material in time, so as not to cause any undue delay in carrying out the repairs and/or replacements.

19. SUBSTITUTIONS

Wherever it is desired to substitute a different make or type of apparatus from that specified, all information pertinent to the adequacy and adaptability of the proposed apparatus, shall be submitted to the EMPLOYER/Consultant.

20. INVERTER ROOM IDENTIFICATION SIGNS / CHARTS

Danger Boards having signs and designation of the room shall be installed on the external door of Electrical and Machine Rooms. Shock/First Aid Charts shall be installed in INVERTER Room. Laminated single line and adequate detail drawings on proper boards highlighting the main system features shall be displayed/ fixed in respective electrical and communication rooms.

21. INSTALLATION INSTRUCTIONS - GENERAL

The Contractor shall furnish all labor, materials, tools and equipment required to install, connect, test and commission all electrical equipment specified herein, whether or not such equipment is furnished by him or by others.
For all equipment to be installed by the Contractor, the Contractor shall supply and install all erection materials such as foundation bolts, washers, nuts, etc. as required and without any additional costs.
The Contractor shall set out the works himself as per Specifications and Drawings and shall properly position the equipment on specified foundation/location. In general, the manufacturer's instructions for installation shall be followed. Any defect or faulty operation of equipment due to the Contractor not following the manufacturer's instructions shall be corrected and repaired by the Contractor at his own cost.

For any deviation from the working drawings that are deemed necessary by the Contractor due to site conditions, he shall submit the details and obtain the Engineer approval before starting such works.

22. FACTORY TESTS

Contractor shall provide the flash test report of the supplied solar panels with the required certifications and specification as specified in the Solar Power Generating System. In addition, contractor shall also provide local electrical properties test of the randomly selected Solar Panels on their own cost from a reputed lab as directed by the Engineer.
Provision for at least Four person's visits of production facility shall be made to include representative from the Client and the Consultant/Engineer. The contractor shall undertake all formalities as may be required for the Engineer or his representative to enable him make the visit.

All type and routine tests on AC/DC switchboards, Low tension cables and all other equipment shall be performed at the manufacturer's works in the presence of the Engineer and the Employer or their representative.
The Contractor shall inform the Engineer about the date and time of test of each equipment at least two weeks in advance. This shall, however, be done after the Contractor has got the test procedures duly approved by the Engineer. The witnessing of test by the Engineer and the Employer shall not absolve the Contractor from his responsibility for the proper functioning of the equipment, and for furnishing the guarantees referred to in clause 9.0. All test results shall be supplied in triplicate. All expenses for carrying out the tests as incurred by the Engineer and the Employer to witness it shall be borne by the Contractor and deemed to have been included in the tender bid.

FIELD TESTING – GENERAL

During the installation, the Contractor shall perform field tests on all equipment, cables, materials and systems. All tests shall be conducted in the presence of the Engineer or his representative for the purpose of demonstrating equipment or system compliance with Specifications. The Contractor shall submit for Engineer's approval complete details of tests to be performed describing the procedure, test observations and expected results.

The Contractor shall furnish all tools, instruments, test equipment, materials, etc., and all qualified personnel required for the testing, setting and adjustment of all electrical equipment and material including putting the same into operation.
All tests shall be made with proper regard for the protection of the personnel and equipment and the Contractor shall be responsible for adequate protection of all personnel and equipment during such tests. The cost of any damages or rectification work due to any accident during the tests shall be the sole responsibility of Contractor.
The Contractor shall record all test values of the tests made by him on all equipment. Three (3) copies of all test data and results certified by the Engineer shall be given to the Engineer for record purposes. These shall also include details of testing method, testing equipment, diagrams, etc.

The witnessing of any tests by the Engineer does not relieve the Contractor of his guarantees for materials, equipment and workmanship, or as any other obligations of Contract.

23. MAINTENANCE AND SERVICE DURING DEFECTS LIABILITY PERIOD

The Contractor shall provide all services, materials, and equipment necessary for successful operations of the entire system during the defects liability period. Provide necessary material required for the work. Minimize impacts on facility operations when performing scheduled adjustments and non-scheduled work.
The adjustment and repairs of the systems include all equipment, software updates, and control devices. Provide the manufacturer's required adjustments and all other work necessary.

Provide all software updates and verify operation in the system. These updates shall be accomplished in a time manner, fully coordinated with system operators, and shall be incorporated into the operations and maintenance manuals, and software documentation

TECHNICAL SPECIFICATIONS

1. SOLAR POWER GENERATION SYSTEM

The system shall be designed and sized as per the site requirements and shall consist of mainly the following:

- Solar photovoltaic panels
- Inverters
- Module mounting structure
- Junction boxes
- AC Distribution board
- Surge Arrester AC & DC
- Earthing protection system
- Cables and other accessories
- Lighting Protection System
- BESS

The PV array converts the light energy of the sun to DC power. The module mounting structure shall be used to hold the module in position. The DC power generated shall be converted to 3 phase, AC, 415V, 50 Hz. solar panels shall be integrated with the premises power supply from electricity authority.

a) SOLAR PV MODULES:

Since the light intensity in the region and the temperature parameters have been taken into consideration, we strongly recommend to go for PV Crystalline modules. The photovoltaic modules shall be designed, manufactured, and tested in accordance with the applicable standards as follows

b) TESTING, CERTIFICATION & QUALITY ASSURANCE

IEC61215 (2016) / IEC61730 (2016)
IEC61701 / IEC62716 / IEC60068 / IEC62804
ISO9001:2015: Quality Management System
ISO14001:2015: Environment Management System
ISO45001:2018: Occupational health and safety management systems
IEC Fire Type: Class C
Protection Class: Class II

All the certifications separately be attached in technical proposal

c) CERTIFICATION – MANUFACTURER

- The Manufacturer should have 10 Years of manufacturing experience.
- The manufacturer should have Authorized Distributor in Pakistan.
- The manufacturer should be Vertically Integrated Company.

d) SPECIFICAITONS & CERTIFICATIONS

- Cell Type: 144 N-Type Bifacial 720watt or above
- Minimum power should be 720W or above at STC: air mass AM 1.5, irradiance 1000 W/m², temperature 25°C
- Minimum Module efficiency ≥22%
- Operating Temperature: -40°C to 70°C
- Temperature coefficient of PMPP -0.29%/°C or better

- Temperature coefficient of VOC -0.25 %/°C or better
- Connectors: MC4 or comparable
- Maximum series fuse rating: 35A
- PID free (certificate should attached)
- Anti-reflective solar glass surface
- Relevant ISO and IEC Certifications should be attached and mentioned (IEC 61215, IEC 61730 & UL 1703. IEC 62804 (PID Free), IEC 60068-2-68, IEC 61701 (Salt Mist Level 6), IEC 62716 (Ammonia Resistance), ISO 9001:2015, ISO 14001, ISO 45001, OHSAS 18001).
- Module product warranty 12 years and performance warranty 30 years.
- A properly laminated sticker containing the following details should be available at the back side of the module
    - Name of the manufacturer/distinctive log.
    - Model Name and Type of Cell 'Technology.
    - Peak Watt Ratting (Wp) and Power Tolerance Range.
    - Voltage (Vmp) and Current (Imp) at STC.
    - Open Circuit Voltage (Voc) and Short Circuit Current (Isc).
    - Maximum System Voltage (Vdc) (i.e.: This should not be less than 1500 Vdc)
    - Dimensions of PV Module
    - Test Standard(s) to which the module has been tested and certified.
- following essential technical parameters of solar panel/modules should be provided with each pane/ supplied as well as in the technical proposal.
    - I-V curve for the solar photovoltaic module/panel.
    - Date and year of obtaining IEC PV module standardization qualification certificate.
    - Electrical Data (i.e: Pmax, Voc/Vmp, Isc/Imp at nominal Cell Operating Temperature (NOCT).
    - PV Module efficiency at STC.
    - Working temperature range of PV Module.
- Each panel should have factory equipped weatherproof terminal junction box having at least IP68 protection with provision of opening for replacement of DC cables, blocking diodes and easy debugging if necessary.
- Bidder should have a history of importing solar panels directly from the manufacturer in last three years, documentary evidence required.
- The PV modules offered should not be more than 6 months old from date of issue of work order.
- The Solar Module should be free from visual and cosmetics defects.
- The department/consultant on the expense of contractor/supplier shall verify Flash test reports with serial numbers from manufacturer for each panel (at the time of supply).
- All information regarding solar panels with above mentioned featured data should be accessible and verifiable online on the manufacturer website.
- IEC accredited lab test for solar panels is mandatory.
- Pre-Shipment inspection at manufacture factory by the Consultant / Owners Engineers.

Product datasheet and the certification should be attached separately with the bid.

2. HYBRID INVERTER:

- The inverter must provide a highly integrated system that combines on-grid, backup, and generator connections, and must include a built-in Energy Management System (EMS) for intelligent management. To maximize solar integration, the inverter shall support a maximum DC input voltage of 1500V, an MPPT voltage range of 300V to 1500V, and a maximum PV array power of up to 250 kWp. On the Inverter Specifications

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1500V, an MPPT voltage range of 300V to 1500V, and a maximum PV array power of up to 250 kWp.

- On the AC side, it shall deliver a rated AC output power of up to 125 kW and a continuous backup output capable of handling peak apparent power up to 1.1 times the rated power.
- The inverter must operate with a transformer less topology, utilize smart air cooling, and be housed in an IP66-rated enclosure capable of operating in temperatures ranging from -30°C to +60°C.
- Built-in safety mechanisms must include Arc Fault Circuit Interrupters (AFCI), PV reverse polarity protection, AC overcurrent protection, and anti-islanding protection.
- Battery Energy Storage System (BESS)
- The accompanying battery energy storage system shall utilize Lithium Iron Phosphate (LFP) 314Ah cells engineered to support a 95% Depth of Discharge (DoD).
- The battery solution must be highly scalable to meet varying capacity expansion requirements ranging from 2 hours to 8 hours of storage duration.
- For maximum thermal efficiency, the solution shall include a 241 kWh liquid-cooled battery cabinet operating with a 0.5P charge and discharge rate.
- The liquid-cooled cabinet must feature minimum IP55 degree of protection, a C4-Medium anti-corrosion rating, and a multi-layered fire suppression system that includes pack-level aerosols, cabinet-level aerosols, and a water sprinkler.
- Certifications & Compliance
- The inverter complies with standard grid connection and safety protocols, including IEC61727, IEC62116, IEC62109-1, and IEC62109-2.
- Additionally, it meets electromagnetic compatibility standards EN61000-6-2 and EN61000-6-4.
- Further compliance with international safety and performance standards including IEC 62477-1 (Power electronic converter systems safety), IEC 62920 (EMC for PV systems), EN 55011, EN 50549, and AS/NZS 4777.2, IEC 63027 (DC arc detection) is also supported to supplement its built-in AFCI capabilities.
- IEC / UL Certification, C4 Medium Anti Corrosion degree IP 55 Enclosure with (Pack-level aerosols, Cabinet-level aerosols, and Water sprinkler) to meet commercial fire safety requirements.AC side, it shall deliver a rated AC output power of up to 125 kW and a continuous backup output capable of handling peak apparent power up to 1.1 times the rated power. The inverter must operate with a transformerless topology, utilize smart air cooling, and be housed in an IP66-rated enclosure capable of operating in temperatures ranging from -30°C to +60°C. Built-in safety mechanisms must include Arc Fault Circuit Interrupters (AFCI), PV reverse polarity protection, AC overcurrent protection, and anti-islanding protection.

Product datasheet and the certifications should be attached separately with the bid

3. BATTERY ENERGY STORAGE SYSTEM:

- The system is designed to maximize solar energy utilization, with BESS incorporated to provide backup for load of 100kW from 5:00PM – 8:00AM and support the load of 600kW from 9:00AM – 4:00PM along with solar generation of 1.66MW. All the data of BESS must be accessible to the owner of the facility.
- The energy storage and power conversion system shall feature a Commercial and Industrial (C&I) hybrid inverter utilizing a 1500V DC to 400V AC architecture to minimize the Levelized Cost of Energy (LCOE).

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- The accompanying battery energy storage system shall utilize Lithium Iron Phosphate (LFP) 314Ah cells engineered to support a 95% Depth of Discharge (DoD).
- The battery solution must be highly scalable to meet varying capacity expansion requirements ranging from 2 hours to 8 hours of storage duration.
- For maximum thermal efficiency, the solution shall include a 241 kWh liquid-coo' '

battery cabinet operating with a 0.5P charge and discharge rate.

- The liquid-cooled cabinet must feature minimum IP55 degree of protection, a C4-Medium anti-corrosion rating, and a multi-layered fire suppression system that includes pack-level aerosols, cabinet-level aerosols, and a water sprinkler.
- IEC / UL Certification, C4 Medium Anti Corrosion degree IP 55 Enclosure with (Pack-level aerosols, Cabinet-level aerosols, and Water sprinkler) to meet commercial fire safety requirements.AC side, it shall deliver a rated AC output power of up to 125 kW and a continuous backup output capable of handling peak apparent power up to 1.1 times the rated power. The inverter must operate with a transformer less topology, utilize smart air cooling, and be housed in an IP66-rated enclosure capable of operating in temperatures ranging from -30°C to +60°C. Built-in safety mechanisms must include Arc Fault Circuit Interrupters (AFCI), PV reverse polarity protection, AC overcurrent protection, and anti-islanding protection.
- The accompanying battery energy storage system shall utilize Lithium Iron Phosphate (LFP) 314Ah cells engineered to support a 95% Depth of Discharge (DoD). The battery solution must be highly scalable to meet varying capacity expansion requirements ranging from 2 hours to 8 hours of storage duration. For maximum thermal efficiency, the solution shall include a 261 kWh liquid-cooled battery cabinet operating with a 0.5P charge and discharge rate. The liquid-cooled cabinet must feature an IP55 degree of protection, a C4-Medium anti-corrosion rating, and a multi-layered fire suppression system that includes pack-level aerosols, cabinet-level aerosols, and a water sprinkler.

Product datasheet and the certification should be attached with the bid

4. MODULE MOUNTING STRUCTURE:

- Structure should be fixed tilt at the height of 16ft for single road and at the height of 10ft on double road. Single road is 24ft wide. Site survey can be conducted for better understanding.
- The angle between the modules and the horizontal plane shall be 5degrees.
- Mounting structure material should be of Hot dip Galvanized as per the standard defined in ASTM-A36 & ASTM-A123 and must be resistant to corrosion, sandstorms
- The mounting structure must be able to withstand basic wind speed of 150km/hr with wind gust for 3 seconds.
- Structure Drawing and wind speed calculation report ASCE 7-10, Considering 150km/hr. Provided report should be of any reputed software.
- The Bidder shall provide detailed drawings of foundations.
- The Bidder shall provide Drawing of the structures.
- The applicable construction codes for each structural element should be quoted.
- The mounting structures must be earthed for maximum short-circuit current and lightning protection.
- The stability of the supporting structure after installation shall be certified and guaranteed by the Contractor.
- All nuts and bolts should be made of good quality Stainless Steel.
- The structure should be designed to allow easy replacement of any module.
- The structure exposure category should be C.
- Structure should have walkways where required for proper cleaning of modules.

5. DC CABLE FOR SOLAR:

- The main design requirement is to reduce ohmic losses of DC cabling. without adversely affecting the cost trade-off. to < 2.5 % at full power under STC conditions
- Design calculations through cable loss simulation have to be provided by the bidder for review & approval.
- String cable shall be 1500 V/Class II (according to protection class II / 1600V, IEC 61140, tinned copper conductor, XLPO Insulation. Temperature: 90 ° C (Temperature M

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allowable: 120 ° C). Halogen free.

- Voltage Drop shall be less than 3%.
- DC cables shall be suitable for the environmental conditions at the Project site. including UV protection and rodents.
- All cables shall be UV resistant PVC double insulated with each core individually insulated. Insulation rating of cables shall be as per IEC standards.
- All cables shall have annealed copper stranded conductors
- All above ground cables shall be routed in rigid galvanized steel cable trays or metallic galvanized steel conduits.
- All underground cables shall have mechanical protection in the form of galvanized steel wire, steel tape or steel interlocked armor. If unarmored cables will be used then the same will be routed in HDPE pipe or rigid galvanized steel conduits
- All cable connections with industrial cable connectors. (MC4 or equivalent) Used connectors have to be compatible with connectors of panel supplier.

Product datasheet and the certification should be attached with the bid

6. LOW VOLTAGE PANELS & SWITCHGEARS

This Specification covers the minimum requirements for the selection, application, procurement, testing and installation of low-voltage switchgear and associated bus.

a) MAIN / SUB-MAIN LOW VOLTAGE PANELS

The main and sub-main Switchboard shall be of floor mounted construction system, incorporating MCCB(s) bus-bars, fuses, measuring equipment etc. all as required and complying to the latest editions of BS EN 60439-1. The switchboard shall be from a reputed manufacturer as per the schedule.

All circuit breakers and busbar ratings shall be as per the load schedules and drawings. All circuit breakers and busbars should be rated for 45 °C ambient temperature. All auxiliary power supplies shall be provided as per the manufacturer's requirement. The fault-current calculation guidelines stated in IEC shall be adhered to when selecting circuit breaker ratings.

The short-circuit current rating of the low-voltage switchgear shall, as a minimum, be 10 percent greater than the calculated available short-circuit current. It is recommended that the rating be 20 percent above the calculated value.

The ambient temperature rating of the switchgear shall be selected in accordance with the maximum ambient temperature of the equipment and shall be 45°C as a minimum.

Low-voltage switchgear shall be, as a minimum, capable of withstanding a current equal to the short-time current capacity of the main circuit breaker for two periods of 0.5 seconds separated by a 15 second interval of zero current. This current shall be maintained without danger to operating personnel and without electrical, thermal or mechanical damage or permanent deformation to the bus, structure or enclosure.

b) DESIGN & CONSTRUCTION

Enclosures shall be made of sheet steel. The basic framework should be roll-formed from 1.6 to 2 mm electro-galvanized steel coated with high-solid enamel, polyester electrostatic spray and oven baked. The doors and panels shall be iron-phosphate steel, coated like the framework but also with primer. The color shall be RAL 7035 or equal. The base frame shall be of minimu

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3mm thick Electro galvanized steel.

Compartments shall be easily accessible for maintenance purposes. Barriers shall be included between each compartment to contain an internal fault as defined in BS / IEC standards to ensure safe maintenance on any outgoing circuit when the remainder of the board is alive. Each compartment shall be provided with a separately fixed compartment thermostat controlled heater at the bottom of each compartment. The maximum height of the enclosure shall be 1800 mm. All meters, lamps, operating handles shall be within a maximum height of 1500 mm. All dimensions shall be of uniform appearance. All live conductors shall be shielded in such a manner that they cannot be accidentally touched when the doors are open. All doors and plates shall be interchangeable and may be hinged left, right, top and bottom as standard. Doors shall be provided with an integral gasket and earth stud and a range of locks to meet all regulations. All internal separations shall be from standard pre-fabricated plates. The usage of Bakelite, fiber sheets or any other material to provide internal separation will not be acceptable. The internal separation between compartments and sections shall be at least IP 40.

Suitable cableways shall be provided for each functional unit section. There shall be front access for cabling purposes. It shall be possible to safely terminate or work on the outgoing cables of any functional unit without having to switch off the main breaker or adjacent functional units. Switchboards shall be suitable for bottom or top cable entry as specified. All openings and entries shall be vermin proof. Switchboards shall be arranged such that safe access (front, rear, side) may be readily obtained. Adjustable gland plates, adequate channel frames and cable clamps for cable supports shall be provided.

c) BUS-BARS

Bus-bars shall be of rectangular cross section HDHC tinned copper and suitably rated for continuous operation. The main bus-bar rating shall be the same throughout the entire length of the switchboard. The bus-bars and primary connections shall comply with BS 159. The surface temperature of the bus-bar should not exceed 85 °C over an ambient of 45 °C. Connections to incoming circuit breakers shall be of the same rating.

Bus-bars shall be installed in a separate chamber and shall run along the whole length of the switchboard, which allows for easy extension in the future. Vertical droppers if any, shall run behind each functional unit section. Busbars shall be rigidly supported along their entire length. The busbar supports shall be of a high-grade polymer. The mechanical and dielectric strength of the busbars and supports shall be capable of withstanding the worst fault conditions and as per ASTA testing requirements.

The main busbar system shall be of a parallel 2 bar per phase arrangement, which eliminates the need for drilling or bending of busbars at joints. All switchboards shall be complete with a neutral and earth bar running along the full length of the panel. The cross section of the neutral bar shall be same as that of the phase conductor and that of the earth bar is at least half the size as that of the phase bar.

Busbars and connections shall be color coded for phase identification and shall conform to the phase sequence R-Y-B, counting from left to right, upper to lower and from near to remote when viewed from the operating side of the switchboard.

Under no circumstances will common earth / neutral bar be accepted. Earth bars, neutral bars and wiring of the switchboard and so that all outgoing neutral and earth conductors can be

readily and safely connected and disconnected without moving other cables or disconnecting the incoming supply to the switchboard.

d) DRAWINGS AND INFORMATION:

A drawing pouch / pocket shall be provided in each panel and laminated load schedules and approved schematic drawings (Framed) shall be providing.

The vendor shall furnish following submittal after placement of order:

General Arrangement drawing showing front view, plan, foundation plan, floor cutouts and trenches for external cables, elevations, transport sections and weights.

Sectional drawings of various types of feeders, panels showing general constructional features, mounting details of various devices, busbars, current transformers, cable boxes, terminal boxes for control cables etc. Schematic and control wiring diagrams for each type of feeder and protection including indicating devices, metering instruments, alarms, space heaters etc.

7. AC CABLES:

- AC cables shall be made of copper/aluminum. Datasheets, Make, Certifications, and warranties should be provided with proposal.
- Rated voltage, nominal voltage between phase and neutral and nominal voltage between phases have to be specified by the Bidder.
- AC cables shall be suitable for the environmental conditions at the Project site, including UV protection and rodents.
- The main design requirement is to reduce ohmic losses of AC cabling, without adversely affecting the cost trade-off, to below 2% under STC conditions. (Design calculations through cable loss simulation to be provided by the Bidder for review & commenting).
- All underground cables shall have mechanical protection in the form of galvanized steel wire, steel tape or steel interlocked armor.

8. CABLE TRAYS

a) GENERAL

Under this section of the Contract cable trough (cable tray) shall be installed to support distribution cables, communication cables and all wiring cables not generally installed in conduit and or trucking. The cable trough shall be installed in such a manner to enable easy access for cable installation.

The cable trough shall vary in type, i.e. where large armored cables are installed, ladder rack type cable trough shall be permitted. Where smaller type communication cables are installed, ventilated type cable trough shall be permitted. Cable trough shall be galvanized finished.

b) QUALITY ASSURANCE

Subject to compliance with the requirements of the Contract Documents, acceptable manufacturers are to be firms regularly engaged in manufacturer of all materials specified in this section of types and sizes required, whose products have been in satisfactory use under similar service conditions for not less than ten years.

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c) SUBMITTALS

Submit the standards to which the cable trough is manufactured to. Submit shop drawings and data in accordance with the general requirements of the contract. Indicate the various types of cable trough with terminology used. Show actual cable trough installation details, size and suspension system.

d) PRODUCTS

The cable trough system shall be of one manufacturer and shall include factory made trays, tray fittings, connections, complete with accessories and supports to from a complete tray support system. The cable trough system shall include the factory-made tray elements. Straight trays and ladders, fittings and horizontal and vertical bends of various angles crosses, tees, wyes, reducers, vertical riser elements, connectors, joint plates and all necessary fixing accessories including supports. No local or site fabrication of any cable trough system including ceiling and wall supports are acceptable. Threaded rods for ceiling supports are not acceptable.

The whole of the tray work, fittings, supports shall be of mild steel hot dipped galvanized after manufacture / imported GI Sheet. The thickness of the protective sheath on any element shall not be less than 90 microns.

Cable trays shall be constructed from mild steel of minimum thickness 16 gauge (1.5mm). Height shall be 75/100mm. Trays in excess of 300mm width shall be of minimum thickness 14 gauge (2.0mm). Flange height shall be 100mm. Insert elements, bolts, screws, pins etc., shall be mild steel cadmium plated/hot dip galvanized. Tray work shall have oval perforations. Ladder type trays shall be used as required and/or approved by the Employer. All trays (straight and fittings) to be heavy duty returned flanged type unless specified otherwise.
Tray component is to be accurately rolled or formed to close tolerance and all edges rounded. Flanges are to have full round smooth edges. Ladder racks for widths up to and including 300mm shall be constructed from rolled steel sections of minimum thickness 16 gauge (1.5mm). Height shall be 75/100mm. Ladders in excess of 300mm width shall be C Section construction with a minimum thickness of 14 gauge (2.0mm). Height shall be 100mm. The rungs shall be spaced at a maximum 300mm.
Unless indicated otherwise on drawings, cable trays shall be used in the range and 150mm to 750mm wide, in five preferred standard sizes: 150, 300, 450, 600 and 750mm. Other sizes shall be used where specified or previously agreed with the Employer. Return flanges shall be a minimum of 10mm deep, unless otherwise specified. Minimum radii at side rails, horizontal, and vertical tees and crosses shall be in accordance with the Manufacturer's standard.

e) INSTALLATION

Install all cable trays and ladder racks strictly in accordance with IEE Codes and local authorities' requirements. Drilling, machining or cutting shall not be carried out after application of protective coat, unless previously agreed by the Employer. If cutting or drilling is necessary, edges shall be cleaned up and painted with zinc-based paint before erection. Provision shall be made when installing all cables and cable trays for the expansion and settlement of the building. Cables shall be fixed to the trays/ladders by means of PVC cleats and flame-retardant cleats for flame/fireproof cables with galvanized bolts, nuts and washers. Use galvanized metal trefoil cleats with rubber pad for single core cables 5 Control cables run and clipped in groups shall not exceed twelve in number and shall be not more than double banked. Power cables shall be laid in a single layer except with the prior approval of the Employer. Power cables

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should be spaced 2D between centers of cables throughout the run of cables. Submit calculations for voltage drop for cables and increase the size if necessary.
Vertical distances between trays mounted horizontally shall be minimum of 250mm. Local reduction of distances between trays will be allowed to a minimum of 150mm with approval from the Employer. Trays shall be adequately supported to prevent sagging by more than 3 Deg. between fixed points. All supporting steelwork shall be fixed at not more than 1-meter centers unless otherwise specified.

Where cable tray pass through floor arrange for 100mm concrete curb around opening and fire sealants shall be provided. The Contractor shall submit calculations relating to tray / ladder work and tray / ladder supports demonstrating acceptable mechanical stresses and sag.
Cable trays shall be constructed from mild steel of minimum thickness 16 gauge (1.5mm). Height shall be 75/100mm. Trays in excess of 300mm width shall be of minimum thickness 14 gauge (2.0mm). Flange height shall be 100mm.Where cable tray is intended to cross a series of beams the tray shall be supported from each beam it crosses by metal supports suspended from below the underside of the beam - the space between the tray and the beam underside surface shall not exceed three times the diameter of the largest cable to be carried on the tray. Cable tray covers are only required on roofs or outdoor where cables are installed exposed to weather conditions or as specified in the BOQ.

f) EARTHING

The entire cable tray and ladder system shall be bonded and 12mm x 1.5mm tinned copper shall be bolted across each joint in the system by means of galvanized nuts and bolts, complete with flat and spring washers. Tray systems shall be bonded to the main building earthing system as required or directed by the Employer.

9. GROUNDING SYSTEM

a) GENERAL

This section described the grounding and bonding system components for active green earth system. Each and every electrical / mechanical equipment computer, panels, mechanical equipment, ventilation fans, metal structures etc. should be connected to earthing system. The earthing system should be made by connecting all the earthing electrodes by copper conductor of specified size as shown on drawing, in such a way to from a ring. Contractor has to ensure a minimum earth resistance of 2.0 OHM. If difficulty is faced in getting this value additional earth electrodes be added into the ring system.

b) ACTIVE GREEN EARTH TECHNOLOGY (AGE-T)

AGE-T is an electro-chemical grounding electrode that automatically conditions the soil/rod interface. This is accomplished by absorbing local moisture to facilitate the electrolytic process. The installation must be accomplished in such a manner as to encourage this process.

To install the AGE-T, first bore a hole in the selected location to a diameter of not less than six (6) inches to accommodate the Earth Conductivity Enhancement Compound (ECEC) and a depth equal to the length as shown in the details and BOQ.

Remove all of the tapes covering the absorption and electrolyte holes.

Insert the electrode in the bored hole to its full length. It is preferable to leave the top exposed and protected by the special Earth Inspection Chamber assembly, as illustrated.

Tamp the earth in place, leaving space to reach the connections and to install the Earth Inspection Chamber assembly.

Make the connection to the AGE-T copper electrode.

Do not install in a place where watershed or downspout carry-off will flood the unit. Provide for carry-off when you install. The unit may be cemented or paved around, providing above instructions are followed and may be installed indoors. Upon completion of installation of the earthing system, resistance-to-ground (earthing connection) shall be tested with a resistance tester. Where tests indicate resistance-to-ground is over 5 ohms, appropriate action shall be taken to reduce resistance to 5 ohms or less, by installing additional, properly spaced, ground electrode and treating soils in proximity to ground electrode. A retest shall be performed to demonstrate compliance.

c) GROUNDING CONDUCTORS OR EARTH LEADS

The earth leads shall be provided from the active green earth electrodes to the earth test point in external area and shall be of tin-plated bare copper conductor type. The termination of earth leads at the electrode end shall be though exothermic cad weld jointing method. A PVC insulated earth continuity conductor of specified size as given in drawing and BOQ shall be laid and connected to the grounding bus bars and from the grounding bus bars to each equipment as shown in the drawings.

d) EARTH TEST POINTS

These points are for testing of earthing systems. At these points hot work can be separated and can be tested for continuity and resistance. Earth Test Point shall be made of copper bar and enclosed in powder coated box as per the sizes shown in the drawings and BOQs.

e) EARTH INSPECTION CHAMBERS

These should be made of pre cast concrete with a cover lid and should be placed over the electrode in level with the finished ground level. The cover lid should have marking showing its number and written "Earth Electrode" in Urdu & English.

f) EARTH CONNECTING POINT / MAIN / SUB MAIN GROUNDING BUS BARS

The Earth Connecting Point / Grounding Main & Sub Main Bus Bars shall be part of the building grounding electrode system for the electrical infrastructure.

The ECP copper bar shall be electro-tin plated to ensure low resistance corrosion free contact between the lugs and busbars.

g) CODES AND STANDARDS

The latest editions of following standards / codes shall be applicable for the materials specified within the scope of this section:

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BS 951 - Earthing clamps
CP 1013 - Earthing
BS 2873 - Copper and copper alloys
BS 2874 - Copper and copper alloys - Rods and section (other than forging stock)
BS 1433 - Hard drawn bare copper conductor for earthing
BS 6346 - PVC insulated cables.

10. LIGHTNING PROTECTIONS

a) GENERAL

- The Early Streamer Emission Lightning Protection System, comprising of ESE Lightening Arrestor shall be provided at top of each Structure/Tower/Building/Rooftop. The Arrestor shall be mounted on 3" dia hot dipped galvanized pipe at least 5 meters from the top of the building/Structure.
- The down conductors shall be 95 sq-mm bare copper conductor or as mentioned in the BOQ shall be installed as shown in drawings welded with the Earth Connecting Point. Continuity shall be checked and recorded for each pi.
- Contractor should also include in his scope inspection by manufacturers authorized representative to ensure correct installation.
- All metal work on or around the building must be bonded to the lightning protection network to avoid side flashing.
- All materials used throughout the installation shall be either copper or copper-based components which are corrosion resistant and compatible with the application.
- The Contractor shall submit fully detailed shop drawing for the arrestors, down conductors, earth termination network and bonding and shall be responsible to provide all the necessary accessories to integrate the system with the architectural finish of the building.

b) Electronic System Surge Protection

- Electronic system surge protection shall be used for the, Incoming Main Power Supply:
- A suitable protection should be installed in the main LV Panels.
- The ESP shall be connected in parallel with the supply. ESP should be installed within the LV Panel by the panel assembler.
- HRC Fuses shall be provided in the connecting leads as required by the Specialist.
- ESP to have neutral earth warning light, to detect if there is excessive voltage present between neutral and earth.
- Protection shall be tested in accordance with the requirement of:
- BS6651: 1999 'Protection of Structures against lightning' (Appendix C).
- BS2914:1972 'Specification for surge diverters for alternating current power circuits.
- IEEE C62.41 - 1991 'Recommended practice on surge voltage in low voltage AC Power circuits.'
- The protector must not interfere with or restrict the system normal operation. It should not:
- Corrupt the normal mains power supply.
- Break or shutdown the power supply during operation.
- Have an excessive earth leakage current.
- The protector shall be rated for a peak discharge current of no less than 10 KA (8 / 20 microsecond waveform) between any two conductors (phase to neutral, phase to earth, neutral to earth).
- The protector shall limit the transient voltage to below equipment susceptibility levels. Unless otherwise stated, the peak transient let-through voltage shall not exceed 600 volts. For protectors with a nominal working voltage of 230 or 240 volts, when tested in accordance with BS 6651 :1999 Category B - High (6 kV 1.2 / 50mircorsecond open circuit voltage, 3kA 8/20

microsecond short circuit current).

- This peak transient let through voltage shall not exceed for all combinations of conductors:
- Phase to neutral
- Phase to earth.
- Neutral to earth.
- Mains protectors (installed in shunt / parallel) should have continuous indication of its protection status and the presence of power. Status indication should clearly show per phase.
- Full protection present.
- Reduced protection - replacement required.
- No protection - failure of protector.
- The status indication should warn of protection failure between all combinations of conductors, including neutral to earth. (Otherwise, a potentially dangerous short circuit between neutral and earth could go undetected for some time). This should include early warning of excessive neutral to earth voltage.

11. JUNCTION BOXES

- The junction boxes shall have suitable cable entry points via PV Connectors and outgoing cables shall be through cable glands of appropriate sizes.
- Suitable markings are provided on the bus bar for easy identification & cable ferrules shall be fitted at the cable termination points for identification.
- Suitable surge protection shall be used at the terminals of array junction boxes for external over voltage protection and also for lightning protections.
- The array junction boxes should be Weather-proof 3 in 2 out Array Junction Box.
- The Positive Input of AJB should be through Fuse & Negative Input through Terminal Block.

List of Approved Manufacturers/Suppliers

All equipment and materials provided under this contract shall be procured from the following manufacturers/suppliers only. Alternatives may be approved from the Engineer before the bid is submitted.

1.	Solar Panels	Jinko/JA or AAA Rated Solar Panels N-Type(Bi-Facial)
2.	Battery Energy Storage System (BESS) & Inverter	Huawei/Sungrow/Sigenergy or equivalent
3.	GI Structure	Local Made
4.	AC Cables	Pakistan Cables/Fast Cables/equivalent
5.	DC Cables	Kuka/Shozou/equivalent
6.	Cable Lugs, Ferrules & Other Accessories	Cembre/Equivalent
		Raychem/Equivalent
		3 M (USA)
7.	Contactors / Relays	ABB/
		Telemecanique
		Finder / equivalent
8.	AC Circuit Breaker	ABB
		Schneider/equivalent
9.	DC Circuit Breaker	Chint
		Schneider/equivalent
10.	Surge Protector Device	Chint
		Phoenix
		Schneider/equivalent
11.	Voltmeters / Ammeters	Saci, Spain
		GEC, UK
		Hobut, UK
		Revalco, Italy/equivalent
12.	PVC Conduit & Accessories	PakArab
		Dadex, Karachi / equivalent
13.	Steel Conduit & Accessories	IIL, Karachi
14.	RCC Pipe	N/A
15.	Earthing & Lighting Protection System	LPI, Australia / equivalent
		Application Technologic as
16.	Switchgear manufacturers	Yuwatech
		Power Engineering
		Hussain & Co. / equivalent
17.	Cable Tray	Ezzi Engineering
		Hafiz Engineering
		Electroline / equivalent
18.	Weather Station	Rain wise
		Seven Sensors / equivalent
19.	Fuel Saver Controller	Siemens
		Elum
		Encombi / equivalent
20.	Data Manager	Huawei/Sungorw
21.	Energy Analyzer	Janitaza
		Schneider / equivalent



Bill of Quantities (BoQ):

Correct and verifiable performance and technical parameters must be specified for each item and filled in the forms provided below: -

NAME OF MANUFACTURER / SUPPLIERS OF EQUIPMENT/ MATERIAL / RELEVANT TECHNICAL DATA ON WHICH THE TENDER IS BASED

Give hereunder, item wise list of Manufacturer/ supplier along with address:

S. No	Equipment Description	Make, Model, Manufacturer's Name, Country of Origin	Address, Contact E-mail

BOQ – SOLAR SYSTEM

- The estimated cost of this Project is **PKR 350,000,000** (Pakistani Rupees Three Hundred Fifty Million Only). This estimate is provided for the information of prospective bidders only and does not constitute a commitment by the Employer to award the Contract at this value.
- Aror Univeristy shall pay Capacity Charges at the rate of PKR 75,000,000 including all applicable Taxes and operational & maintenance costs per annum.
- All operations, maintenance, repair, replacement, and associated costs of the facility shall be the sole responsibility of the Contractor throughout the contract term.
- The Contractor shall ensure the contracted demand power is available in accordance with the agreed performance parameters and availability requirements.
- The system will cater to a 600 KW load from 9:00 AM to 4:00 PM (7 Hours) and extra power may be used as per requirement and availability in daytime. After 4:00 PM (17 Hours) the load on the system will be reduced to approximately 100 kW throughout the year.
- The bidder is advised to carry out a site visit before submitting the bid

S.No.	Description	Total lump-sum Price
1	Design, Engineering, Procurement, Supply, Installation, Testing, Commissioning, and successful handover of a complete 1664 KW DC Coupled Solar Photovoltaic (PV) Power Generation System integrated with a Battery Energy Storage System (BESS) with 10-year replacement warranty. The scope shall include, but not be limited to, solar PV modules 720watt or above, inverters 125kw or above, battery energy storage system 2MWH (Useable), battery management system (BMS), mounting and support structures, DC and AC cabling, combiner boxes, switchgear, protection and control equipment, monitoring and SCADA systems, earthing and lightning protection systems, communication infrastructure, civil and structural works, Transformers, HT Panels, LT Panel, ATS, Control Room inclusive of all civil work and all associated auxiliaries and balance-of-system (BOS) components necessary to deliver a fully integrated, safe, reliable, and operational facility. The Contractor shall provide all labor, materials, equipment, tools, documentation, training, warranties, Operation and maintenance till handing over of the project and services required for the complete execution of the works in accordance with the Contract Documents, specification, applicable international standards, local regulations, and the Engineer's requirements.	
	TOTAL PROJECT PRICE (INCLUSIVE OF ALL applicable taxes and O&M Cost) RS.	
	Proposed Number of Months/Years for Deferred Model (A)	
	Total project cost inclusive of O&M Cost and applicable taxes (C=(AxB))	

Security Structure

To ensure payment security, the following structure will be implemented:

Institutional Approval: Project subject to **Statutory Approval** of Aror University

Financial Security

- **Bank Guarantee (BG)** to be provided by the Aror University

Additional Provisions

- Payment security mechanism to be detailed in contract.
- Default and cure periods to be defined in the contract.
- Two way LD mechanism will be defined in the contract.

SCHEDULE – B TO BID

WORK TO BE PERFORMED BY SUBCONTRACTORS

The bidder will do the work with his own forces except the work listed below which he intends to sub-contract.

Items of Work to be Sub-Contracted	Name and address of Sub-Contractor	Statement of works previously executed (attach evidence)

Note:

1. No change of Sub-Contractor shall be made by the bidder without prior approval of the Employer.

2. The truthfulness and accuracy of the statement as to the experience of Sub-Contractors is guaranteed by the bidder. The Employer's judgment shall be final as to the evaluation of the experience of Sub-Contractors submitted by the bidder.

3. Statement of similar works shall include description, location & value of work, year completed and name & address of the clients.

SCHEDULE – C TO BID

PROPOSED PROGRAMME OF WORKS

Bidder shall provide a programme in a bar-chart/CPM/PERT form showing the sequence of work items by which he proposes to complete the work of the entire Contract. The programme should indicate the sequence of work items and the period of time during which he proposes to complete the Works including the activities like designing, schedule of submittal of drawings, ordering and procurement of materials, manufacturing, delivering, construction of civil works, erection, testing and commissioning of Works to be supplied under the Contract.

SCHEDULE – D TO BID

DEVIATIONS
FROM
TECHNICAL PROVISIONS

It is presumed that the bidder shall not take any deviation. However, if he intends to take deviations to the specified terms, those must be listed in the space provided below:

Sr. No.	Clause No. / Section No.	Deviations/Clarifications

[Note**:** Attach additional sheets, if necessary]

SCHEDULE – E TO BID

DEVIATIONS
FROM
CONTRACTUAL CONDITIONS

It is presumed that the bidder shall not take any deviation. However, if he intends to take deviations to the specified Contractual/Commercial Conditions, those must be listed in the space provided below:

Sr. No.	Clause No. / Section No.	Deviations/Clarifications

[Note: Attach additional sheets, if necessary]

SCHEDULE – F TO BID

METHOD OF PERFORMING WORKS

The bidder is required to submit a narrative outlining the method of performing the Works. The narrative should indicate in detail and include but not be limited to:

- The sequence and methods in which he proposes to carry out the Works, including the number of shifts per day and hours per shift, he expects to work.

- A list of all major items of constructional and erection plant, tools and vehicles proposed to be used in carrying out the Works at Site, including number of each kind, make, type, capacity of all equipment, working condition, which shall be deployed by him for Civil Work and Erection, Testing and Commissioning of the Works, in sufficient detail to demonstrate fully that the equipment will meet all the requirements of the Technical Provisions.

- The procedure for installation of equipment and transportation of equipment and materials to the site.

- Details regarding mobilization in Pakistan, the type of facilities including personnel accommodation, office accommodation, provision for maintenance and for storage, communications, security and other services to be used.

- Organization chart indicating head office & field office personnel involved in management, supervision and engineering of the Works to be done under the Contract.

SCHEDULE – G TO BID

PROPOSED ORGANISATION

The bidder shall list in this Schedule the key personnel he will employ from Head office and from Site office to direct and execute the Works, together with their names, qualifications, experience, positions held and their nationalities.

- Head Office:

- Site Office:
  Contractor's Representative
  Site Superintendent
  Supervising Engineer
  Plant Erectors
  Construction Supervisors
  Other Key Staff

The CVs of key personnels to be furnished in the format given below.

Curriculum Vitae Format for Key Personnel

1. **Proposed Position :**
2. **Name of Staff :**
3. **Profession :**
4. **Date of Birth :**
5. **Years with Firm :**
6. **Nationality :**
7. **Membership in Professional Societies:**
8. **Education :**
9. **Key Qualification :**
10. **Employment Record :**
11. **Languages**

Language	Speaking	Reading	Writing

SCHEDULE – H TO BID

(INTEGRITY PACT)

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC. PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS IN CONTRACTS WORTH RS. 10.00 MILLION OR MORE

Contract No._____ Dated _____
Contract Value: _____
Contract Title: _____

…… [name of Supplier] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GoP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GoP through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Supplier] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.

[name of Supplier] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Supplier] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP.

Notwithstanding any rights and remedies exercised by GoP in this regard, [name of Supplier] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

Name of Buyer: ……	Name of Seller/Supplier: ……
Signature: ……	Signature: ……
[Seal]	[Seal]

IV- SCHEDULE OF PRICES

1. PREAMBLE TO SCHEDULE OF PRICES

1. General

1.1 The Schedule of Prices shall be read in conjunction with the Conditions of Contract together with the Specifications and Drawings.

1.2 The Contract shall be for the whole of the Works as described in these Bidding Documents. Bids must be for the complete scope of Work.

2. Description

2.1 The general directions and descriptions of work and materials are not necessarily repeated nor summarized in the Schedule of Prices. References to the relevant sections of the Bidding Documents shall be made before entering prices against each item in the Schedule of Prices.

2.2 The quantities shown in the BoQ are estimated quantities only as an indication of the Scope of Work to enable the bidder to bid for different items of the Works for his estimate of costs. The estimated quantities shall be used for comparing the bids. It is, however, to be noted that in the event of any increase or decrease in the quantity of any item of Works and subject to provisions of the Conditions of Contract herein, the actual quantities executed will be paid.

3. Units & Abbreviations

3.1 Units of measurement, symbols and abbreviations expressed in the Bidding Documents shall comply with the System International d' Unites (SI Units).

The following abbreviations shall be used in the Schedule of Prices:

	Abbreviation
Foreign Currency Component	FCC
Local Currency Component	LCC
United States Dollars	US$
Pakistani Rupees	PKR/Rs
Number	No.
Kilometer	km
Kilogram	Kg
Cubic Meter	Cu.m
Provisional Sum	PS
Percent	%

4. Rates and Prices

4.1 Except as otherwise expressly provided under the Conditions of Contract, the rates and amounts entered in the Schedule of Prices shall be the rates at which the Contractor shall be paid and shall be the full inclusive value of the work set forth or implied in the Contract.

4.2 Unless otherwise stipulated in the Conditions of Contract, the rates and prices entered by the bidder shall not be subject to adjustment during the performance of the Contract.

4.3 Price will be inclusive of all duties, taxes and other levies payable by the Contractor under the Contract. Sales tax to be paid.

4.4 The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Schedule of Prices, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of the Works and no separate payment will be made for those items.

The rates, prices and amounts shall be entered against each item in the Schedule of Prices. Any item against which no rate or price is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates and prices for other items in the Schedule of Prices.

4.5 The bidder shall be deemed to have obtained all information as to port clearance facilities and charges, loading and unloading facilities and charges, storage facilities and charges, transportation facilities and charges, congestion and/or other conditions to be expected at Karachi Port and or any other seaport of Pakistan and all requirements related thereto.

The Contractor shall be responsible to make complete arrangements for the transportation of the equipment to all selected houses.

The bidder shall be deemed to have included all clearing, forwarding and other incidental costs in this regard in his bid.

4.6 The Contractor shall provide for all parts of the Works to be completed in every respect for commercial operation. Notwithstanding that any details, accessories, etc. required for the complete installation and satisfactory operation of the Plant, are not specifically mentioned in the Specifications, such details shall be considered as included in the Contract Price.

5. Bid Prices

The price offered by bidder shall be inclusive of all prevailing taxes & duties, inland transportation to designated sites, installation, testing, commissioning and training to local as well as 10-year warranty.

5.1 Break-up of Bid Prices (N/A)

The various elements of Bid Prices shall be quoted as detailed below:

a) FOB Port of Shipment

The bidder shall quote prices for FOB Port of Shipment for all individual items and for each sub-total of Plant, Erection Equipment and Spare Parts to be supplied from outside Pakistan on FOB (Port of Shipment) basis. The FOB Port of Shipment price shall include the cost of the following:

i) Design, manufacture, finishing, factory testing, packing for transport and all transportation costs incurred in placing the Plant, Erection Equipment and Spare Parts and other materials on board the vessel.

ii) Provision of clean on-board bills of lading.

iii) Export taxes, fees or charges levied on exporting Plant, Erection Equipment and Spare Parts and other materials in the country of origin, in the case of Plant imported to Pakistan.

iv) Provision of certificates of origin, consular invoices (if required) or any other documents issued in the country of origin.

b) Insurance & Shipping

i) Insurance

The bidder shall quote prices for insurance cover from ex-factory/ ex-works to the Site for the sub-totals of the Plant, Erection Equipment, Spare Parts and other materials to be imported for the Contract. Such prices shall include all insurance costs covering the responsibility for all loss or damages while loading, unloading, storing and trimming on board or on inland carrier and transportation to Site.

The prices for transportation/marine insurance cover shall be quoted on the basis of insurance through insurers from any country (is) of the world acceptable to the Employer.

ii) Shipping

The bidder shall quote prices for shipping from port of shipment to the port of entry in Pakistan for the sub-totals of the Plant, Erection Equipment, Spare Parts and other materials to be imported for the Contract in Pakistan. Such prices shall include all marine transportation costs including ocean freight and other charges, etc.

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The prices for shipping/marine transportation shall be quoted for shipment through reputed shipping lines including Pakistan National Shipping Corporation (PNSC).

Cost of shipment(s) effected by the Contractor at his option by aircraft shall be deemed to be included in the Total Bid Price.

c) CIF (Pakistan Seaport) Price

CIF (Pakistan Seaports) price will be the total of FOB price, insurance and shipping prices, described hereabove.

d) Customs Duties

Customs duty for Plant, Erection Equipment, Spare Parts and other materials, if any, offered from outside Pakistan shall also include sales tax, import duty and other import charges.

e) DDP (Pakistan Seaport) Price

DDP (Pakistan Seaport) price will be the total of CIF price and customs duties, described hereabove.

f) Ex-factory Price for Local Goods

The bidder shall quote prices for Local Goods, materials (other than materials required for civil works such as concrete and reinforcement etc. Cost of which will be included in the price of civil works) and equipment in the relevant column of Ex-Factory (Pakistan) of "Schedule of Prices". Such prices shall include:

i) Design documentation, drawings, drafting, planning services, manufacturing, testing and packing of finished goods ready for delivery to Site.
ii) All custom duties, sales tax and other taxes already paid or payable on the components and raw materials used in the manufacture or assembly of Local Goods, materials and equipments.

g) Insurance of Local Goods

Insurance of Local Goods and other materials from factory to Site shall include all insurance costs covering the responsibility of all losses or damages, while loading, unloading, storing, trimming on the carrier and transporting to Site. Checking and verifying of consignments, issuance of receiving reports and damage reports (when applicable) shall be the Contractor's responsibility. The cost of insurance shall be quoted on the basis of insurance through National Insurance Company (NIC) of Pakistan or any other insurance company operating in Pakistan and acceptable to the Employer.

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h) Local Transport

Inland transportation for the Plant, Erection Equipment and Spare Parts shall be the Contractor's responsibility in respect of:

i) the Plant, Erection Equipment, Spare Parts and other materials offered from outside Pakistan; from the port of entry in Pakistan to the storage area at the Site, and

ii) indigenous Plant, Erection Equipment, Spare Parts and other materials if any, offered from within Pakistan; from the factory in Pakistan to the storage area at the Site, and

all charges occurring therefrom including octroi, zila tax, fees etc. and charges for loading, forwarding and unloading expenses shall be borne by the Contractor. Unloading at the Site, handling of the Plant, Erection Equipment, Spare Parts and other materials to the designated point of Site storage, checking and verifying all shipments received against shipping documents, issue of all receiving reports and issues of damage reports (when applicable) shall be the Contractor's responsibility.

The bidder shall recognize such elements of the costs which he expects to incur in the performance of the Works and shall include all such costs in the rates and amounts entered in the Schedule of Prices.

iii) Erection & Other Work

The bidder shall quote prices for Erection & Other Work (foreign and local currency portion) for the sub-totals of the Plant at the Site. Such prices shall include the costs of handling of the Plant and other materials from Site storage to point of final installation, erection, installation, testing, commissioning including all inspection, reliability tests, the cost of foreign and local erection staff and labor, tools and equipment, etc. It shall also cover the services of qualified representative(s) of the supplier(s) of Plant or adviser(s) to assure proper erection and commissioning of the Plant. The price shall also include cost of arranging insurances in respect of Contractor's operations in Pakistan which insurances shall be effected by the Contractor with the National Insurance Company (NIC) of Pakistan or any other insurance company operating in Pakistan and acceptable to the Employer.

5.2 Total Bid Price (N/A)

The total of bid prices under foreign currency and local currency columns in the Schedule of Prices shall be entered in the Summary of Bid Prices. The unit rates and prices and lump sum amount entered in the Schedule of Prices will be the rates at which the Contractor will be paid, and shall be deemed to be the full



inclusive value of the work including all costs of performing the Works such as overheads, income tax, super tax, profits, costs of accepting the general risks, liabilities and obligations set forth or implied in the Contract except for the amounts reimbursable, if any, to the Contractor under the Contract. The rates shall also include Contractor's cost for providing Performance Security and other Bank Guarantees required for performance of the Contract.

6. Erection and Testing Equipment and Maintenance Tools (N/A)

6.1 In the Schedule of Prices, under Erection and Testing Equipment & maintenance tools the Employer has drawn up a list of Erection and Testing Equipment and Maintenance Tools along with estimated quantities. The bidder shall enter the price only in FOB price column for all individual items and shall give the break-up of the prices into FOB Port of Shipment, Shipping to wharf at the port of entry in Pakistan, Insurance to Site and Local Transport in Pakistan against each sub-total. These Erection and Testing Equipment and Maintenance Tools shall be furnished and the cost included in the Bid Price.

The Employer shall have the option of ordering additional quantities of these essential Erection and Testing Equipment and Maintenance Tools, at the unit rates entered in the Schedule of Prices no later than one year after the Commencement Date.

The unit rate for any item shall be computed by dividing the total amount by the quantity of that item.

6.2 The bidder shall also list, in the space provided in the Schedule of Prices, Additional Recommended Erection and Testing Equipment and Maintenance Tools, any Erection and Testing Equipment and Maintenance Tools which he recommends be provided for the Works, in addition to those already specified by the Employer in the Schedule of Prices. The bidder shall enter against each such item, its recommended quantity, and price. The cost of such Additional Recommended Erection and Testing Equipment and Maintenance Tools will not be taken into account in the evaluation of bids.

The Additional Recommended Erection and Testing Equipment and Maintenance Tools may be selected by the Engineer/Employer and the Contract Price will be adjusted in accordance with the prices set against those items in the Schedule of Prices.

7. Spare Parts (N/A)

7.1 In the Schedule of Prices, under Spare Parts, the Employer has drawn up a list of spare parts along with estimated quantities. The bidder shall enter the price only in FOB price column for all individual items and shall indicate the break-up of price into FOB Port of Shipment, Shipping to wharf at the port of entry in Pakistan, Insurance to Site and Local Transport in Pakistan against each sub-total. These spare parts shall be furnished and the cost included in the Bid Price.

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The successful Bidder shall prepare and at the time of preparation of Letter of Acceptance submit to the Employer the unit rates of all individual items of the spare parts. The unit rates of the spare parts for the required quantities shall give a total cost equal to the amount entered in the Schedule of Price for spare parts.

The Employer shall have the option of ordering additional quantities of these essential spare parts, at the unit rates entered in the Schedule of Prices, no later than one year after the Commencement Date.

The unit rate for any item shall be computed by dividing the total amount by the quantity of that item.

7.2 The Bidder shall also list in the space provided in the Schedule of Prices any Spare Parts which he recommends be provided for the Works, in addition to those specified by the Employer in the Schedule of Prices. The Bidder shall enter against each such item, its recommended quantity, rate and price. The cost of such Additional Recommended Spare Parts will not be considered in the evaluation of bids.

The Additional Recommended Spare Parts may be selected by the Engineer/ Employer and the Contract Price will be adjusted in accordance with the prices set against those items in the Schedule of Prices.

8. Reimbursable Costs (N/A)

8.1 If provided in the Particular Conditions of Contract, the Contractor shall be reimbursed the actual amounts (without any overhead charges and profits) disbursed by him in respect of non-exempt Pakistani customs, import duties, and taxes, levied upon Plant, Erection Equipment and Spare Parts imported directly by him or his subcontractors into Pakistan for the purpose of this Contract for incorporation in the Works.

8.2 The bidder shall recognize such elements of the costs which he expects to incur in the performance of the Works and which are reimbursable, and he shall not include any such costs in the rates and amounts entered in the Schedule of Prices.

9. Provisional Sums (N/A)

9.1 Provisional Sums included and so designated in the Schedule of Prices if any, shall be expended in whole or in part at the direction and discretion of the Employer/ Engineer. The Contractor will only receive payment in respect of Provisional Sums if he has been instructed by the Employer/Engineer to utilize such sums.

DAYWORK SCHEDULE (N/A)

1. General

1.1 Work shall not be executed on a Day work basis except by written Order of the Engineer. The rates for Day work items entered in the Schedule of Prices shall apply to any quantity of Day work ordered by the Engineer. Nominal quantities have been indicated against each item of Day work, and the extended total for Day work shall be carried forward as a provisional sum to the Summary of Bid Prices. (N/A)

2. Day work – Labor (N/A)

2.1 In calculating payments due to the Contractor for the execution of Day work, the hours for labor shall be reckoned from the time of arrival of the labor at the job Site to execute the particular item of Day work to the time of departure, but excluding meal breaks and rest periods. Only the times of classes of labor directly doing work ordered by the Engineer and for which they are competent to perform shall be measured.

The time of Plant Erectors or other expatriate supervisory personnel shall not be measured unless their time on Site is extended by Variation Order. The rates entered by the Bidder for these categories shall be daily rates inclusive of all allowances and overheads.

2.2 For labor other than Plant Erectors or other expatriate supervisory personnel, the Contractor shall be entitled to payment in respect of the total time that labor is employed on Day work, calculated at the basic rates entered by him in the Schedule of "Day work Rates – Labor" together with an additional percentage payment on basic rates representing the Contractor's profit, overheads, etc., as described below:

a) The basic rates for labor shall cover all direct costs to the Contractor, including (but not limited to) the number of wages paid to such labor, transportation time, overtime, subsistence allowances and any sums paid to or on behalf of such labor for social benefits in accordance with Pakistan Labour laws. The basic rates will be payable in Pak. Rupees only, and

b) The additional percentage payment to be quoted by the Bidder and applied to costs shall be deemed to cover the Contractor's overheads, profits, superintendence, liabilities and insurances and allowances to labor, timekeeping and clerical and office work, the use of consumable stores, water, lighting and power; the use and repair of staging, scaffolding, workshops and stores, portable power tools, manual plant and tools; supervision by the Contractor's staff, foremen and other supervisory personnel; and charges incidental to the foregoing. Payments under this item shall be made in foreign currency and local currency at the percentages entered in the Day work Schedule.

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2.3 Rates entered in the Day work Schedule shall apply to labor of trade and qualification as described and to labor of other trades with similar skill and qualification.

3. Day work - Contractor's Equipment (N/A)

3.1 The Contractor shall be entitled to payments in respect of Contractor's Equipment already on Site and employed on Day work at the basic rental rates entered by him in the "Schedule of Day work Rate - Contractor's Equipment". The said rates shall be deemed to include complete allowance. for depreciation, interest, indemnity and insurance, repairs, maintenance, supplies, fuel, lubricants and other consumables and all overheads, profit and administrative costs related to the use of such equipment.

3.2 In calculating the payment due to the Contractor for Contractor's Equipment employed on Day work, only the actual number of working hours will be eligible for payment, except that, where applicable and agreed with the Engineer, the travelling time from the part of the Site where the Contractor's Equipment was located when ordered by the Engineer to be employed on Day work and the time for the return journey thereto shall be included for payment.

3.3 The rental rates for Contractor's Equipment employed on Day work shall be stated in Pakistani Rupees but payments to the Contractor will be made in local and foreign currencies according to the rates entered in the Schedule.

4. Day Work-Materials (N/A)

4.1 The Contractor shall be entitled to the following payments in respect of materials used for Day work (except for materials for which the cost is included in the percentage addition to labor costs) which are actually incorporated into the Works:

a) The net cost of such materials delivered to warehouse or work yard area or storage area at the Site. Such cost shall be calculated by the Contractor on the basis of the invoiced price and freight and insurance as certified by the Engineer on the basis of invoices produced.

b) Percentage addition, in local and/or foreign currency, of such net cost of materials to cover the Contractor's handling charges, overheads and profits.

4.2 Payment of the net cost to the Contractor of Day work materials shall be made in the same currency as the invoice. Payment of the addition for handling charges, overheads and profit shall be in local and/or foreign currency as entered in the Schedule of Day work - Materials.

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2. (a) SCHEDULE OF PRICES – SUMMARY OF BID PRICES

Maximum Annual Payment Cap by Aror University Including all Taxes, Operation & maintenance costs	PKR 75,000,000
Proposed Number of Months/Years for Deferred Model (A)	
Proposed yearly/Monthly Instalment amount (B)	
Total project cost inclusive of O&M Cost and applicable taxes (C=(AxB))	

(Note: Total Price, in Pak Rupees, shall be provided in figures as well as in words)

V- PREAMBLE
TO
CONDITIONS OF CONTRACT

PREAMBLE TO CONDITIONS OF CONTRACT

[This Preamble must be completed before issuance of Bidding Documents and shall contain essential requirements of General Conditions of Contract & Particular Conditions of Contract.]

Commencement Date	Sub-Clause 1.1.1.(i) The date for commencement of the Works is the date of signing of the contract agreement.
Defect Liability Period	Sub-Clause 1.1.11 The Defect Liability Period is Ten (10) year.
The Employer	Sub-Clause 1.1.12. AROR University Sukkur, Bypass Road Sukkur Phone +92-071-5651900, E-mail: info@AROR.edu.pk
Time for Completion	Sub-Clause 1.1.35. The Time for Completion is 6 months from the Contract signing date.
Warranty Period	Sub-Clause 1.1.40. The Warranty Period is 10 year for overall installed system. Bidder shall mention useful-life of the all component. Any problem during useful life, the contactor will be responsible to remove problem.
Engineer's Duties & Authorities	Sub-Clause 2.1 Amount of Variation Order in emergency is with the consultation of the Engineer.
Confirmation in Writing	Sub-Clause 2.6 (i) If the Contractor shall require the confirmation, it shall be notified to the Engineer within 07 days. (ii) Engineer shall confirm the decision/instruction within 07 days.
Ruling Language	Sub-Clause 5.1. The version in English language (ruling language) shall prevail.
Day to Day Communications	Sub-Clause 5.2. The language for day to day communications is English
As-Built Drawings	Sub-Clause 6.10 As-Built drawings shall be provided to the Engineer within 7 days from the date of issue of Taking Over Certificate.
General Obligations	Sub-Clause 8.1 Detail of Erection and Testing Equipment and Maintenance Tools is given herein below:
Programme to be Furnished	Sub-Clause 12.1. The Programme must be submitted to the Engineer in written.
Electricity Water, Gas and Other Services	The Contractor shall be responsible for making his own arrangements for adequate supply of electricity, water, gas and other services required for the effective performance of his obligations under the contract.
Employer's	Sub-Clause 14.4. (N/A)

Equipment	
Time for Completion	Sub-Clause 25.1 Completion Period: 06 months (Import + Installation)
Delay in Completion	Sub-Clause 27.1. Failure to complete the works, or any part thereof within the time stated in Sub Clause 25.1, shall entitled the Employer for deduction in contract price as follows 2% deduction per month of late delivery subject to maximum of 5% deduction on account of late delivery.
Terms of Payment	Sub-Clause 33.1. In addition to the provisions under Clause 33, the terms of payment shall be as stated in Particular Conditions of Contract.
Payment	Sub-Clause 33.5 Period of Payment by Employer to Contractor: After installation of contracted quantity as per following break-up:
Payment in Foreign Currencies	Sub-Clause 35.1. Payment in foreign currencies shall be arranged as follows: N/A
Notices to Employer	Sub-Clause 49.2. The address of the Employer for notices is: Assistant Engineer Electrical, AROR University Sukkur, Bypass Road Sukkur Phone +92-071-5651900, E-mail: info@aror.edu.pk / iftikhar.ahmed@aror.edu.pk
Disputes & Arbitration	Sub-Clause 50.4 Venue of Arbitration Karachi, Pakistan.
Applicable Law	Sub-Clause 51.1. The applicable law is Government of Pakistan Law/ Government of Sindh Law.
Procedural Law for Arbitration	Sub-Clause 51.2. The procedural law for arbitration is as per arbitration law of Pakistan.
Language and Place of Arbitration	Sub-Clause 51.3. The language of arbitration is English language. The place of arbitration is Karachi, Pakistan.

VI- GENERAL CONDITIONS OF CONTRACT

[Notes on the Conditions of Contract]

The Conditions of Contract comprise two parts:

(a) General Conditions of Contract
(b) Particular Conditions of Contract

Over the years, a number of "model" General Conditions of Contract have evolved. The one used in these Standard Bidding Documents was prepared by the International Federation of Consulting Engineers (Federation International des Ingenieurs-Conseils, or FIDIC), and is commonly known as the FIDIC Conditions of Contract. (The used version is the 1987 edition, reprinted in 1988 with editorial amendments.)

The FIDIC Conditions of Contract have been prepared for an ad measurement (unit price or unit rate) type of contract, and cannot be used without major modifications for other types of contracts, such as lump sum, turnkey, or target cost contracts.

The standard text of the General Conditions of Contract chosen must be retained intact to facilitate its reading and interpretation by bidders and its review by the Employer. Any amendments and additions to the General Conditions, specific to the contract in hand, should be introduced in the Particular Conditions of Contract.

The use of standard conditions of contract for all electrical/mechanical Works will ensure comprehensiveness of coverage, better balance of rights or obligations between Employer and Contractor, general acceptability of its provisions, and savings in time and cost for bid preparation and review, leading to more economic prices.

The FIDIC Conditions of Contract are copyrighted and may not be copied, faxed, or reproduced. Without taking any responsibility of its being accurate, Pakistan Engineering Council with prior consent of FIDIC Secretariat, has reproduced herein the FIDIC General Conditions of Contract for reference purpose only which cannot be used by the users for preparing their bidding documents. The bidding document may include a purchased copy, the cost of which can be retrieved as part of the selling price of the bidding document. Alternatively, the FIDIC Conditions of Contract can be referred to in the bidding documents, and the bidders are advised to obtain copies directly from FIDIC. *

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* Add the following text if the bidding documents, as issued, do not include a copy:
"Copies of the FIDIC Conditions of Contract can be obtained from:
FIDIC Secretariat
P.O. Box 86
1000 Lausanne 12
Switzerland
fidic.pub@fidic.org – FIDIC.org/bookshop]

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The **"CONDITIONS OF CONTRACT FOR ELECTRICAL AND MECHANICAL WORKS"** section from page 71-141 has been removed as FIDIC doesn't allow it to be copied. Download the PDF version of this document from PICC website to view it completely OR Copies of the FIDIC Conditions of Contract can be obtained from:

FIDIC Secretariat
P.O. Box 86
1000 Lausanne 12
Switzerland

E-mail: fidic.pub@fidic.org – FIDIC.org/bookshop]

VII- PART-II: PARTICULAR CONDITIONS OF CONTRACT

(Mandatory Provisions- not to be amended/substituted except where indicated by PEC)

PART-II: PARTICULAR CONDITIONS OF CONTRACT

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PART-II: PARTICULAR CONDITIONS OF CONTRACT

1.1 Definitions

The text of Sub-Clause 1.1.1 is deleted and substituted by the following:

"Commencement Date" means the date specified in the Preamble to Conditions of Contract.

The text of Sub-Clause 1.1.2 is deleted and substituted by the following:

"Conditions" means the Preamble to Conditions of Contract, General Conditions of Contract and Particular Conditions of Contract.

Sub-Clause 1.1.3

At the end of Sub-Clause the following is added:
"Any subsequent document mutually agreed and signed by the Employer and the Contractor, shall be the part of the Contract."

The text of Sub-Clause 1.1.5 is deleted and substituted by the following:

"Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works subject to such additions thereto or deductions therefrom as may be made under the provisions hereinafter contained and remedying of any defects therein in accordance with the provisions of the Contract."

Sub-Clause 1.1.11

The Defects Liability Period is the period mentioned in the Preamble to Conditions of Contract.

Sub-Clause 1.1.15

The following is added at the end of Sub-Clause:

"or any other competent person appointed by the Employer as his replacement."

Sub-Clause 1.1.23

The following paragraph is added:

The word "Goods" is synonymous with "Plant."
The text of Sub-Clause 1.1.27 is deleted and substituted by the following:

"Schedule of Prices" means the completed and priced Schedule of Prices, or any part or individual schedule thereof, submitted by the Contractor with his Bid or revised and mutually agreed and forming a part of the Contract documents.

Sub-Clause 1.1.33

The word "Tender" is synonymous with the word "Bid" and the word "Tender Documents" with the word "Bidding Documents".

The following Sub-Clauses are added:

"1.1.38 "Month" means calendar month according to Gregorian calendar.
1.1.39 "Operation and Maintenance Manuals" has the meaning described in Sub-Clause 6.6.
1.1.40 "Warranty Certificate" means the certificate against specified goods/equipment, for the period mentioned in the Preamble to Conditions of Contract, to be issued by the Contractor that the goods/equipment supplied under the Contract are new, unused and incorporate all recent improvements in design and materials unless provided otherwise in the Contract and that the Contractor will be responsible for making good or replacing any defective goods/equipment during the Warranty Period specified in the Preamble to Conditions of Contract which should commence after expiry of Defect Liability Period.

Sub-Clause 1.1.41

The word "Part II" stated in FIDIC Conditions of Contract is synonymous with the word "Particular Conditions of Contract".

Sub-Clause 1.6 Cost, Overhead Charges and Profit

The last sentence "Any profit _____ stated in the Preamble" is deleted and substituted by the following:
"Any profit entitlement shall be added to cost at the percentage stated in the Bid and agreed in the Contract Agreement."

Sub-Clause 2.1 Engineer's Duties

The text of Sub-Clause 2.1 is deleted and substituted by the following:

"The Engineer shall carry out the duties specified in the Contract.

The Engineer may exercise the authority attributable to the Engineer as specified in or necessarily to be implied from the Contract. The Engineer is required to obtain the specific approval of the Employer before carrying out his duties in accordance with the following Clauses of General Conditions of Contract:

(a) approval of Subcontractor under Sub-Clause 4.1,
(b) certifying additional sums under Sub-Clause 5.4,
(c) certifying additional costs under Sub-Clauses 11.3 & 12.3,
(d) certifying any cost under Sub-Clause 14.6,
(e) approval of extension of time under Clause 26,
(f) issuing a Taking–Over Certificate under Sub-Clause 29,
(g) issuing a Defects Liability Certificate under Sub-Clause 30.11,
(h) issuing a Variation Order under Clause 31,
(i) fixing rates or prices under Clauses 31 and 34,
(j) certifying additional costs under Sub-Clause 44.5 and
(k) certifying additional costs under Sub-Clause 47.2;

Except for such variations pursuant to Sub-Clause 31.1 of the GCC which may be necessary in an emergency affecting safety of life, the works or of adjoining property."
Except as expressly stated in the Contract the Engineer shall have no authority to relieve the Contractor of any of his obligations under this Contract."

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Sub-Clause 2.6 Confirmation in Writing

(i) In line 3 after the words “undue delay” the following is added:
“but not after the number of days mentioned in the Preamble to Conditions of Contract from the instruction or decision.”

(ii) At the end of Sub-Clause 2.6, the following is added:
"The Engineer shall confirm or otherwise within the period mentioned in the Preamble to Conditions of Contract from the receipt of requirement(s) from the Contractor.”

Sub-Clause 2.7 Disputing Engineer’s Decisions and Instructions

The following text is deleted:
“If either party ……. in accordance with the Contract.”

Sub-Clause 2.8 Replacement of Engineer

The text of Sub-Clause 2.8 is deleted and substituted by the following:

“If the Employer intends to replace the Engineer, the Employer shall, not less than 14 days before the intended date of replacement, give notice to the Contractor, of the name, address and relevant experience of the intended replacement Engineer. The Employer shall not replace the Engineer with a person against whom the Contractor raises reasonable objection by notice to the Employer, with supporting particulars.”

Sub-Clause 2.9 Engineer Not Liable

Sub-Clause 2.9 is added as follows:

“Approval, reviews and inspection by the Engineer of any part of the Works does not relieve the Contractor from his sole responsibility and liability for the supply of remaining materials and equipment for the Works and parts thereof and complete the remaining erection works and testing and commissioning in accordance with the Contract and neither the Engineer's authority to act nor any decision made by him in good faith as provided for under this Contract whether to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their representatives or employees or any other person performing any of the works. However, the Contractor shall be compensated if any loss/damage is occurred due to the decision of the Engineer.”

Sub-Clause 4.2 No Contractual Relation between Subcontractor and the Employer

Sub-Clause 4.2 is added as follows:

Nothing contained in the Contract Documents shall create any contractual relation between any Subcontractor and the Employer.

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Sub-Clause 5.3 Priority of Contract Documents

Sub-Clause 5.3 is deleted and substituted by the following:

"Unless otherwise provided in the Contract the priority of the Contract Documents shall be as follows:

1. The Contract Agreement (if completed)
2. The Letter of Acceptance
3. The completed Form of Bid
4. Preamble to Conditions of Contract
5. The Particular Conditions of Contract
6. The General Conditions of Contract
7. The priced Schedule of Prices
8. The completed Schedules to Bid
9. The Specifications
10. The Drawings
11. …… (Any other document)

In case of discrepancies between drawings, those of larger scale shall govern unless they are superseded by drawing(s) of a later date regardless of scale. All drawings and specifications shall be interpreted in conformity with the Contract Agreement and these conditions."

Sub-Clause 5.4 Documents Mutually Explanatory

The text appearing in the last line after the words "the Contract Price" is deleted.

Sub-Clause 6.2 Consequences of Disapproval of Contractor's Drawings

Full stop is deleted and the following words are added at the end of Sub-Clause:
"for the approval of the Engineer. However, the Contractor shall not be entitled for time extension on this account."

Sub-Clause 6.6. Operation and Maintenance Manuals

Paras 2&3 are deleted and the following text is added at the end of Para 1 of Sub-Clause:

"The Operation and Maintenance Manuals shall include full instructions for the operation, servicing and maintenance of the Plant, not only during the period of the Contractor's liability but more particularly during its operating life.

The directions shall be set out simply, clearly and systematically. This may be divided into two volumes if desirable, one for operation and the second for servicing and maintenance (in sub–volumes for major items of Plant).

The operational data shall include a complete physical and functional description of the Plant (in sub–volumes for major items of Plant) and step–by–step procedures for inspection, checking and adjustments for proper operation of the Plant.

The maintenance data shall include complete instructions for routine checks, servicing

maintenance and repair of all parts and for dismantling, handling and re–assembly of all equipment, sub–assemblies and all separate components. The maintenance data shall also include where possible parts catalogue the lists shall provide all necessary information for identifying the parts and for re–ordering the parts including name of part, part number and catalogue references where applicable, name of manufacturer, size, capacity and other characteristics.

General arrangements, single line diagrams and detailed drawings shall be provided for ready reference in the operation and maintenance instructions.

The manuals shall be printed on ISO paper size A4 (210x297 mm) with offset or equivalent printing strongly bound in a durable stiff cover bearing the title in approved legend. Drawings shall be folded or reduced to 297 mm height. All volumes shall bear on the spine an approved shortened version of the title.
The Contractor shall submit three draft copies for approval of the Engineer prior to producing finished volumes.

The Contractor shall provide ten (10) copies of the approved Operation and Maintenance Manuals prior to Taking Over by the Employer. Supplementary Operation and Maintenance Manual shall be provided by the Contractor, if required, to incorporate changes resulting from experience during the operation and maintenance period. The work shall not be considered to be completed for the purpose of taking over until such manual and drawings have been supplied to the Employer."

Sub-Clause 6.9 Manufacturing Drawings

The words "Unless otherwise specified in Part-II" are deleted and the following is added at the end of Sub-Clause:

"However, the Contractor is required to disclose to the Engineer or the Employer any confidential information necessary to justify the reliability, the efficiency and the operation and maintenance of the Plant supplied by him."

Sub-Clause 6.10 "As–Built" Drawings

The following new Sub-Clause is added:

The Contractor shall furnish to the Engineer six (6) copies and one (1) reproducible of approved quality of all "As–Built" drawings within the period mentioned in the Preamble to Conditions of Contract.

Sub-Clause 8.1 General Obligations

The text of Sub-Clause 8.1 is deleted and substituted by the following:

"(a) The Contractor shall commence the work on the date specified in the Preamble to Conditions of Contract and shall proceed with the same with due expedition and without delay.

(b) The Contractor shall, in accordance with the Contract, with due care and diligence, complete the Works and test and commission the Plant and carry out the Works within the Time for Completion. The Contractor shall also provi-

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all necessary Contractor's Equipment, superintendence, labor and except as stated herein below, all necessary facilities therefor.

The Employer will permit use of the Erection, Testing Equipment and Maintenance Tools as stated in the Preamble to Conditions of Contract.

The above facilities shall be provided at no cost to the Contractor but he shall procure at his cost all required consumable materials and any other items necessary for the proper execution of the Works. These shall be properly used and maintained by the Contractor and returned to the Employer upon handing over of the Works in good condition, fair wear and tear excepted. In case of any damage, loss or theft, the items shall be replaced by the Contractor at his own cost."

Sub-Clause 10.1 Performance Security

Sub-Clause 10.1 is deleted and substituted by the following:

"The Contractor shall provide a Performance Security in the prescribed Form annexed to these Documents. The said Security shall be furnished by the Contractor within 28 days after the receipt of Letter of Acceptance. The Performance Security shall be of an amount equal to 10 percent of the Contract Price in the currency (is) of the Contract at the option of the bidder, in the form of Bank Guarantee from any Scheduled Bank in Pakistan or from a bank located outside Pakistan duly counter-guaranteed by a Scheduled Bank in Pakistan or an insurance company having at least AA rating from PACRA/JCR."

The cost of complying with the requirements of this Sub-Clause shall be borne by the Contractor."

Sub-Clause 10.3 Claims under Performance Security

Sub-Clause 10.3 is deleted in its entirety.

The following Sub Clause is added:

Sub-Clause 10.4 Performance Security Binding on Variations and Changes

"The Performance Security shall be binding irrespective of variations and changes in the quantities of the Works or extensions in completion time of the Works, which are granted or agreed upon under the provisions of the Contract."

Sub-Clause 12.1 Programme to be Furnished

Sub-Clause 12.1(a) is deleted and substituted by the following:

"(a) the order in which the Contractor proposes to carry out the Works (including preliminaries, required material ordering, delivery to Site, erection and rectifications work, testing, commissioning and taking–over by the Employer). The programme shall also include the following:

(i) Employment of local and expatriate labor of various categories,

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(ii) Local material procurement,

(iii) Material imports, if any."

In Sub-Clause 12.1(c) (iv) the words "any import licenses" are deleted.

Sub-Clause 12.4 Monthly Progress Report

The following Sub-Clause 12.4 is added:

"During the period of the Contract, the Contractor shall submit six sets of report to the Engineer not later than the 8th day of each month, including:

(i) a construction schedule indicating the progress achieved during the preceding month;

(ii) description of all work carried out since the last report;

(iii) description of the work planned for the next forty two days sufficiently detailed to enable the Engineer to determine his programme of inspection and testing;

(iv) summary of daily job record for the preceding month; and

(v) color photographs to illustrate progress.

Sub-Clause 12.5 Daily Job Record

The following Sub Clause 12.5 is added:

"During the period of the Contract, the Contractor shall keep a daily record of the work progress, which shall be made available to the Engineer as and when requested.

The daily record shall include particulars of weather conditions, number of men working, in different categories, deliveries of materials, quantity, location and assignment of equipment."

Sub-Clause 13.1 Contractor's Representative

At the end of the Sub-Clause the following is added:

"The Contractor's Representative shall be a competent and skilled person approved by the Engineer (which approval may at any time be withdrawn) and who shall be present on the Site during all working hours. He shall be fluent in the English language. He shall not be transferred from the Site without the consent of the Engineer. The Contractor's Representative shall be a Registered/Professional engineer as defined in the Pakistan Engineering Council Act 1975 (V of 1976)."

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Sub-Clause 13.3 Language Ability of Superintending Staff of Contractor

The following Sub-Clause 13.3 is added:

"A reasonable proportion of the Contractor's superintending staff shall have a working knowledge of the English language."

Sub-Clause 13.4 Employment of Local Personnel

The following Sub-Clause 13.4 is added:

"The Contractor shall, to the extent practicable and reasonable, employ staff and labor from sources within Pakistan."

Sub-Clause 14.1 Contractor's Equipment

Replace the word "or" at the end of Sub-paragraph (a) by the word "and" and insert the following at the end of Sub-paragraph (b):
"which shall not be unreasonably withheld."

Sub-Clause 14.2 Safety Precautions

At the end of the Sub-Clause the following is added:

"In order to provide for the safety, health and welfare of persons, and for prevention of damage of any kind, all operations for the purposes of or in connection with the Contract shall be carried out in compliance with the safety requirements of the Government of Pakistan with such modifications thereto as the Engineer may authorize or direct and the Contractor shall take or cause to be taken such further measures and comply with such further requirements as the Engineer may determine to be reasonably necessary for such purpose.

The Contractor shall make, maintain, and submit reports to the Engineer concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe."

Sub-Clause 14.3 Electricity Water and Gas

The text of Sub-Clause 14.3 is deleted and substituted by the following:

"The Contractor shall be responsible for making his own arrangements for the adequate supply of electricity, water and gas required for the effective performance of his obligations under the Contract. Subject to the aforesaid, the Contractor shall be entitled to use for the purposes of the Works such supplies and services as may be available on the Site. The Contractor shall, before the commencement of the work at Site, seek the approval of the Engineer as to his detailed requirements of electricity, water and gas for the entire Contract period. The Contractor shall pay the Employer at the rates/cost incurred by the Employer. The Contractor shall at his own cost provide any apparatus necessary for such use."

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Sub-Clause 14.4 Employer's Equipment

The text of Sub-Clause 14.4 is deleted and substituted by the following:
"The Employer shall, if the Contractor so requests for the execution of the works operate any available equipment of which details are given in the Preamble to Conditions of Contract. The Contractor shall pay the Employer a mutually agreed price for such use.

The Employer shall during such operation retain control of and be responsible for the safe working of the equipment.

Sub-Clause 14.8 Information for Import Permits & Licenses

The text of Sub-Clause 14.8 is deleted and substituted by the following:

"The Contractor shall submit to the Employer in good time such details of all Plant and Contractor's Equipment as is to be imported into Pakistan and identify as to what assistance of the Employer is required for obtaining by the Contractor of all necessary import permits or licenses."

Sub-Clause 15.2 Compliance with Laws

The Sub-Clause 15.2 is deleted and substituted by the following:
"The Contractor shall comply with the Laws of country of manufacture and the Laws of Pakistan where the Plant is to be erected."

Sub-Clause 16.4 Photographs of Works and Advertisement Prohibited

Sub-Clause 16.4 is added:

"Except with the prior written authorization of the Employer the Contractor shall not exhibit or permit to be exhibited any photographs or advertisement on the Works. Any authorized exhibition shall be immediately removed if the Employer so requires."

Sub-Clause 16.5 Training of Employer's Staff

Sub-Clause 16.5 is added:

"The Contractor shall provide such facilities for the training of such numbers of Pakistani engineers, engineering students, apprentices and trade apprentices on such sections of the Works at the Site or on the Contractor's premises or Contractor selected plant manufacturer's premises and factories, or wherever else work is in hand, as specified or directed by the Engineer. The Employer shall direct what sums by way of wages and allowances are to be paid by the Contractor to such persons and shall reimburse the Contractor for such sums as are so directed to be paid and are paid. The Contractor shall also provide medical expenses or medical insurance and travelling expenses for trainees if required by the Employer which shall be reimbursed by the Employer.

The language of training at the above stated premises shall be English and Urdu."

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Sub-Clause 17.4 Consents and Way Leaves

The Sub-Clause 17.4 is deleted and substituted by the following:

The Employer shall issue permissions, letters, certificates and provide such other assistance to the Contractor for his obtaining permits-to-work, way leaves and approvals from any other department/authority and right of way from private owners, if required. The Contractor will bear the cost of logistics, fees, etc. for such activities. The Employer, will reimburse the Contractor only the payments made by him in respect of any land compensation for obtaining such way leaves, required for the Works.

Sub-Clause 17.5 – Import Permits and Licenses

The word "Employer" is deleted and substituted by the word "Contractor" and the following is added at the end of Sub-Clause 17.5:
"the Employer will provide assistance for this purpose."

Sub-Clause 18.1 – Engagement of Labor

At the end of the Clause the following is added:
"in accordance with the regulations, orders and requirements of the Govt. of Pakistan."

Sub-Clauses 18.5 to 18.12 are added:

"Sub-Clause 18.5 Employment of Persons in the Service of Others

The Contractor shall not recruit or attempt to recruit staff and labor from amongst the persons in the service of the Employer or the Engineer and vice–versa, unless mutually agreed between the Employer/Engineer and the Contractor

Sub-Clause 18.6 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, employees or labor.

Sub-Clause 18.7 Arms and Ammunition

The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

Sub-Clause 18.8 Festivals and Religious Customs

The Contractor shall in all dealings with his staff and labor have due regard to all recognized festivals, days of rest and religious or other customs.

Sub-Clause 18.9 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful riotous or disorderly conduct by or amongst his staff and labor and for the preservation of peace and protection of persons and property in the neighborhood of the Works.

Sub-Clause 18.10 Records of Safety and Health

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

Sub-Clause 18.11 Reporting of Accidents

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition to appropriate action required under the law, notify the Engineer immediately by the quickest available means.

Sub-Clause 18.12 Compliance by Subcontractors

The Contractor shall be responsible for compliance by his Subcontractors of the foregoing provisions.

Sub-Clause 19.1 Manner of Execution

The following is added at the end of Sub-Clause:

"The Contractor shall submit for approval of the Engineer, his detailed method statement(s) for the execution of such items of work as may be desired by the Engineer. Approval of such method statement(s) shall neither relieve the Contractor of his responsibilities under the Contract nor form any basis for claiming additional costs."

Sub-Clause 19.3 Uncovering Work

The following is added at the end of second paragraph of Sub-Clause 19.3:

"In any other case, all costs shall be borne by the Contractor."

Sub-Clause 19.4 Use of Pakistani Materials

The following Sub-Clause 19.4 is added:

"The Contractor shall so far as may be consistent with the Contract make the maximum use of materials, supplies and equipment indigenous to or produced in Pakistan and services available in Pakistan or operated in Pakistan provided such materials, supplies, equipment and services shall be of required standard."

Sub-Clause 24.1 Cost of Suspension

At the end of the second paragraph after the word "Contractor" the following is added:

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"or for the proper execution or for the safety of the Works or Plant unless such necessity results from any act or default of the Engineer or the Employer or in consequence of any of the Employer's Risks under Sub-Clause 37.2."

Sub-Clause 24.4 Resumption of Work

First paragraph of Sub-Clause 24.4 is deleted and substituted by the following:

"If the Contractor chooses not to treat prolonged suspension as an omission or termination under Sub-Clause 24.3, the Employer shall, upon the request of the Contractor, take over the responsibility for protection, storage, security and insurance of the suspended Works and of the Plant which has been delivered to the Site and which is affected by suspension and the risk of loss or damage thereto shall thereupon pass to the Employer."

Sub-Clause 25.1 Time for Completion

The text of Sub-Clause 25.1 is deleted and substituted by the following:

"The Works at the place of the project mentioned in the Preamble to Conditions of Contract shall be completed tested and commissioned within the period mentioned in the Preamble to Conditions of Contract."

Sub-Clause 26.1 Extension of Time for Completion

Sub-Clause 26.1(h) is deleted.

Sub-Clause 26.3 Earlier Completion

(i) At the end of Sub-Clause 26.3(a) the following text is added and Clause is re-designated as 26.3.

"The extra sum to be paid to the Contractor for Completion of Works prior to the date of Completion established under Sub-Clause 25.1 shall be computed on the basis of the sums mentioned in the Preamble to Conditions of Contract."

(ii) Sub-Clause 26.3 (b) is deleted.

Sub-Clause 26.4 Rate of Progress
Sub-Clause 26.4 is added:

"If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any Section is at any time, in the opinion of the Engineer, too slow to comply with the Time for Completion, the Engineer shall so notify the Contractor who shall thereupon take such steps as are necessary, subject to the consent of the Engineer, to expedite progress so as to comply with the Time for Completion. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the

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Contractor considers that it is necessary to do any work at night or on locally recognized days of rest, he shall be entitled to seek the consent of the Engineer so to do. Provided that if any steps, taken by the Contractor in meeting his obligations under this Sub-Clause, involve the Employer in additional supervision costs, such costs shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any moneys due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer."

Sub-Clause 27.1 Delay in Completion

Sub-Clause 27.1 is deleted and substituted by the following:

"If the Contractor fails to deliver the Works, or any part thereof, within the time stated in Sub-Clause 25.1, or fails to complete the whole of the Work, or, if applicable, any Section within the relevant time prescribed by Sub-Clause 25.1, then the Contractor shall pay to the Employer the relevant sum stated herein below as liquidated damages for such default (which sum shall be the only moneys due from the Contractor for such default) for every day or part of a day which shall elapse between the relevant time for Delivery or Time for Completion and the actual date of delivery at site or the date stated in a Taking–Over Certificate of the whole of the Works or the relevant Section, as the case may be, subject to the applicable limit stated herein below.

The Employer may deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations & liabilities under the Contract."

The liquidated damages for each day of delay and the maximum amount of liquidated damages shall be the amounts mentioned in the Preamble to Conditions of Contract.

Sub-Clause 28.7 Consequences of Failure to Pass Tests on Completion

The words "by arbitration" appearing at the end of the Sub-Clause 28.7(c) are deleted and substituted by the words "by the Engineer".

Sub-Clause 30.4 Extension of Defects Liability Period

At the end of 4th paragraph of Sub-Clause the following is added:
"or a mutually agreed period."

Sub-Clause 30.5 Failure to Remedy Defects

In first line after the words “reasonable time” the following is added:
“fixed by the Engineer”.

Sub-Clause 30.13 Unfulfilled Obligations

New Sub-Clause 30.13 is added as herein below:

“After the Defects Liability Certificate has been issued, the Contractor and the Employer shall remain liable for the fulfillment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force.”

Sub-Clause 31.1 Engineer's Right to Vary

The following is added at the end of second paragraph:

“No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with Clause 31. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of Contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.”

Sub-Clause 31.5 Record of Costs

The word “Engineer” in 4th line of Sub-Clause is deleted and substituted by “Engineer/Employer”.

Sub-Clause 31.6 Day work under Variation Order

New Sub-Clause 31.6 is added as given below:

“A Variation Order may provide that work done pursuant thereto shall be executed as Day work. In such case the Contractor shall be paid for such work under the conditions and the rates and prices set out in the Day Work Schedule.”

Sub-Clause 31.7 Value Engineering

New Sub-Clause 31.7 is added as given below:

The Contractor may, at any time, submit to the Engineer a written proposal which in the Contractor’s opinion will reduce the cost of constructing, maintaining or operating the works, or improve the efficiency or value to the Employer of the completed Works or otherwise be of benefit to the Employer. Any such proposal shall be prepared at the cost of the Contractor. However Employer is not bound to accept such proposal.

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Sub-Clause 33.1 Terms of Payment

(Employer may vary this Sub-Clause)

The following Sub-Clauses are added:

Sub-Clause 33.1.1 Retention of Payment

If at any time any payment would fall due for Works or part of Works and, if there shall be any defect in part of such Works in respect of which such payment is proposed, the Employer may retain the whole or any part of such payment. Any sum retained by the Employer pursuant to the provisions of this Clause shall be paid to the Contractor after the said defect is removed.

Sub-Clause 33.1.2 Payment Where Taking-Over Certificate Issued for Section or part of Works

If any section or part of the Works shall be taken-over separately under Clause 29 (Taking-Over) hereof, the payments herein provided for on or after Taking-Over shall be made in respect of the section or part taken-over and reference to the price shall mean such part of the price as shall, in the absence of agreement, be apportioned thereto by the Engineer.

Sub-Clause 33.2 Method of Application

(Employer may vary this Sub-Clause)

Sub-Clause 33.5 Payment

Sub-Clause 33.5 is deleted and substituted by the following:

The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract, shall, subject to Clause 27, be paid by the Employer to the Contractor within 30 days after such Interim Payment Certificate has been jointly verified by Employer and Contractor, or, in the case of the Final Certificate referred to in Sub-Clause 33.10 within 60 days after such Final Payment Certificate has been jointly verified by Employer and Contractor; Provided that the Interim Payment shall be caused in 42 days and Final Payment in 60 days in case of foreign funded project.

Deduction shall be made from the net amounts payable to the Contractor of any sum(s) in accordance with the prevalent Federal and/or Provincial laws, provided that no such deduction shall be made from those payments in respect of which the Contractor has obtained exemption under the Law."

Sub-Clause 33.6 Delayed Payments

The text of Sub-Clause 33.6 is deleted and substituted by the following:

"In the event of the failure of the Employer to make payment within the times stated in



Sub-Clause 33.5, the Employer shall pay to the Contractor compensation at the rate of KIBOR+1% for local currency and LIBOR+1% for foreign currency per annum, upon all local currency sums unpaid from the date by which the same should have been paid. The provisions of this Sub-Clause are without prejudice to Contractor's entitlement under Sub-Clause 46.1."

Sub-Clause 33.8 Payment by Measurement

The work shall be measured for the units mentioned in the Schedule of Prices according to the Contract as determined by the Engineer from approved drawings, Specifications and Contract Documents.

Sub-Clause 33.12 Withholding of Payment

New Sub-Clause 33.12 is added as given below:

If the Works or any part thereof is not being carried out to the Engineer's satisfaction and in order to protect the Employer from loss on account of:

(a) defective work not rectified
(b) guarantees not met
(c) claims filed against the Contractor
(d) failure of the Contractor to make payments due for Plant procured or labor employed by him.
(e) damage to any other contractor employed by the Employer.
(f) Contractor's non–compliance with the Contract
(g) any Government dues recoverable from the Contractor if notified by the Government

The Engineer may notify withholding of such payments or part thereof as may, in his opinion, be related to the aforesaid reasons/grounds. When the reasons/grounds for withholding the payment are removed by the Contractor, the Engineer shall upon being satisfied to that effect issue Certificate of Payment in respect of withheld amounts.

Sub-Clause 35.1 Payment in Foreign Currencies N/A

(Employer may vary this Sub-Clause)

Sub-Clause 35.2 Currency Restrictions N/A

The text of Sub-Clause 35.2 is deleted and substituted by the following:

"Any required foreign currency transactions shall be met by the Employer/Contractor at his cost from his own resources."

Sub-Clause 35.3 Rates of Exchange N/A

The words "as stated in the Preamble" appearing in 3rd line of Sub-Clause are deleted and substituted by the words "as published or authorized by State Bank of Pakistan".

Sub-Clause 36.4 Payment against Provisional Sums N/A

Sub-Clause 36.4 is deleted and substituted by the following:

"Provisional Sum if any will be expended on the direction of the Engineer through Variation Orders which would be valued in accordance with the provisions of Clause 31 Conditions of Contract."

Sub-Clause 37.2 Employer's Risks

The text of Sub-Clause 37.2 is deleted and substituted by the following:

"The Employer's Risks are:

(a) (Insofar as they relate to Pakistan) war and hostilities (whether war be declared or not), invasion, act of foreign enemies

(b) (Insofar as they relate to Pakistan) rebellion, revolution, insurrection, military or usurped power or civil war

(c) ionizing radiation or contamination by radioactivity from any nuclear fuel, radio-active toxic explosives or other hazardous properties of any explosive nuclear assembly or nuclear components thereof

(d) pressure waves caused by aircraft travelling at sonic or supersonic speed

(e) (Insofar as they relate to Pakistan) riot, commotion or disorder, unless solely restricted to the employees of the Contractor or of his Subcontractors

(f) use or occupation of the Work or any part thereof by the Employer

(g) fault, error, defect or omission in the design of any part of the Works by the Engineer, Employer or those for whom the Employer is responsible for which the Contractor has disclaimed responsibility in writing within a reasonable time after the receipt of such design

(h) the use or occupation of the Site by the Works or any part thereof, or for the purposes of the Contract: or interference, whether temporary or permanent with any right of way, light, air or water or with any easement, way leaves or right of a similar nature which is the inevitable result of the construction of the Works in accordance with the Contract

(i) the right of the Employer to construct the Works or any part thereof on, over, under, in or through any land

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(j) damage (other than that resulting from the Contractor's method of construction) which is the inevitable result of the construction of the Works in accordance with the Contract

(k) the act, neglect or omission or breach of contract or of statutory duty of the Engineer, the Employer or other contractors engaged by the Employer or of their respective employees or agents."

Sub-Clause 39.2 Loss or Damage Before Risk Transfer Date

The words "by arbitration under Clause 50" are deleted and substituted by the words "by the Engineer".

Sub-Clause 39.4 Duty to Minimize Delay

New Sub-Clause 39.4 is added as given below:

Each Party shall at all times use all reasonable endeavors to minimize any delay in the Performance of the Contract as a result of Risks.

The Contractor shall give notice to the Employer and vice versa the Employer shall give notice to the Contractor in case of foreseeable delay by the Risks.

Sub-Clause 40.2 Employer's Liability

The text of Sub-Clause 40.2 from the words "or of death or personal injury" to the end of the Sub-Clause, is deleted and substituted by the following:

"..... (other than the Works) or of death or personal injury to the extent caused by any of the Employer's Risks listed in paragraphs (f), (g), (h), (i), (j), and (k) of Sub-Clause 37.2 but not otherwise."

Sub-Clause 42.2 Maximum Liability

the words "the sum stated in the Preamble to Conditions of Contract or if no such sum is stated" appearing in 2nd line of Sub-Clause are deleted.

Sub-Clause 42.6 Foreseen Damage

Sub-Clause 42.6 is deleted in its entirety.

Sub-Clause 43.1 The Works (Insurance)

(Employer may vary this Sub-Clause)

Sub-Clause 43.2 Contractor's Equipment

Sub-Clause 43.2 is deleted and substituted by the following:

"The Contractor shall insure the Contractor's Equipment for its full replacement value

while on the Site against all loss or damage caused by any of the Contractor's Risks."

Sub-Clause 43.3 Third Party Liability (Insurance)

(Employer may vary this Sub-Clause)

Sub-Clause 43.7 Remedies on the Contractor's Failure to Insure

In 3rd line after the word, "purpose", the expressions- "and reasonable costs including the man-hours costs of Employer's Personnel" are added.

Sub-Clause 43.9 Currency of Insurance

New Sub-Clause 43.9 is added as given below:

"All policies of Insurance of the Plant shall provide for payment of indemnity to be made in such amounts as will allow making good of loss of or damage to the whole or any part of the Works."

Sub-Clause 43.10 Contractor to Notify

New Sub-Clause 43.10 is added as given below:

"It shall be the responsibility of the Contractor to notify the insurance company of any changes in nature and extent of the Works and to ensure the adequacy of the insurance coverage at all times in accordance with the provisions of the Contract."

Sub-Clause 43.11 Procurement of Insurance Policies

New Sub-Clause 43.11 is added as given below:
"The Contractor shall procure and submit the insurance cover under this Clause within a period of 28 days from the date of receipt of Letter of Acceptance from the Employer."

Sub-Clause 44.6 Damage Caused by Force Majeure

At the end of the Sub-Clause 44.6 the following is added:

"However the Contractor shall put up his claim to the Employer / Engineer with full details and justification."

Sub-Clause 44.8 Payment on Termination for Force Majeure

Text in sub-para (c) is deleted and para (d) and (e) are re-numbered as (c) and (d).

Sub-Clause 44.10 Force Majeure Affecting Engineer's Duties

Sub-Clause 44.10 is deleted in its entirety.

Sub-Clause 45.2 Contractor's Default

The following paragraph is added at the end of Sub-Clause 45.2.

"The Employer or such other contractor may use for such completion any Contractor's Equipment which is upon the Site as he or they may think proper, and the Employer shall pay the Contractor a reasonable compensation for such use".

Sub-Clause 45.6 is added as follows:
Sub-Clause 45.6 Integrity Pact

If the Contractor or any of his Subcontractors, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Contractor as Schedule-H to his Bid, then the Employer shall be entitled to:

(a) recover from the Contractor an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Contractor or any of his Subcontractors, agents or servants;
(b) terminate the Contract; and
(c) recover from the Contractor any loss or damage to the Employer as a result of such termination or of any other corrupt business practices of the Contractor or any of his Subcontractors, agents or servants.

The termination under Sub-Para (b) of this Sub-Clause shall proceed in the manner prescribed under Sub-Clauses 45.2 to 45.5 and the payment under Sub-Clause 45.4 shall be made after having deducted the amounts due to the Employer under Sub-Para (a) and (c) of this Sub-Clause.

Sub-Clause 46.1 Employer's Default

The comma and the word "or" at the end of paragraph (d) of Sub-Clause 46.1 are deleted and substituted by period (.) Paragraph (e) of Sub-Clause 46.1 is deleted.

Sub-Clause 46.3 Payment on Termination for Employer's Default

The words "including loss of profit" in the second paragraph of Sub-Clause 46.3 are deleted.

Sub-Clause 49.1 Notice to Contractor

The following is added at the end of Sub-Clause 49.1:

"For the purposes of Sub-Clause 49.1 the Contractor shall, immediately after receipt of Letter of Acceptance, intimate in writing to the Employer and the Engineer by registered post, the address of his principal place of business or any change in such address during the period of the Contract."



Sub-Clause 50 Disputes & Arbitration

Clause 50 is deleted and in its place the following Sub-Clauses 50.1 to 50.5 are inserted:

"50.1 If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with, or arising out of, the Contract or the execution of the Works, whether during the execution of the Works or after their completion and whether before or after repudiation or other termination of the Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state that it is made pursuant to this Clause. No later than the fifty sixth (56) day after the day on which he received such reference, the Engineer shall give notice of his decision to the Employer and the Contractor. Such decision shall state that it is made pursuant to this Clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the Work with all due diligence, and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided in an amicable settlement or in an arbitral award.

In any case where the Conditions of Contract provide that the decision of the Engineer is to be final and conclusive, such decision shall not be referable to arbitration under this Clause nor shall the same be questioned in any other form of proceedings whatsoever.

50.2 If either the Employer or the Contractor be dissatisfied with a decision of the Engineer or if the Engineer fails to give notice of his decision on or before the fifty sixth (56) day after the day on which he received the reference, then either the Employer or the Contractor may, on or before the twenty eighth (28) day after the day on which the said period of fifty six (56) days expired, as the case may be, give notice to the other party to commence arbitration, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 50.5, no arbitration in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notification of intention to commence arbitration as to such dispute has been given by either the Employer or the Contractor on or before the twenty eighth (28) day after the day on which the parties received notice as to such decision from the Engineer the said decision shall become final and binding upon the Employer and the Contractor.

50.3 Where notice of intention to commence arbitration as to a dispute has been given in accordance with Sub-Clause 50.2, arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably through mutual negotiation within ninety (90) days from the date of notification of Engineer's decision.

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50.4 Any dispute in respect of which:

(a) the decision, if any, of the Engineer has not become final and binding pursuant to Sub-Clause 50.1 and

(b) amicable settlement has not been started/reached within the period stated in Sub-Clause 50.3

shall be finally settled, unless otherwise specified in the Contract, under the Pakistan Arbitration Act, 1940 (Act No. X of 1940) and Rules made thereunder as amended, by one or more arbitrators appointed under such Rules.

The said arbitrator(s) shall have full power to open up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Engineer for the purpose of obtaining said decision pursuant to Sub-Clause 50.1. No such decision shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator(s) on any matter whatsoever relevant to the dispute.

The venue of arbitration proceedings shall be the place in Pakistan as mentioned in the Preamble to Conditions of Contract.

50.5 Where neither the Employer nor the Contractor has given notice of intention to commence arbitration of a dispute within the period stated in Sub-Clause 50.1 or 50.2 and the related decision has become final and binding, either party may, if the other party fails to comply with such decision, and without prejudice to any other rights it may have, refer the failure to arbitration in accordance with Sub-Clause 50.4. The provisions of Sub-Clauses 50.1 to 50.2 shall not apply to any such reference."

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VIII- STANDARD FORMS

STANDARD FORMS

Page No.

Standard Forms include the following:

- Form of Contract Agreement 114
- Form of Performance Security 116
  (Performance Bond inshape of Bank Guarantee)
- Form of Bank Guarantee/Bond for Advance Payment 118

(Note: Standard Forms provided in this document for securities are to be issued by a bank. In case the bidder chooses to issue a bond for accompanying his bid or performance of contract or receipt of advance, the relevant format shall be tailored accordingly without changing the spirit of the Forms of securities).

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the _____ day of _____ (month) 20_____ between _____ _____ (hereafter called the "Employer") of the one part and _____ (hereafter called the "Contractor") of the other part.

WHEREAS the Employer is desirous that certain Works, via _____ should be executed by the Contractor and has accepted a Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW this Agreement witnessed as follows:

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

2. The following documents after incorporating addenda, if any except those parts relating to Instructions to Bidders shall be deemed to form and be read and construed as part of this Agreement, via:

   (a) The Contract Agreement
   (b) The Letter of Acceptance
   (c) The completed Form of Bid
   (d) The Preamble to Conditions of Contract
   (e) The Particular Conditions of Contract
   (f) The General Conditions of Contract
   (g) The priced Schedule of Prices
   (h) The completed Schedules to Bid
   (i) The Specifications
   (j) The Drawings

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

4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this Contract Agreement to be executed on the day, month and year first before written in accordance with their respective laws.



Signature of the Contactor	Signature of the Employer
_____	_____
(Seal)	(Seal)

Signed, Sealed and Delivered in the presence of:

Witness:	Witness:
_____	_____
(Name, Title and Address)	(Name, Title and Address)

FORM OF PERFORMANCE SECURITY
(Performance Bond inshape of Bank Guarantee)

Guarantee No._____
Executed on _____
Expiry date _____

[Letter by the Guarantor to the Employer]

Name of Guarantor (Bank) with address: _____
Name of Principal (Contractor) with address:
_____
_____
Penal Sum of Security (express in words and figures) _____
_____
Letter of Acceptance No. _____Dated _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the _____ (hereinafter called the Employer) in the penal sum of the amount stated above for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has accepted the Employer's above said Letter of Acceptance for _____ _____ (Name of Contract) for the _____

_____ (Name of Project).

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 30, Defects after Taking Over, of Conditions of Contract are fulfilled.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We, _____ (the Guarantor), waiving all objections and defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's written declaration



that the Principal has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling said obligations and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer forthwith and without any reference to the Principal or any other person.

IN WITNESS WHEREOF, the above-bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

_____
Guarantor (Bank)

Witness:

1. _____ Signature _____

_____ Name _____
Corporate Secretary (Seal)

Title _____

2. _____

_____ _____
Name, Title & Address Corporate Guarantor (Seal)

FORM OF BANK GUARANTEE/BOND FOR ADVANCE PAYMENT

Guarantee No._____
Executed on_____
Expiry date _____

[Letter by the Guarantor to the Employer]

WHEREAS the _____ (hereinafter called the Employer) has entered into a Contract for _____ _____ _____ (Particulars of Contract), with _____ _____ (hereinafter called the Contractor).

AND WHEREAS the Employer has agreed to advance to the Contractor, at the Contractor's request, an amount of Rupees_____ (Rs._____) which amount shall be advanced to the Contractor as per provisions of the Contract.

AND WHEREAS the Employer has asked the Contractor to furnish Guarantee to secure advance payment for performance of his obligations under the said Contract.

AND WHEREAS _____ (Bank) (hereinafter called the Guarantor) at the request of the Contractor and in consideration of the Employer agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

NOW THEREFORE the Guarantor hereby guarantees that the Contractor shall use the advance for the purpose of above mentioned Contract and if he fails, and commits default in fulfillment of any of his obligations for which the advance payment is made, the Guarantor shall be liable to the Employer for payment not exceeding the aforementioned amount.

Notice in writing of any default, of which the Employer shall be the sole and final judge, as aforesaid, on the part of the Contractor, shall be given by the Employer to the Guarantor, and on such first written demand payment shall be made by the Guarantor of all sums then due under this Guarantee without any reference to the Contractor and without any objection.

This guarantee shall come into force as soon as the advance payment has been credited to the account of the Contractor.

This guarantee shall expire not later than _____
by which date we must have received any claims by registered letter, telegram, telex or telefax.

HI-TECH ENGINEERING COMPANY HEC

It is understood that you will return this Guarantee to us on expiry or after settlement of the total amount to be claimed hereunder.

_____
Guarantor (Bank)

Witness:

1. _____ Signature _____

_____ Name _____
Corporate Secretary (Seal)

Title _____

2. _____

_____ _____
Name, Title & Address Corporate Guarantor (Seal)

IX- SPECIFICATIONS

SPECIAL PROVISIONS (N/A)

SP-1 WORK BY CONTRACTOR

SP-2 WORK BY OTHERS

SP-3 FACILITIES PROVIDED BY THE EMPLOYER

SP-4 DESCRIPTION OF THE PROJECT

SP-5 ACCESS TO SITE

SP-6 SITE CONDITIONS

SP-7 STANDARDS AND DESIGN

SP-8 DRAWINGS AND INFORMATION

SP-9 INSTRUCTION MANUALS

SP-10 CONTRACTOR TO COOPERATE WITH OTHERS

SP-11 INSTRUCTIONS AND TRAINING OF EMPLOYER'S STAFF

SP-12 ERECTION AND TESTING EQUIPMENT AND MAINTENANCE TOOLS

SP-13 SPARE PARTS

SP-14 PACKING

SP-15 ERECTION MARKS

SP-16 PROGRAMME

SP-17 PROGRESS REPORTS AND MEETINGS

SP-18 PHOTOGRAPHS

SP-19 SECTIONS OF THE WORKS

SP-20 QUALITY ASSURANCE

SP-21 SUBCONTRACTS

SP-22 INSPECTION AND TESTING

SP-23 TESTS ON COMPLETION

SP-24 TAKING OVER

SP-25 TRANSPORTATION AND HANDLING OF PLANT

SP-26 DEFECTS AFTER TAKING OVER

SP-27 DIRECTED AND REQUIRED

SP-28 PAYMENT FOR WORK REQUIRED BY SPECIAL PROVISIONS

SP-29 SAFETY AND HEALTH

SP-30 RATING PLATES, NAMEPLATES AND LABELS

X- SPECIFICATIONS

TECHNICAL PROVISIONS (N/A)

[Note for Preparing the Specifications

A set of precise and clear specifications is a prerequisite for bidders to respond realistically and competitively to the requirements of the user without qualifying their Bids. The specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, performance of the works. Only if this is done objectives of economy, efficiency, and fairness in procurement will be realized and responsiveness of Bids can be ensured, and the subsequent task of bid evaluation can be facilitated. The specifications should require that materials to be incorporated in the works be new, unused, and of the most recent or current models, and incorporated all recent improvements in design and materials unless provided for otherwise in the contract.

Samples of specifications from similar previous procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the works and the repetitiveness of the type of procurement, it may be advantageous to standardize the Technical Specifications that should cover all classes of workmanship, materials and equipment although not necessarily to be used in a particular procurement.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for equipment, materials, and workmanship, recognized international standards should be used as much as possible. The specifications shall consider all site conditions but not limited to seismic conditions, weather conditions and environmental impact. The specifications should state that equipment, materials, and workmanship that meet other authoritative standards, and which ensure at least a substantially equal quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the Specifications.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Specifications to specific standards and codes to be met by Works to be furnished and tested, the provisions of the latest current edition or revision of the relevant shall apply, unless otherwise expressly stated in the Contract. Other authoritative standards that ensure equivalence to the standards and codes specified will be acceptable.]

XI- DRAWINGS N/A

(To be prepared and incorporated by the Employer)


ELEVATED-16'-0"
TILT ANGLE = 5°
AZIMUTH = 236.6
TOTAL MODULE = 115
TOTAL POWER = 83.37 KW
ELEVATED-9'-0"
TILT ANGLE = 5°
AZIMUTH = 148
TOTAL MODULE = 111
TOTAL POWER = 80.47 KW
ELEVATED-16'-0"
TILT ANGLE = 5°
AZIMUTH = 235
TOTAL MODULE = 65
TOTAL POWER = 47.12 KW
WALKWAY
ELEVATED-9'-0"
TILT ANGLE = 5°
AZIMUTH = 144.7
TOTAL MODULE = 240
TOTAL POWER = 174 KW
ELEVATED-16'-0"
TILT ANGLE = 5°
AZIMUTH = 238.6
TOTAL MODULE = 280
TOTAL POWER = 203 KW
ELEVATED-9'-0"
TILT ANGLE = 5°
AZIMUTH = 173.2
TOTAL MODULE = 70
TOTAL POWER = 50.75 KW
INVERTER & LV SHED
ELEVATED-9'-0"
TILT ANGLE = 5°
AZIMUTH = 212.3
TOTAL MODULE = 120
TOTAL POWER = 87 KW
WALKWAY
ELEVATED-9'-0"
TILT ANGLE = 5°
AZIMUTH = 216.6
TOTAL MODULE = 576
TOTAL POWER = 417.6 KW
ELEVATED-16'-0"
TILT ANGLE = 5°
AZIMUTH = 131.6
TOTAL MODULE = 85
TOTAL POWER = 61.6 KW
ELEVATED-16'-0"
TILT ANGLE = 5°
AZIMUTH = 142
TOTAL MODULE = 115
TOTAL POWER = 83.37 KW
ELEVATED-16'-0"
TILT ANGLE = 5°
AZIMUTH = 155
TOTAL MODULE = 70
TOTAL POWER = 50.75 KW
ELEVATED-16'-0"
TILT ANGLE = 5°
AZIMUTH = 203.6
TOTAL MODULE = 120
TOTAL POWER = 87 KW
WALKWAY
ELEVATED-9'-0"
TILT ANGLE = 5°
AZIMUTH = 220.6
TOTAL MODULE = 330
TOTAL POWER = 239.25 KW
WALKWAY

ARORUNIVERSITY OF ART, ARCHITECTURE, DESIGN & HERITAGE SUKKUR
OFFICE OF THE PROJECT DIRECTOR

NO. PD/AU-SKR/- 435 of 2026
Dated: 04/11/2026

EXPRESSION OF INTEREST
BUILD – OPERATE - TRANSFER MODEL (B.O.T)
E-PAK ACQUISITION & DISPOSAL SYSTEM (EPADs)

Sealed tenders are invited from all interested Contractors / Firms / Companies / Suppliers / Vendors that fulfill eligibility criteria under the SPPRA-2010 Rules (Amended-up to Date) on National Competitive Bidding for the Procurement of Goods and Services, with valid registration with the Income Tax Department & SRB, FBR,PEC (C-2 or above), PPIB (C-1). Eligible bidders are invited to participate in the tenders mentioned below. Bidders should submit their bids in a single package containing two separate sealed envelopes, as per SPPRA Rule No.46 (2) **Single Stage Two Envelope**. Each envelope should be marked "**Technical Proposal**" and "**Financial Proposal**" and should reference the tender enquiry **NO. PD/AU-SKR/- 435 of 2026** dated: 4/11/2026. The details are as follows:

S. No	Tender Title	Tender Fee	Estimated Cost	Completion Period	Bid Security	Date of Publish	Pre-Bid Meeting Date	Date of Submission & Opening
01.	Selection of Contractors for Engineering, Procurement and Construction of 1664 KWp Solar Power System along with 2.00 MWH BESS under B.O.T Model	10,000	**PKR 350.0 Million**	Six Month	10,500,000	10th Nov,2026	18th NOV 2026 @ 02:30 PM	26th NOV 2026 Submission 01:30 PM Opening 02:00 PM

The tender documents are available from SPPRA (E-Pad) at https://portalsindh.eprocure.gov.pk and Aror University, Sukkur's website at https://aror.edu.pk, upon payment via pay order/DD in favour of 'The Aror University of Art, Architecture, Design, and Heritage' Sukkur (non-refundable). Bidding documents may be downloaded from 10/11/2026. Completed bids should be **submitted 26/11/2026 up to 01:30 p.m. & opening same at 02:00 p.m** in the presence of contractors/Companies/representatives present at the time of opening at Aror University, Sukkur. Conditional tenders or tenders unaccompanied by earnest money will not be considered in the competition.

Bidders are required to submit proposals according to the Technical Evaluation Criteria provided in the Bidding Documents.

The Procuring Agency may reject any or all bids subject to relevant provisions of SPPRA Rules in cases of:

1. Bids not accompanied by the required bid security amount, Processing fees and form.
2. Bids received after the specified date and time.
3. Bids from blacklisted/suspended bidders.

In the event of a holiday announcement or other disruptions, the tenders will be opened on the next working day as per the schedule. Accordingly, bidders to be informed via e-mail/whatsapp.

Project Director
Aror University Sukkur

Address: Project Director, Aror University of Art, Architecture, Design & Heritage Rohri Bypass Sukkur. 65170
E-mail: pd@aror.edu.pk Tel: 071-5651900 Ext: 901

ARORUNIVERSITY OF ART, ARCHITECTURE, DESIGN & HERITAGE SUKKUR
OFFICE OF THE PROJECT DIRECTOR

No. PD/AU-SKR/- 436 of 2026
Dated: 04 / 11 /2026

NOTIFICATION

With the approval of the Worthy Vice-Chancellor, Aror University of Art, Architecture, Design and Heritage, Sukkur, the following Procurement Committee is hereby constituted and authorized to undertake and oversee the procurement process for the **"Supply, Installation, Testing and Commissioning of a 1.66 MWp Solar Photovoltaic (PV) System with 2 MWh Battery Energy Storage System (BESS)"** at Aror University of Art, Architecture, Design & Heritage, Sukkur, on a **Build, Operate and Transfer (BOT)** basis, in accordance with **Rules 7, and 8 of the Sindh Public Procurement Rules, 2010 (as amended to date)** and other applicable laws, rules, regulations and guidelines:.

1. **Mr. Abdul Haleem Soomro**
   Director Finance
   Aror University Sukkur
   Convenor

2. **Mr. Manzoor Ali Rind**
   Project Director
   Aror University, Sukkur
   Member

3. **Prof. Dr. Zameer Abro**
   Dean – Faculty of Design
   Aror University Sukkur
   Member

4. **Dr. Nadeem Ahmed Tunio**
   Assistant Professor
   MUET SZAB Campus Khairpur Mirs
   External Member

5. **Engr. Abdul Jabbar**
   XEN – Electrical
   PUMHS University Nawabshah
   External Member

6. **Engr. Iftikhar Ahmed**
   Assistant Engineer (Electrical)
   Aror University Sukkur
   Member

7. **Engr. Bhawish Dass**
   Project Engineer
   Aror University Sukkur
   Member/Secretary

Address: Project Engineer, Aror University of Art, Architecture, Design & Heritage Rohri Bypass Sukkur. 65170
Tel: 071-5651900,

TERMS OF REFRENCES (TORs) OF PROCUREMENT COMMITTEE

1. Prepare, review, and finalize, BOT Concession Agreement, qualification requirements, evaluation criteria, and other bidding documents for approval by the Competent Authority.
2. Ensure that the bidding documents and procurement process comply with the applicable SPPRA Rules, Pakistan Engineering Council (PEC) regulations/guidelines, applicable Public-Private Partnership (PPP) laws, policies and guidelines, and other relevant statutory requirements.
3. Conduct pre-bid meetings, examine pre-bid queries, and recommend clarifications, corrigenda, or addenda for approval by the Competent Authority.
4. Receive, open, and carry out the technical and financial evaluation of bids/proposals in accordance with the approved evaluation criteria and applicable procurement rules.
5. Prepare and submit the Evaluation Report and recommend the most advantageous responsive bidder to the Competent Authority for approval.
6. Seek clarifications from bidders, where permissible under the applicable procurement rules, without permitting any material change to the submitted bids.
7. Review the successful bidder's technical design, implementation methodology, project schedule, Operation & Maintenance (O&M) Plan, performance guarantees, and other technical submissions, and submit recommendations to the Competent Authority prior to contract execution.
8. Oversee and review the services, technical assistance, and deliverables provided by the Consultant during the procurement process and other ancillary activities connected with the procurement and recommend any necessary modifications or technical revisions to the Competent Authority for approval and subsequent communication to the Consultant.
9. Verify technical submissions, milestone deliverables, testing and commissioning reports, and other contractual deliverables, where assigned by the Competent Authority, and submit recommendations for acceptance.
10. Maintain complete procurement records, including bidding documents, bid opening proceedings, evaluation reports, meeting minutes, correspondence, and recommendations for audit and record purposes.
11. Perform any other function ancillary and incidental to the procurement process as may be assigned by the Competent Authority in accordance with Rule 8 of the Sindh Public Procurement Rules, 2010.

Deliverables:

The Committee shall submit, as applicable:

- Pre-Bid Meeting Minutes and Clarifications.
- Technical & Financial Evaluation Report.
- Recommendation for Award of Contract.
- Technical Review Reports.
- Recommendations on Consultant's Technical Deliverables.
- Testing & Commissioning Verification Report (where assigned).
- Procurement Record and Completion Report.

Reporting:

The Committee shall report to the **Vice-Chancellor/Competent Authority** and perform its functions in accordance with **Rules 7 and 8 of the Sindh Public Procurement Rules, 2010**, applicable PEC regulations/guidelines, PPP laws and policies, and other applicable statutory provisions.

All recommendations of the Committee shall be subject to approval of the Competent Authority, wherever required under the applicable rules and regulations.

The Committee shall commence its functions with immediate effect and shall remain responsible for the procurement process of the subject project until completion of the assigned procurement activities or until further orders.

This issues with the approval of the Worthy Vice-Chancellor, Aror University of Art, Architecture, Design and Heritage, Sukkur.

Project Director
Aror University, Sukkur

Copy forwarded for information:

1. Secretary to Vice-Chancellor, Aror University of Art, Architecture, Design & Heritage Sukkur.
2. All Concerned.
3. Office File.

ARORUNIVERSITY OF ART, ARCHITECTURE, DESIGN & HERITAGE SUKKUR
OFFICE OF THE PROJECT DIRECTOR

No. PD/AU-SKR/- 437 of 2026
Dated: 04 / 11 /2026

NOTIFICATION

With the approval of the Worthy Vice-Chancellor, Aror University of Art, Architecture, Design and Heritage, Sukkur, the following Complaint Redressal Committee is hereby constituted and authorized to undertake and oversee the procurement process for the *"Supply, Installation, Testing and Commissioning of a 1.66 MWp Solar Photovoltaic (PV) System with 2 MWh Battery Energy Storage System (BESS)"* at Aror University of Art, Architecture, Design & Heritage, Sukkur, on a Build, Operate and Transfer (BOT) basis, in accordance with Rules 31 of the Sindh Public Procurement Rules, 2010 (as amended to date) and other applicable laws, rules, regulations and guidelines:

1. **Prof. Engr. Dr Zahid Hussain Khand**
   Director Finance
   Aror University Sukkur — **Convenor**

2. **District Account Officer**
   District Account Officer — **External Member**

3. **Engr. Muhammad Akbar**
   Manager - MEP
   Dr. Ziauddin Hospital Sukkur — **External Member**

TERMS OF REFRENCES (TORs) OF PROCUREMENT COMMITTEE

1. To examine written complaints submitted by aggrieved bidders in accordance with Rule 31 of the Sindh Public Procurement Rules, 2010
2. To Scrutinize relevant procurement records, bidding documents and supporting evidence.
3. To identify procedural irregularities or violations of applicable procurement rules and regulations.
4. To announce a reasoned division within seven (7) days of receipt of the complaint
5. To ensure compliance with the applicable provisions regarding continuation of procurement proceedings and award of contract during the complaint redressal process.

This issues with the approval of the Worthy Vice-Chancellor, Aror University of Art, Architecture, Design and Heritage, Sukkur.

Project Director
Aror University, Sukkur

Copy forwarded for information:
1. Secretary to Vice-Chancellor, Aror University of Art, Architecture, Design & Heritage Sukkur.
2. All Concerned.
3. Office File.

Address: Project Engineer, Aror University of Art, Architecture, Design & Heritage Rohri Bypass Sukkur. 65170
Tel: 071-5651900,