



FAZAIA RUTH PFAU MEDICAL COLLEGE
PAF BASE FAISAL, KARACHI



**PROVISIONING AND INSTALLATION OF SOLAR
POWER PLANT AT
FAZAIA RUTH PFAU MEDICAL COLLEGE,
KARACHI**

LAST DATE FOR SUBMISSION OF PROPOSAL

27th May 2024

**PAY ORDER / DEMAND DRAFT TO BE MADE IN FAVOR OF
“FAZAIA RUTH PFAU MEDICAL COLLEGE, KARACHI”**

MAY 2024

Volume :1

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BOQ,s & Drawings

CHECKLIST FOR DOCUMENTS

CHECKLIST FOR ESSENTIAL DOCUMENTS

Note: Failure to provide any of the documents listed in the checklist below at the time of bid submission would result in technical disqualification of the firm. It is Important to attach all documents as per following sequence Serial 1 to 10 below:

S#	Document Name	(Initial if provided)	Page(s) where document is provided
1	Company Profile (to be attached)		
2	Affidavit that firm is not blacklisted by any Government Department/Civil Agency (to be attached).		
3	Duly filled Appendix- A (to be attached).		
4	Latest Bank statement for the last 12 months duly signed & stamped by the Bank (to be attached)		
5	Photocopy of bid security showing bid amount as blanked (to be attached)		
6	Previously completed Purchase Orders & Completion Certificates (to be attached)		
7	Proof of firm's registration with income tax department (to be attached)		
8	Tender document duly signed and stamped by the contractor (to be attached)		
9	Detailed Tax Returns for last 3 years (to be attached)		
10	Audited Financial Statement for last 3 years (to be attached)		

Note:

These documents will be checked Infront of all parties, if any of above documents listed is not attached, bid documents shall be returned without further opening. Penalty of 10% of bid security will be deducted.

**INVITATION
TO
TENDERERS**

INVITATION TO TENDERERS

Address:

1. Address: Admin Office
Fazaia Ruth Pfau Medical College,
PAF Base Faisal,
Main Shahra-e-Faisal,
Karachi-74350
Tel: 021-34604701

Date: May, 2024

1. The Employer invites sealed tenders from eligible firms for “PROVISION AND INSTALLATION OF 350 KVA ON-GRID SOLAR POWER PLANT FOR ITS ‘Fazaia Ruth Pfau Medical College, Karachi’.
2. A complete set of Tender Documents may be downloaded by interested eligible tenderers on submission of a written application to the abovementioned office along with Pay Order / Demand Draft of **Rs. 5,000/- (Five Thousand only)** in favor of “Fazaia Ruth Pfau Medical College, Karachi” (Non-refundable/Non-Transferrable).
3. All tenders must be accompanied by a Tender Security as mentioned in the special stipulations must be delivered on above mentioned address at or before 10:00 hours, on **27th May, 2024**. Tenders will be opened at 12:30 hours on the same day in the presence of tenderers/representatives who choose to attend. **This is an item rate / measurement based contract.**
4. Fazaia Ruth Pfau Medical College reserves the right to reject any or all bids/proposals prior to acceptance or cancel the tendering process by giving a notice in this respect in pursuance of Rule 33 of Public Procurement Rules (2004).

**INSTRUCTIONS
TO TENDERERS
&
TENDERING DATA**

INSTRUCTIONS TO THE BIDDERS

GENERAL

The management of FMC, Air University desires to award an item / measurement based contract for the provision of following at FMC, Air University main campus Islamabad.

“PROVISION AND INSTALLATION OF 350 KVA ON-GRID SOLAR POWER PLANT FOR FAZAIA RUTH PFAU MEDICAL COLLEGE, KARACHI.

1 Scope of Tender, Source of Funds, Site Visit & Pre-Bid Meeting.

1.1 Scope of Tender

The scope of the works is as per abovementioned detail: -

1.2 Source of Funds

Fazaia Ruth Medical College, Karachi has arranged funds from its own resources.

1.3 Site Visit

The bidders are advised to visit the site, examine the site to obtain all information that may be necessary for preparing the tender and entering into a contract for execution of the work. All cost(s) in this respect shall be at the bidders own expenses.

1.4 Pre-Bid Meeting

The Contractor may, at his own or at the request of any prospective Bidder(s), hold a Pre-Bid meeting to clarify issues and to answer any questions on matters related to the Bidding Documents. The date, time and venue of Pre-Bid meeting, if convened, shall be intimated through letter for invitation.

All prospective Bidders or their authorized representatives shall be invited to attend such a Pre-Bid meeting

2 Eligible Tenderers

2.1 Tender is open to all contractors/construction firms who have previous experience of similar work and have necessary expertise to undertake the stated works as mentioned above. Relevant additional conditions in this regard are given below:-

- a) Never been blacklisted by any Govt organization. Affidavit to this effect shall be furnished.
- b) Never involved in litigation with any agency/Govt Deptt (Affidavit to this effect shall be furnished).
- c) Financial bids of only the technically qualified bidders will be opened.

3. INSTRUCTIONS FOR BIDDING & COST OF TENDERING

3.1 The bidders, in addition to the information mentioned in advertisement, are required to submit the requisite details in the form of following Performa

- a) The bidders are required to submit duly filled Appendix-A: Similar Projects completed in last 03 years.
- b) Details of Similar Ongoing Projects filled in Appendix-B

3.2 Cost of Tendering

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

TENDER DOCUMENTS

4 Contents of Tender Documents

4.1 The Tender Documents are those stated below, and should be read in conjunction with any Addendum issued in accordance with Clause 6.

1. Instructions to Tenderers & Tendering Data
2. Forms of Tender & Schedules to Tender
Schedules to Tender comprise the following:
 - (i) Schedule A: Preamble to Schedule of Prices
 - (ii) Special Stipulations
 - (iii) Bill of Quantities & Drawings.
 - (iv) Method of performing works
 - (v) Software generated project report
3. Conditions of Contract & Contract Data
4. Standard Forms:
 - (i) Form of Tender Security
 - (ii) Form of Performance Security
 - (iii) Form of Contract Agreement

5 Clarification of Tender Documents

A prospective tenderer requiring any clarification(s) in respect of the Tender Documents may notify through email.

info@frpmc.edu.pk

6 Amendment of Tender Documents

At any time prior to the deadline for submission of bids the FRPMC may for any reason, whether at own initiative or in response to a clarification requested by the bidder, modify the tender documents by issuing addendum.

- (a) Any addendum thus issued shall be part of the tender documents. To afford bidders reasonable time for taking such an addendum into account in preparing their bids, the FRPMC may at its discretion extend the deadline for submission of bids

PREPARATION OF TENDERS

7 Language of Tender

- a) Bidding documents and all correspondence shall be in English Language.
- b) The bid shall have a covering letter printed on firm's letter pad.
- c) All pages of the bid i.e instructions to bidders, integrity pact, specifications, contract documents and priced BoQ shall be initiated/signed and official seal be affixed by the person(s) authorized to sign.

8 Documents Comprising the Tender

8.1 Each bid shall comprise a single package containing two separately sealed envelopes. Each envelope shall separately contain the **TECHNICAL PROPOSAL** and **FINANCIAL PROPOSAL**.

- a) The envelopes shall be clearly marked as "TECHNICAL PROPOSAL" and "FINANCIAL PROPOSAL" in bold and legible letters to avoid confusion.
- b) The envelope marked as **TECHNICAL PROPOSAL** shall contain:-
 - (i) The Company Profile.
 - (ii) Information asked through the advertisement.
 - (iii) Performa A & B along with relevant supporting documents
 - (iv) Work schedule .
- c) The envelope marked as **FINANCIAL PROPOSAL** shall contain Tender Documents (Priced BoQ, Contract Documents) and bid security in shape of CDR.
- d) Initially, only the envelope marked as "**Technical Proposal**" shall be opened **10:00 hr, 27th May, 2024**.
 - (i) The Financial bids of only the technically qualified bidders will be opened whereas the financial bids of non-qualified bidders will not be considered and returned unopened to the respective bidders.

9 Sufficiency of Tender

- 9.1 Each tenderer shall satisfy himself before Tendering as to the correctness and sufficiency of his Tender and of the rates and prices entered in the Price Schedule, which shall, except in so far as it is otherwise expressly provided in the Contract, cover all his obligations under the Contract, including all applicable taxes, and all matters and things necessary for the proper completion of the Works.
- 9.2 The tenderer is advised to obtain for himself at his own cost and responsibility all information that may be necessary for preparing the tender and entering into a Contract for execution of the Works.

10 Tender Prices, Currency of Tender and Payment

- 10.1 The tenderer shall fill up the Schedule of Prices (Schedule A (ii) to Tender) of the tender document, indicating the unit rates and 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.
- 10.2 Unless otherwise stipulated in the Conditions of Contract, prices quoted by the tenderer shall remain fixed during the tenderer's performance of the Contract and not subject to variation on any account.
- 10.3 The unit rates and prices in the Schedule of Prices shall be quoted by the tenderer in the currency as stipulated in Tendering Data.

11. Documents Establishing Tenderer's Eligibility and Qualifications

- 11.1 Pursuant to Clause 8, the tenderer shall furnish, as part of its tender, documents establishing the tenderer's eligibility to tender and its qualifications to perform the Contract if its tender is accepted.
- 11.2 Tenderer must possess and provide evidence of the experience as stipulated in Tendering Data.

12. Documents Establishing Works Conformity to Tender Documents

- 12.1 The documentary evidence of the Works' conformity to the Tender Documents in the form of Bill of quantities and shall furnish documentation as set out in Tendering Data.
- 12.2 The tenderer shall note that standards for workmanship and references to brand names or catalogue numbers, designated by the Employer in the Technical Provisions are intended to be descriptive only and not restrictive.

13 BID AMOUNT & TENDER SECURITY

13.1 BID AMOUNT

The bidders are required to ensure that bid amount is firm, final and clearly written/typed without any ambiguity.

- a) The bidders are advised not to keep any space for bid negotiation.
- b) The rates shall be entered against each item in the bill of Quantity (BoQ).
- c) This an item / measurement based contract.
- d) The bidder shall be deemed to have obtained all information as to all the requirements thereto which may affect the bid price.

13.2 TENDER SECURITY / EARNEST MONEY

The bidder shall furnish a tender security/earnest money as given in special stipulations in the form of Deposit at call issued by a scheduled bank of Pakistan in favor of Fazaia Ruth Pfau Medical college, Karachi.

- a) Any bid not accompanied by an acceptable earnest money shall be rejected by the FRPMC, as non-responsive.
- b) The earnest money of the unsuccessful bidders will be returned upon award of contract to the successful bidder.
- c) The earnest money of bidders, who are not in competition, can be returned earlier at FRPMC discretion upon receiving a request.
- d) The earnest money of the successful bidder will be returned when the bidder has furnished the required performance security and signed contract agreement.
- e) The earnest money may be forfeited:-
 - i) If a bidder withdraws his bid during the period of validity.
 - ii) If the bidder does not accept the correction (clause-16.4 (b)) of his bid price.

Note: In case of the successful bidder, if he fails to furnish the required performance security and/or sign the contract agreement within seven days of the issuance of work order. His bid security may be forfeited and contract may be awarded to the next responsive bidder on the list.

14 Validity of Bids, Format, Signing and submission of Tender

- 14.1 Bids shall remain valid for a period of **90 days** from the date of opening of the bid.
- 14.2 All Schedules to Tender are to be properly completed and signed.
- 14.3 No alteration is to be made in the Form of Tender except in filling up the blanks as directed. If any alteration be made or if these instructions be not fully complied with, the tender may be rejected.
- 14.4 Each tenderer shall prepare Original and one copy specified in the Tendering Data of the documents comprising the tender as described in Clause 8 and clearly mark them "ORIGINAL" and "COPY" as appropriate. In the event of discrepancy between them, the original shall prevail.
- 14.5 The original and one copy of the tender shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign (in the case of copies, Photostats are also acceptable). This shall be indicated by submitting a written Power of Attorney authorizing the signatory of the tenderer to act for and on behalf of the tenderer. All pages of the tender shall be initialed and official seal be affixed by the person(s) signing the tender.
- 14.6 The Tender shall be delivered in person or sent by registered mail at the address to Employer as given in Tendering Data.

15 Deadline for Submission, Modification & withdrawal of Tenders

15.1 Deadline for submission of Bid:

The bid shall be delivered in person/courier services so as to reach at Admin Office, Fazaia Ruth Pfau Medical College, PAF Base Faisal, Main Shahra-e-Faisal, Karachi-74350 before **on 10:00 hr, 27th May, 2024.**

- a) Sealed bids shall be received along with PO/DD to Admin Office on or before the prescribed time on given date.
- b) Bids shall be submitted in sealed envelope having necessary information regarding tender notice.
- c) No open, emailed or faxed bids will be accepted.
- d) Any bid submitted after the deadline for tender submission will be returned unopened to such bidder.

15.2 Modification & withdrawal of Bid

Following terms will apply for modification or withdrawal of bid.

- a) Any bidder may modify or withdraw his bid after bid submission provided that written notice of the modification or withdrawal is received by the concerned officer prior to the deadline for submission of bids.

- b) No bid shall be modified or withdrawn by a bidder after the deadline for submission of bids.

TENDER OPENING AND EVALUATION

16 Tender Opening & Clarification and Evaluation

16.1 The Employer will open the tenders, in the presence of tenderers' representatives who choose to attend, at the time, date and location stipulated in the Tendering Data.

16.2 The tenderer's name, tender prices, any discount, the presence or absence of Tender Security, and such other details as the Employer at its discretion may consider appropriate, will be announced by the Employer at the tender opening.

- i) Any Tender Price or discount which is not read out and recorded at financial tender opening will not be considered in the evaluation of tender.

16.3 To assist in the examination, evaluation and comparison of tenders the Engineer/Employer may, at its discretion, ask the tenderer for a clarification of its tender. The request for clarification and the response shall be in writing and no change in the price or substance of the Tender shall be sought, offered or permitted.

16.4 (a) Prior to the detailed evaluation, pursuant to Sub-clause 16.7 to 16.9, the Engineer/Employer will determine the substantial responsiveness of each tender to the Tender Documents. For purpose of these Clauses, a substantially responsive tender is one which conforms to all the terms and conditions of the Tender Documents without material deviations.

- (b) 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 there is a discrepancy between the words and figures the amount in words shall prevail. If there is a discrepancy between the Total Tender price entered in Form of Tender and the total shown in Schedule of Prices-Summary, the amount stated in the Form of Tender will be corrected by the Employer in accordance with the Corrected Schedule of Prices.

If the tenderer does not accept the corrected amount of Tender, his Tender will be rejected and his Tender Security forfeited.

16.5 A Tender determined as substantially non-responsive will be rejected and will not subsequently be made responsive by the tenderer by correction of the non-conformity.

16.6 Any minor non-conformity or irregularity in a Tender which does not constitute a material deviation may be waived by Employer, provided such waiver does not prejudice or affect the relative ranking of any other tenderers.

16.7 The Engineer/Employer will evaluate and compare only the tenders previously determined to be substantially responsive pursuant to Sub-clauses 16.4 to 16.6 as per requirements given hereunder. Tenders will be evaluated for complete scope of works. The prices will be compared on the basis of the Evaluated Tender Price pursuant to Sub-Clause 16.8 herein below.

(a) Technical Evaluation

It will examine in detail whether the documents submitted by the tenderer complies with the Technical Provisions of the Tender Documents. For this purpose, the tenderer's data submitted with the tender will be compared with technical features/criteria of the Work detailed in the Technical Provisions. Other technical information submitted with the tender regarding the Scope of Work will also be reviewed. Detailed evaluation criteria used to evaluate bids for this tender is given at last page of this tender document.

(b) Commercial Evaluation

It will be examined in detail whether the tenders comply with the commercial/contractual conditions of the Tender Documents. It is expected that no major deviation/stipulation shall be taken by the tenderers.

16.8 Evaluated Tender Price

In evaluating the tenders, the Engineer/Employer will determine for each tender in addition to the Tender Price, the following factors (adjustments) in the manner and to the extent indicated below to determine the Evaluated Tender Price:

- (i) Making any correction for errors pursuant to Sub-Clause 16.4 hereof.
- (ii) Making an appropriate price adjustment for any other acceptable variation or deviation.
- iii) Making an appropriate price adjustment for Deviations in terms of Payments.

16.9 **Evaluation Methods**

Pursuant to Sub-Clause 16.8, Para (ii), and (iii) following evaluation methods for price adjustments will be followed:

- (i) Price Adjustment for Technical Compliance

The cost of making good any deficiency resulting from technical non-compliance will be added to the Corrected Total Tender Price for comparison purposes only. The adjustments will be applied taking the highest price quoted by other tenderers being evaluated in detail in their original Tenders for corresponding item. In case of non-availability of price from other tenderers, the price will be estimated by the Engineer/Employer.

(ii) Price Adjustment for Commercial Compliance

The cost of making good any deficiency resulting from any quantifiable variations and deviations from the Tender Schedules and Conditions of Contract, as determined by the Engineer/ Employer will be added to the Corrected Total Tender Price for comparison purpose only. Adjustment for commercial compliance will be added to the Corrected Total Tender Prices.

(iii) Price Adjustment for Deviation in Terms of Payments refer to Tendering Data.

17 PROCESS TO BE CONFIDENTIAL

No bidder shall contact FRPMC on any matter relating to its tender from the opening of bid till the award of contract.

AWARD OF CONTRACT

18. Post-Qualification

18.1 In the absence of pre-qualification, the tender committee will determine to its satisfaction whether the substantially responsive, lowest evaluated bidder is qualified to satisfactorily perform the order.

18.2 The determination will take into account the bidder's financial and technical proposals. It will be based upon an examination of the documentary evidence and physical inspection of few completed/ ongoing projects as well as such other information as the committee deems necessary and appropriate.

19 AWARD CRITERIA & AU'S RIGHT

19.1 The contract will be awarded to substantially responsive lowest evaluated bidder, provided that such bidder has been determined to be qualified to satisfactorily perform the order.

19.2 The FRPMC reserves the right to accept or reject any or all the bids prior to award of order without thereby incurring any liability to the affected bidders or any obligation to inform the affected bidders of the grounds for the FRPMC's action.

20 Notification of Award & Signing of Contract Agreement

- 20.1 Prior to expiry of the period of tender validity prescribed by the Employer, the Employer will notify the successful tenderer in writing (“Letter of Acceptance”) that his tender has been accepted.
- 20.2 Within 07 days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Employer will send the successful tenderer the Form of Contract Agreement provided in the Tender Documents, incorporating all agreements between the parties.
- 20.3 The formal Agreement between the Employer and the successful tenderer shall be executed within 07 days of the receipt of Form of Contract Agreement by the successful tenderer from the Employer.

21 PERFORMANCE SECURITY

- 21.1 The successful bidder shall furnish to the FRPMC a performance security in the form and the amount stipulated in the conditions of contract within a period of **14 days** after the receipt of letter of acceptance.
- 21.2 Failure of the successful bidder to comply with the requirements of sub-clauses 20.2 & 20.3 or clause 21 shall constitute sufficient grounds for the annulment of the award and forfeiture of the tender security. ***The contract may be awarded to next responsive bidder on the list.***

22 ADHERENCE TO INTEGRITY PACT

Government of Pakistan has announced that integrity pact duly signed by the bidder shall be part of the contract. The same is contained in the contract documents.

- a) Any effort by a bidder to influence FRPMC in the tender evaluation, bid comparison or award decision may result in the rejection of his bid.

23. UNBALANCED TENDER

If the Tender of the successful Tenderer is seriously unbalanced, the Employer may require that the amount of the Performance Security be increased at the expense of the Tenderer to a level sufficient to protect the Employer against financial loss in the event of a subsequent default by the Tenderer under the Contract.

24 Joint Venture (Not Used)

In case the Contractor consist of a joint venture of more than one entity, the Contractors shall be jointly and severally bound to the Client for fulfillment of the terms of the Contract and designate the Member named in the SC to act as leader of the Joint Venture, for the purpose of receiving instructions from

25 Tender Drawings/Specification and Scope of work

The Employer reserves the right to make any additions, alterations or modifications in the specification at any time in the best interest of the Work; also Employer reserves the right increase or decrease the scope of work during the execution of work.

26 SUPPLEMENTARY INFORMATION

25.1 Each Tenderer shall submit the following supplementary information along with his Tender:

- a) A preliminary construction schedule showing the construction program for various activities proposed by the Tenderer for execution of the Works from commencement of mobilization to completion. The schedule, in reasonable detail, shall show the sequence of various constructional operations proposed and the period of time estimated for performing each activity within the Time for Completion of the Works.
- b) A chart of the organization which he proposes to create for the satisfactory execution of the Work.
- c) Among others, the organization chart must show at least one engineer holding at least a diploma and five years' experience in similar kinds of jobs as the proposed Work. Such a person, to be approved by the Employer , shall provide full time site supervision of the Work.

25.2 Tenderers shall give with their Tenders, the address at which notices may validly be served on them.

27 ACCEPTANCE CERTIFICATE:-

The contractor may notify the Engineer/ Employer, when he considers that the work have been completed. Upon such notification from contractor, the Engineer will arrange inspection within 15 days and issue an acceptance certificate in favour of contractor subject to satisfactory completion as per requirement of contract. Alternatively the Engineer will notify the contractor, that the work is not fully complete and contractor will rectify the discrepancies.

SIMILAR ONGOING WORKS (EACH PROJECT)

Description	Client Deptt / Agency	Project Value	Commencement Date	Completion Date	%age Completed	Photocopy of work order attached as annex	Name, Designation, Phone & Email of Controlling Officer

Note-1:- Raising of this form is mandatory. Non compliance would lead to technical disqualification.
Note-2:- The Employer reserves the right to verify above stated details and disqualify the firm at any stage before awarding the contract on providing unauthentic information.
Certificate: I hereby certify that the above details have been read, understood, filled properly & signed as authentic information:-

Authorized Signature, Name & Official Seal of the bidder: _____

INTEGRITY PACT

**DECLARATION OF FEES, COMMISSIONS AND BROKERAGE ETC
PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES AND WORKS**

_____ The bidder/contractor hereby declares its intention not to obtain or induce the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan or any administrative subdivision or agency thereof or any other entity owned or controlled by it (GoP) through any corrupt business practice.

Without limiting the generality of the foregoing, the bidder/contractor 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 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 for from GoP, except that which has been expressly declared pursuant hereto.

The bidder/contractor 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.

[The seller/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 right 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, the bidder/contractor 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 times the sum of any commission, gratification, bribe, finder's fee or kickback given by the bidder/contractor 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.

Signature _____

Name _____

Designation _____

Company _____

Date _____

TENDERING DATA

Instructions to Tenderers

Clause Reference

1.1 Name of Employer

Fazaia Ruth Pfau Medical College, PAF Base Faisal, Main Shahra-e-Faisal, Karachi. Tel No: 021-34604701

Brief Description of Work

“PROVISION AND INSTALLATION OF 350 KVA ON-GRID SOLAR POWER PLANT FOR FAZAIA RUTH PFAU MEDICAL COLLEGE, KARACHI”.

5.1 Employer’s address:

Fazaia Ruth Pfau Medical College, PAF Base Faisal, Main Shahra-e-Faisal, Karachi-74350. Tel No: 021-34604701

10.3.1 Tender shall be quoted entirely in Pak. Rupees. The payment shall be made in Pak. Rupees.

11.2 The tenderer has the financial & technical capability necessary to perform the Contract.

13.1 **Amount of Tender Security as given in the special stipulations page no. 29.**

14.1 Period of Tender Validity

90 days from the date of financial opening.

14.4 Number of Copies of the Tender to be submitted

One original. & one copy .

14.5 (a) Employer’s Address for the Purpose of Tender Submission

“Admin Office, Fazaia Ruth Pfau Medical College, PAF Base Faisal, Main Shahra-e-Faisal, Karachi-74350”

(B) Warning

DO NOT OPEN BEFORE 10:00 hrs, 27TH MAY, 2024.

15.1 Deadline for Submission of Tenders

10:00 hrs, 27TH MAY, 2024.

16.1 Venue, Time, and Date of Tender Opening

Venue: Fazaia Ruth Pfau Medical College, PAF Base Faisal, Karachi

Time: 10:00 hrs

Date: **27TH MAY, 2024**

16.4 Responsiveness of Tenders

- (i) The Tender is valid till required period,
- (ii) The Tender prices are firm during currency of contract
- (iii) Completion period offered is within specified limits,
- (iv) The Tenderer is eligible to Tender and possesses the requisite experience,
- (v) The Tenderer does not deviate from basic technical requirements.

Note: - For any Queries: - 021-34604701

FORMS OF TENDER AND SCHEDULES TO TENDER

SCHEDULE – TO TENDER

FORM OF TENDER

(LETTER OF OFFER)

Tender Reference No. _____

(Name of Works)

To:

Gentlemen,

1. Having examined the Tender Documents including Instructions to Tenderers, Tendering Data, Conditions of Contract, Contract Data, Specification, Drawings, if any, Schedule of Prices and Addenda Nos. _____ for the execution of the above-named Works, we, the undersigned, offer to execute and complete such work and remedy defects therein in conformity with conditions of contract. Specifications, Bill of Quantities and addenda for the sum of Rupees _____
(Rs. _____)
_____ or such other sum as may be ascertained in accordance with the said conditions.
2. We understand that all the Appendices/Schedules attached hereto form part of this Tender.
3. As security for due performance of the undertakings and obligations of this Tender, we submit herewith a Tender Security in the amount of Rs. _____ drawn in your favour or made payable to you and valid for a period of 28 days beyond the period of validity of Tender.
4. We undertake, if our Tender is accepted, to commence the Work and to deliver and complete the Works comprised in the Contract within the time(s) stated in **Schedule A(I) to Tender** to tender.
5. We agree to abide by this Tender 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.

6. Unless and until a formal Agreement is prepared and executed, this Tender, together with your written acceptance thereof, shall constitute a binding contract between us.
7. We undertake, if our Tender is accepted, to execute the Performance Security referred to in Conditions of Contract for the due performance of the Contract.
8. We understand that you are not bound to accept the lowest or any Tender you may receive.
9. We do hereby declare that the Tender is made without any collusion comparison of figures or arrangement with any other person or persons making a Tender for the Works.

Dated this _____ day of _____ Signature _____
 in the capacity of _____ duly authorized to sign tenders for
 and _____ on _____ behalf _____ of _____

 (Name of Tenderer in Block Capitals)

Address: _____

Witness: _____

SCHEDULES TO TENDER

SCHEDULE- A TO TENDER

PREAMBLE TO SCHEDULE OF PRICES

1. General

- 1.1 The Schedule of Prices shall be read in conjunction with the Conditions of Contract, Contract Data together with the complete description of work.
- 1.2 The Contract shall be measurement-based contract as described in the Tender Documents.

2. Description

- 2.1 The general directions and descriptions of works and materials are not necessarily repeated nor summarized in the Schedule of Prices. References to the relevant sections of the Tender Documents shall be made before entering prices against items in the Schedule of Prices.

3. Units & Abbreviations

Units of measurement, symbols and abbreviations expressed in the Tender Documents shall be following:

Area in Square feet	(Sft)
Volume in Cubic Feet	(Cft)
Length in Running feet	(Rft)
Quantities	(No's)
Weight	(kg)

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 works set forth or implied in the Contract; except for the amounts reimbursable, if any to the Contractor under the Contract.
- 4.2 Unless otherwise stipulated in the Contract Data, the rates and prices entered by the tenderer shall not be subject to adjustment during the performance of the Contract.
- 4.3 All duties, taxes and other levies payable by the Contractor shall be included in the rates and prices.

SCHEDULE – A TO TENDER

- 4.4 The cost of complying with the provisions of the Contract shall be included in the items provided in the Schedule of Prices, and where no items are provided shall not be considered for financial evaluation process.
- 4.5 (a) The tenderer shall be deemed to have obtained all information as to and all requirements related thereto which may affect the tender price.
- (b) The Contractor shall be responsible to make complete arrangements for the transportation of the Equipment/Tools and material to the Site.
- 4.6 The Contractor shall provide for all parts of the Works to be completed in every respect. Notwithstanding that any details, accessories, etc. required to complete the Work are not specifically mentioned in the Specifications, such details shall be considered as included in the Contract Price.

5. Tender Prices

5.1 Break-up of Tender Prices

Various elements of Tender Prices shall be quoted as detailed by the Employer in the format of Schedule of prices.

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

SCHEDULE-A-I TO TENDER

SPECIAL STIPULATIONS

S #	Subject	Clauses of the contract	Provision
1	Amount of Performance Security	4.4	10% of contract price stated in the Work order in the form of CDR or Bank Guarantee from any scheduled Bank of Pakistan
2.	Time for Completion of Works	8.1	150 calendar days from the date of issuance of work order
3.	Liquidated Damages	17	RS. 20,000/- for each day of delay in completion of the works subject to a maximum of 10% of contract price stated in Work Order
4.	Defects Liability Period	8.3	365 days from the effective date of completion of work.
5	Time within payments to be made	11.1	Within 25 days from the date of the submission of the Bill /IPC by the contractor and 40 days in case of final bill.
6	Tender Security		2% of bid value. in the form of CDR.
7.	Percentage and Limit of Retention Money	11.2	10% of the contract Price
8	Release of Retention Money	11.2	On expiry of defects liability period
9	Limit of Variation from BOQ Quantities	10.6	An increase of 15% from the quantities given/or as per space available on the roof.

TENDERER:-

Name :- _____

Signature :- _____

Address:- _____

Seal :- _____

SCHEDULE-A-II TO TENDER

BILL OF QUANTITIES

ATTACHED AS VOL-2

CONDITIONS OF CONTRACT

1. GENERAL PROVISIONS

1.1 Definitions

In the Contract as defined below, the words and expressions defined shall have the following meanings assigned to them, except where the context requires otherwise:

The Contract

- 1.1.1 “Contract” means the Contract Agreement and the other documents listed in the Contract Data.
- 1.1.2 “Specification” means the document as listed in the Contract Data, including Employer’s requirements in respect of design to be carried out by the Contractor (if any), and any Variation to such document.
- 1.1.3 “Drawings” means the Employer’s drawings of the Works as listed in the Contract Data, and any Variation to such drawings.

Persons

- 1.1.4 “Employer” means the person named in the Contract Data and the legal successors in title to this person, but not (except with the consent of the Contractor) any assignee.
- 1.1.5 “Contractor” means the person named in the Contract Data and the legal successors in title to this person, but not (except with the consent of the Employer) any assignee.
- 1.1.6 “Party” means either the Employer or the Contractor.

Dates, Times and Periods

- 1.1.7 “Commencement Date” means the date 14 days after the date the Contract comes into effect or any other date agreed between the Parties.
- 1.1.8 “Day” means a calendar day
- 1.1.9 “Time for Completion” means the time for completing the Works as stated in the Contract Data (or as extended under Sub-Clause 7.3), calculated from the Commencement Date.

Money and Payments

- 1.1.10 “Cost” means all expenditure incurred (or to be incurred) by the Contractor, whether on or off the Site, including overheads and similar charges.

Other Definitions

- 1.1.11 “Contractor’s Equipment” means all machinery and other things required for the execution of the Work but does not include Materials or Plant intended to form part of the Work.
- 1.1.12 “Country” means the Islamic Republic of Pakistan.
- 1.1.13 “Employer’s Risks” means those matters listed in Sub-Clause 6.1.
- 1.1.14 “Force Majeure” means an event or circumstance which makes performance of a Party’s obligations illegal or impracticable and which is beyond that Party’s reasonable control.
- 1.1.15 “Materials” means things of all kinds (other than Plant) to be supplied and incorporated in the Work by the Contractor.
- 1.1.16 “Plant” means the machinery and apparatus intended to form or forming part of the Works.
- 1.1.17 “Site” means the places provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the Site.
- 1.1.18 “Variation” means a change to the Specification and/or Drawings (if any) which is instructed by the Engineer/Employer under Sub-Clause 10.1.
- 1.1.19 “Works” means any or all the works whether Supply, Installation, Construction etc. and design (if any) to be performed by the Contractor including temporary works and any variation thereof.
- 1.1.20 “Engineer” means the person notified by the Employer to act as Engineer for the purpose of the Contract and named as such in Contract Data.

1.2 Interpretation

Words importing persons or parties shall include firms and organizations. Words importing singular or one gender shall include plural or the other gender where the context requires.

1.3 Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. If an ambiguity or discrepancy is found in the documents, the priority of the documents shall be in accordance with the order as listed in the Contract Data.

1.4 Law

The law of the Contract is the relevant Law of Islamic Republic of Pakistan.

1.5 Communications

All Communications related to the Contract shall be in English language.

1.6 Statutory Obligations

The Contractor shall comply with the Laws of Islamic Republic of Pakistan and shall give all notices and pay all fees and other charges in respect of the Work.

2. THE EMPLOYER

2.1 Provision of Site

The Employer shall provide the Site and right of access thereto at the times stated in the Contract Data.

2.2 Permits etc.

The Employer shall, if requested by the Contractor, assist him in applying for permits, licenses or approvals which are required for the Works.

2.3 Engineer/Employer's Instructions

The Contractor shall comply with all instructions given by the Employer in respect of the Work including the suspension of all or part of the Work.

2.4 Approvals

No approval or consent or absence of comment by the Engineer/Employer shall affect the Contractor's obligations.

3. ENGINEER'S/EMPLOYER'S REPRESENTATIVES

3.1 Authorized Person

One of the Engineer's/Employer's personnel shall have authority to act for him. This authorized person shall be as stated in the Contract Data, or as otherwise notified by the Engineer/Employer to the Contractor from time to time.

3.2 Engineer's/Employer's Representative

The name and address of Engineer's/Employer's Representative is given in Contract Data. However the Contractor shall be notified by the Engineer/Employer, the delegated duties and authority before the Commencement of Works.

4. THE CONTRACTOR

4.1 General Obligations

The Contractor shall carry out the Work properly and in accordance with the Contract. The Contractor shall provide all supervision, labour, Materials, Plant and Contractor's Equipment which may be required.

4.2 Contractor's Representative

The Contractor shall submit to the Employer for consent the name and particulars of the person authorized to receive instructions on behalf of the Contractor.

4.3 Subcontracting

The Contractor shall not subcontract the whole of the Work. The Contractor shall not subcontract any part of the Work without the consent of the Employer.

4.4. Performance Security

4.4.1 The Contractor shall furnish to the Employer within **07 days** after receipt of Letter of Acceptance, a Performance Security in the form of CDR or Bank Guarantee from any scheduled Bank of Pakistan base in Islamabad.

5. DESIGN BY CONTRACTOR

5.1 Contractor's Design (NOT APPLICABLE)

The Contractor shall carry out design to the extent specified, as referred to in the Contract Data. The Contractor shall promptly submit to the Engineer/Employer all designs prepared by him. Within 14 days of receipt the Engineer/Employer shall notify any comments or, if the design submitted is not in accordance with the Contract, shall reject it stating the reasons. The Contractor shall not construct any element of the Works designed by him within 14 days after the design has been submitted to the Engineer/Employer or which has been rejected. Design that has been rejected shall be promptly amended and resubmitted. The Contractor shall resubmit all designs commented on taking these comments into account as necessary.

5.2 Responsibility for Design (NOT APPLICABLE)

The Contractor shall remain responsible for his tendered design and the design under this Clause, both of which shall be fit for the intended purposes defined in the Contract and he shall also remain responsible for any infringement of any patent or copyright in respect of the same. The Engineer/Employer shall be responsible for the Specifications and Drawings.

6. EMPLOYER'S RISKS

6.1 The Employer's Risks

The Employer's Risks are;

- (iii) War, hostilities (whether war be declared or not), invasion, act of foreign enemies, within the Country,
- (iv) Rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war, within the Country,
- (v) Riot, commotion or disorder by persons other than the Contractor's personnel and other employees including the personnel and employees of Sub-Contractors, affecting the Site and/or the Works,
- (vi) Ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly, except to the extent to which the Contractor/Sub-Contractors may be responsible for the use of any radio-active material,
- (vii) Pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds,

- (viii) Use or occupation by the Employer of any part of the Work, except as may be specified in the Contract,
- (ix) Design of any part of the Works by the Employer's personnel or by others for whom the Employer is responsible,
- (x) A suspension under Sub-Clause 2.3 unless it is attributable to the Contractor's failure,
- (xi) Physical obstructions or physical conditions other than climatic conditions, encountered on the Site during the performance of the Works, which obstructions or conditions for which the Contractor immediately notified to the Employer and accepted by the Employer.

7. TIME FOR COMPLETION

7.1 Extension of Time

Subject to Sub-Clause 10.3, the Contractor shall be entitled to an extension to the Time for Completion if he is or will be delayed by any of the Employer's Risks subject to the Contractor's notification of intention without un-reasonable delay.

On receipt of an application from the Contractor, the Engineer/Employer shall consider all supporting details provided by the Contractor and the Employer shall extend the Time for Completion as appropriate.

7.2 Late Completion

If the Contractor fails to complete the Works within the Time for Completion, the Contractor's only liability to the Employer for such failure shall be to pay the amount stated in the Schedule A(I) to Tender for each day for which he fails to complete the Works.

8. TAKING-OVER

8.1 Completion

The whole of the Work to be completed within a time as stated in the Schedule A(I) to Tender, shall be completed, in accordance with the provisions of Clause 8.2, within the time stated in the Schedule A(I) to Tender for the whole of the Work may be calculated from the Commencement Date.

8.2 Taking-Over Notice

When the whole of the Work have been substantially completed and have satisfactorily passed any tests on completion prescribed by the Contract, the Contractor may give notice to that effect to the Engineer, with a copy to the Employer, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period.

Such notice and undertaking shall be deemed to be a request by the Contractor for the Engineer to issue a Taking-Over Certificate in respect of the Work.

The Engineer shall, within 21 days of the date of delivery of such notice, either issue to the Contractor, with a copy to the Employer, a Taking-Over Certificate, stating the date on which, in his opinion, the Works were substantially completed in accordance with the Contract, or giving instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion, is required to be done by the Contractor before the issue of such certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the Work specified therein. The Contractor shall be entitled to receive such Taking-Over Certificate within 21 days of completion, to the satisfaction of the Engineer, of the Work so specified and remedying any defects so notice.

8.3. DEFECTS LIABILITY PERIOD

In these Conditions the expression "Defects Liability Period" shall mean the defects liability period named in the Schedule A(I) to Tender, calculated from:

- (a) The date of completion of the Work certified by the Engineer in accordance with Clause 8.2, or

In the event of more than one certificate having been issued by the Engineer under Clause 8.2, the respective dates so certified and in relation to the Defects Liability Period the expression "the Work" shall be Construed accordingly.

9. REMEDYING DEFECTS

9.1 Remedying Defects

The Employer may at any time prior to the expiry of the period stated in the Schedule A(I) to Tender, notify the Contractor of any defects. The Contractor shall remedy at no cost to the Employer any defects due to the Contractor's design, Materials, workmanship not in accordance with the Contract.

The cost of remedying defects attributable to any other cause shall be valued as a Variation. Failure to remedy any such defects or complete outstanding work within a reasonable time shall entitle the Employer to carry out all necessary works at the Contractor's cost.

9.2 Uncovering and Testing

The Engineer/Employer may give instruction as to the uncovering any part of work. Unless as a result of an uncovering, it is established that the Contractor's design, Materials, workmanship are not in accordance with the Contract, the Contractor shall be paid for such uncovering as a Variation in accordance with the Sub-Clause 10.2.

10. VARIATIONS AND CLAIMS

10.1 Right to Vary

The Employer may instruct Variations.

10.2 Valuation of Variations

Variations shall be valued as follows:

The valuation will be carried out on the basis of actual with the application of current market rates for labour and material. No escalation on account of material or labour wages shall be allowed on such items if the valuation is carried out on the basis of actual. The percentage (%) of overheads, taxes profit, carriage and wastage, etc. all-inclusive to be allowed in such cases be twenty five (25) percent (%).

10.3 Early Warning

The Contractor shall notify the Engineer/Employer in writing as soon as he is aware of any circumstance which may delay or disrupt the Work, or which may give rise to a claim for additional payment.

To the extent that the Contractor's failure to notify results to the Engineer/Employer being unable to keep all relevant records or not taking steps to minimize any delay, disruption, or Cost, or the value of any Variation, the Contractor's entitlement to extension to the Time for Completion or additional payment shall be reduced/rejected.

10.4. Valuation of Claims

If the Contractor incurs Cost as a result of any of the Employer's Risks, the Contractor shall be entitled to the amount of such Cost. If as a result of any Employer's Risk, it is necessary to change the Works, this shall be dealt with as a Variation subject to Contractor's notification for intention of claim to the Engineer/Employer within 14 days of the occurrence of cause.

10.5 Variation and Claim Procedure

The Contractor shall submit to the Engineer/Employer an itemized make-up of the value of variations and claims within 28 days of the instruction or of the event giving rise to the claim. The Engineer/Employer shall check and if possible agree the value. In the absence of agreement, the Employer shall determine the value.

10.6 LIMIT OF VARIATION.

Limit of Variation from BOQ Quantities |

In last line the text, "10%", is being replaced with, "15%"

10.7 VARIATION IN SCOPE OF WORK

Client has the authority to increase or decrease the scope of work (any BoQ item) / include or delete items from BOQ during the execution of work at the best interest of the project.

11. CONTRACT PRICE AND PAYMENT

11.1 (a) Terms of Payments

Payment of the Contract Price shall be made as per provisions in the Contract Data.

(b) Valuation of the Works

The Works shall be valued subject to Clause 10.

11.2 Retention Money (10%).

Retention money will be released after 365 days from date of issue of the completion certificate by the Engineer.

11.5 Currency

Payment shall be in the currency stated in the Contract Data.

12. DEFAULT

12.1 Default by Contractor

If the Contractor abandons the Works, refuses or fails to comply with a valid instruction of the Engineer/ Employer or fails to proceed expeditiously and without delay, or is, despite a written complaint, in breach of the Contract, the Employer may give notice referring to this sub-Clause and stating the default.

If the Contractor has not taken all practicable steps to remedy the default within 14 days after receipt of the Employer's notice, the Employer may by a second notice given within a further 21 days, terminate the Contract. The Contractor shall then demobilize from the Site leaving behind any Contractor's Equipment which the Employer instructs in the second notice is to be used for the completion of the Work.

12.2 Default by Employer

If the Employer fails to pay in accordance with the Contract, or is, despite a written complaint, in breach of the Contract, the Contractor may give notice referring to this Sub-Clause and stating the default. If the default is not remedied within 14 days after the Employer's receipt of

this notice, the Contractor may suspend the execution of all or parts of the Works.

If the default is not remedied within 28 days after the Employer's receipt of the Contractor's notice, the Contractor may by a second notice given within a further 21 days, terminate the Contract. The Contractor shall then demobilize from the Site

12.3 Insolvency

If a Party is declared insolvent under any applicable law, the other Party may by notice terminate the Contract immediately. The Contractor shall then demobilize from the Site leaving behind, in the case of the Contractor's insolvency, any Contractor's Equipment which the Employer instructs in the notice is to be used for the completion of the Work.

12.4 Payment upon Termination

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
- b) any sums to which the Employer is entitled,
- c) if the Employer has terminated under Sub-Clause 12.1 or 12.3, the Employer shall be entitled to a sum equivalent to 20% of the value of parts of the Work not executed at the date of the termination.
- d) if the Contractor has terminated under Sub-Clause 12.2 or 12.3 Contractor shall be entitled to the cost of his demobilization together with a sum equivalent to 10% of the value of parts of the Works not executed at the date of termination.
The net balance due shall be paid or repaid within 28 days of the notice of termination.

13. RISK AND RESPONSIBILITY

13.1 Contractor's Care of the Works

The Contractor shall take full responsibility for the care of the Work from the Commencement Date until the date of the Employer's notice under Sub-Clause 8.2. Responsibility shall then pass to the Employer. If any loss or damage happens to the Works during the above period, the Contractor shall rectify such loss or damage so that the Works conform with the Contract. Unless the loss or damage happens as a result of any of the Employer's Risks, the Contractor shall indemnify the Employer, or his agents against all claims loss, damage and expense arising out of the Works. Moreover if contractor fail to rectify the damages within given

time frame in written notice, the Employer has the authority to carried out the work with contractor risk and cost and the amount will be deducted from contractor IPC's Or Retention money etc.

13.2 Force Majeure

If Force Majeure occurs, the Contractor shall notify the Engineer/Employer immediately. If necessary, the Contractor may suspend the execution of the Works and, to the extent agreed with the Employer demobilize the Contractor's Equipment.

If the event continues for a period of 84 days, either Party may then give notice of termination which shall take effect 28 days after the giving of the notice.

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
- b) the cost of his demobilization,
- c) less any sums to which the Employer is entitled.

The net balance due shall be paid or repaid within 28 Days of the notice of termination.

15. RESOLUTION OF DISPUTES

15.1 Engineer's Decision

If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with the Work, the matter in dispute shall, in the first place, be referred in writing to the Director P&D, with a copy to the other party. Such reference shall be state that it is made pursuant to this Clause. No later than the twenty eight (28) days after the day on which he received such reference, the Engineer shall give notice of his decision to the Employer and the Contractor.

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 Director P&D unless and until the same shall be revised, as hereinafter provided in an arbitral award.

15.2 Notice of Dissatisfaction

If a Party is dissatisfied with the decision of the Engineer or if no decision is given within the time set out in Sub-Clause 15.1 here above, the Party may give notice of dissatisfaction referring to this Sub-Clause within 14 days of receipt of the decision or the expiry of the time for the decision. If no notice of dissatisfaction is given within the specified time, the decision shall be final and binding on the Parties. If notice of dissatisfaction is given within the specified time, the decision shall be binding on the Parties who shall give effect to it without delay unless and until the decision of the Engineer is revised by an arbitrator.

15.3 Arbitration

All matters of dispute or difference regarding rejection of works by the Admin Office, FRPMC or cancellation of the contract by the Fazaia Ruth Pfau Medical College, Karachi arising out of this agreement between the parties thereto, the settlement of which is not otherwise specially provided for in this agreement, shall be referred to arbitration as under:-

- (i) The settlement of dispute, not otherwise specially provided for in the contract, through arbitration clause in the contract shall be referred to the competent authorities. His decision shall be final and binding on both the parties.

16. Third Party Insurance (NOT APPLICABLE)

The contractor shall without limiting his or the Employer's obligations and responsibilities under insure in the joint names of the contractor and the Employer, against liabilities for death of or injury to any person or loss of or damage to any property arising out of the permanence of the contract.

17. Liquidated Damages for Delay

If the Contractor fails to comply with the Time for Completion in accordance with Clause 8.2, for the whole of the Works or, if applicable, any Section with within the relevant time prescribed by Clause 7, then the Contractor shall pay to the Employer the relevant sum stated in the Schedule A(I) to Tender as liquidated damages for such default and not as penalty (which sum shall be the only monies due from the Contractor for such default) for every day or part of a day which shall elapse between the relevant Time for Completion and the date stated in a Taking-Over Certificate of the whole of the Works or the relevant Section, subject to the applicable limit stated in the Schedule A(I) to Tender. The Employer may, without prejudice to any other method of recovery, 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 obligation to complete the Works, or from any other of his obligations liabilities under the Contract.

18. SUPPLY OF MATERIALS & Site Facilities

18.1 No materials, including water supply, Electricity , Labour Camp ,Site Office etc., required for execution of the Works shall be supplied or arranged by the Employer. It shall be the responsibility of the contractor to procure/provide all materials and required facilities at site for the timely completion of work and the remedying of any defects therein of the Works.

18.2 No escalation on account of materials, labor, POL or any other thing or matter shall be permissible.

CONTRACT DATA

Sub-Clauses of Conditions of Contract

1.1.4 **The Employer** means

Principal

Fazaia Ruth Pfau Medical College, PAF Base Faisal, Karachi.

1.1.5 **The Contractor** means

1.1.9 **Time for Completion** **(150 calendar days)**

1.1.20 **Engineer**

Principal Fazaia Ruth Pfau Medical College

or person authorized by Principal, Fazaia Ruth Pfau Medical College

Karachi

1.3 **Documents forming the Contract listed in the order of priority:**

- (a) The Contract Agreement
- (b) Contract Data
- (c) Letter of Acceptance
- (d) Conditions of Contract
- (g) The Schedules to Tender including Schedule of Prices

3.2 **Name and address of Employer's representative**

Admin Office, Fazaia Ruth Pfau Medical College, PAF Base Faisal, Main
Shahra-e- Faisal, Karachi-74350. Tel: 021-34604701

4.4 **Performance security:**

Amount **10% of the contracted amount**

Validity After Completion of work, subject to issuance of
acceptance certificate by the Engineer

9.1 **Period for notifying defects**

365 Days

11.1 *(a) Terms of Payments

Payment to be made in the following manners.

- i) 90% payment of the verified IPC/Bill amount will be paid to the contractor after deducting all Govt applicable taxes, but subject to issuance of acceptance certificate by the Engineer.
- ii) Ten percent (10%) Retention Money shall be paid in accordance with Clause 11.2 of Conditions of Contract.

11.3 Percentage of Retention: 10%

11.7 Currency of payment: Pak. Rupees

15.3 Arbitration Place of Arbitration: Fazaia Ruth Pfau Medical College, PAF Base Faisal, Karachi.

STANDARD FORMS

FORM OF TENDER SECURITY
(Bank Guarantee)

Guarantee No. _____
Executed on _____

Letter by the Guarantor to the Employer

Name of Guarantor (Bank) with
address: _____

Name of Principal (Tenderer) with
address: _____

Penal Sum of Security (express in words and
figures): _____

_____ Tender Reference No. _____ Dated _____ of
Tender _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Tender 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 sum stated above, for the payment of which sum well and truly to be made, 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 submitted the accompanying Tender numbered dated as above for _____ (Particulars of Tender) to the said Employer; and

WHEREAS, the Employer has required as a condition for considering said Tender that the Principal furnish a Tender Security in the above said sum to the Employer, conditioned as under:

- (1) that the Tender Security shall remain valid for a period of 28 days beyond the period of validity of the tender;
- (2) that in the event of;
 - (a) the Principal withdraws his Tender during the period of validity of Tender, or
 - (b) the Principal does not accept the correction of his Tender Price, pursuant to Sub-Clause 16.4 of Instructions to Tenderers, or
 - (c) failure of the successful tenderer to
 - (i) Furnish the required Performance Security, in accordance with Clause 21 of Instructions to Tenderers, or
 - (ii) Sign the proposed Contract Agreement, in accordance with Clause 20-2 & 20.3 of Instructions to Tenderers,Then the entire sum be paid immediately to the said Employer for delayed completion and not as penalty for the successful tenderer's failure to perform.

NOW THEREFORE, if the successful tenderer shall, within the period specified thereof, on the prescribed form presented to him for signature enter into a formal Contract with the said Employer in accordance with his Tender as accepted and furnish within twenty eight (28) days of his being requested to do so, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfillment of the said Contract or in the event of withdrawal of the said Tender within the time specified then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

PROVIDED THAT the Guarantor shall forthwith pay to the Employer the said sum stated above upon first written demand of the Employer without cavil or argument and without requiring the Employer to prove or to show grounds or reasons for such demand notice of which shall be sent by the Employer by registered post duly addressed to the Guarantor at its address given above.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Guarantor shall pay without objection the sum 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 bounded Guarantor has executed the instrument under its seal on the date indicated above, the name and 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:	
Signature _____	Signature _____
Name _____	Name _____
Title _____	Title _____
Corporate Secretary (Seal)	Corporate Secretary (Seal)

FORM OF PERFORMANCE SECURITY
(Bank Guarantee)

Guarantee No. _____
Executed on: _____

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 Tender Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above name, 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 9, Remedying Defects, 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 defences 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-bounded 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:

Signature _____

Signature _____

Name _____

Name _____

Title _____

Title _____

Corporate Secretary (Seal)

Corporate Secretary (Seal)

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the _____ day of _____ 2024 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, viz _____ should be executed by the Contractor and has accepted a Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents after incorporating addenda, if any except those parts relating to Instructions to Tenderers shall be deemed to form and be read and construed as part of this Agreement, viz:
 - (a) Work Order
 - (b) The Tender
 - (c) Conditions of Contract & Contract Data
 - (d) The Schedule of Prices
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 within 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 Agreement to be executed the day and year first before written in accordance with their respective laws.

The Common Seal of _____
was hereunto affixed in the presence of:

or

Signed, Sealed and Delivered by the said in the presence of:

Binding Signature of Employer _____

Binding Signature of Contractor _____

TECHNICAL SPECIFICATIONS

2.0 TECHNICAL INFORMATION AND SPECIFICATION FOR SOLAR POWER GENERATION SYSTEM TO BE REQUIRED

Based on the data evaluated, Client desires to install **280 KW On-Grid PV Solar Power Plant** on available area.

2.1 SITE TECHNICAL INFORMATION

The necessary technical information about the project site is discussed below. However, any further query additional to information mentioned in the bidding documents would be responded on request within bidding time.

2.1.1 Site Introduction:

The suggested location for execution of Solar Based Power Project is at Roof Top of FRPMC Building Roof-top of Fazaia Ruth Pfau Medical College, PAF Base Faisal, Karachi. **(Drawings are attached)**

2.1.2 Site Location:

Fazaia Ruth Pfau Medical College is located at <https://maps.app.goo.gl/ZJn684PgznL61k9q9>.



Aerial View of FRPMC Building

Figure 2: View of FRPMC Building

2.1.3 Site Description:

The premise of FRPMC Building comprises of, **ground plus two stories** building having approx. covered area of Top Roof **34,883 Sq. ft.** The vertical height of the 'FRPMC' block is approx. 45 feet from ground level.



2.1.4 Power & Control Room (Suggested)

The Power & Control room is suggested to be built at Ground floor of the FRPMC Block having dimension of (12 X 8x3) feet. **(Drawing Attached)** The power output from the subject system is synchronized on Ground floor distribution box through conduits and cable trays. Whereas An independent Power & Control distribution box would be provided for solar array at FMC, Hostel furthermore this synchronization of solar array would be made with LV switch gear. Further Details regarding the proposed synchronization system has been discussed in pre bid meeting if required.

2.1.5 Existing Power Supply Arrangements:

The Campus have already independent Feeder from K-Electric Grid.

2.1.6 Site Area Availability for Solar PV Modules:

As discussed above, the available roof area approx. **34,883** ft².

2.1.7 Area Available for Solar PV Modules:

The available roof area of 'FRPMC' Block is **34,883** ft², where Solar PV modules with accumulated capacity of 90 KW have been recommended initially for Solar PV Plant. The Detailed dimensions of roof top area have been attached in drawings section. The area available and the recommended capacity of Solar PV modules can be summarized as below: -

S. No.	Building Detail	Area Available (ft ²)	Solar PV Recommended (KW)
1.	FRPMC Building	34,883	280 KW

Table 1 Area available for Solar PV Modules

2.1.8 Strength of Roof:

The proposed design (PV modules along structure & base) of the 'A' block will enhance surplus weight of 30 Kg/m² on the roof and the building is in good condition to bear that weight. The slab of the roof is supported by column and beam. The slab showed uniform distributed load corresponding to the accumulative of dead and live load. The dead load was based on an assumed density of concrete/ steel. The density of concrete was around 2240 kgm⁻³ and density of steel was 7800 kgm⁻³.

Whereas the proposed super structure for this solar array is attached in the drawing section.

2.1.9 Base Structure:

The both fixed solar array based structure has been recommended to install with angle of 10 Degree. Concrete of size 1.125 cubic feet would be paved on each column of solar array structure of academic block after anchoring on the existing concrete slab. Proper civil work has to be done so as to cater wind speed of up to 150 Km/hr with factor of safety 2. The further requirement for execution of the project is covered in Scope of work as discussed below:-

2.2 TECHNICAL SPECIFICATION FOR SOLAR POWER GENERATION SYSTEM TO BE REQUIRED

2.2.1 Definition

The Grid interactive Solar Photo Voltaic system consists of mainly four (04) major components. The arrays of solar photovoltaic (SPV) modules, arrays mounting structure, the inverters and Balance of Systems.

The SPV arrays convert the solar energy into DC electrical energy. The array mounting structure holds the PV modules in required position and the DC electrical energy is converted to AC power by the inverter, which is connected to the utility power grid. The AC power output of the inverter is fed to the AC distribution board through (03) Phase metering panel and isolation panel. The (03) Phase AC output of the system can be synchronizing with the K-Electric and the power can be exported to the K-Electric E-8 in case of excess generation.

2.2.2 Location:

<https://maps.app.goo.gl/ZJn684PgznL61k9q9>

2.2.3 Existing Power Supply Arrangements:

Electrical Power requirement for is met from 11 KV Grid line.

2.2.4 Scope of Specification:

The scope of this specification should cover design, engineering, manufacture, quality surveillance, testing at manufacturer's works,

packing, and supply, erection testing and commissioning and performance testing of grid interactive roof top solar photovoltaic grid interactive system with associated components for installation at the roof top and operation and maintenance for ONE (01) year from date of commissioning/Completion of work in all respect..

- These systems should be complete with PV modules, PV Module String Isolation Breakers, inverter, metering, junction boxes, AC, DC distribution boards and cables, communication interface, all necessary installation material and any other equipment necessary for safe and efficient operation of the system.
- The work should also include interconnection of installed PV System with the K-Electric grid and Diesel Power Generation Systems.
- The scope of supply should also include LV Panel with appropriate Breakers and isolator switches.
- The scope of supply should also include comprehensive insurance, storage & in transit transportation.
- The civil works for installation of complete system should also be in scope of supplier.
- The scope of work should also include operation and maintenance of the Solar Power Generation System for ONE year from the date of commissioning.
- The scope of supply should also include essential spares necessary for operation, routine maintenance and testing of equipment supplied for ONE year.
- The equipment offered should conform in all respects to high standards of engineering, design and workmanship and be capable of performing in commercial operation.
- We have authorized to interpret the meaning of drawings, specification and should have the power to reject any work or materials, which in his judgment are not in full accordance therewith.
- It should be responsibility of the installer to ensure that all the works as per scope of the specification are completed for safe and efficient working of the system.
- All the fittings and accessories that might not have been mentioned specifically in the specification but are necessary for equipment's of the plant, should be deemed to be included in the specification and shall be supplied and furnished by the installer without any extra charge.
- Contractor will train FRPMC technician during the execution and maintenance period work.

- Equipment's warranty period (After Defects Liability Period) **will remain valid up to manufacturer recommended time period.**

2.3 TECHNICAL SPECIFICATION FOR SOLAR POWER EQUIPMENT TO BE REQUIRED

Solar PV system should consist of following equipment:

- i. Solar Power Generation system consisting of required number of PV Modules.
- ii. Efficient Grid interactive Inverters
- iii. Mounting structures
- iv. Cables and hardware
- v. Monitoring & Data Logging System
- vi. Miscellaneous Item
 - a. Junction boxes and distribution boxes
 - b. PV String/ Arrays Isolation Breakers
 - c. AC Earthing Complete
 - d. DC Earthing with Lightning arrestors
 - e. PVC pipes/ Cable trays and accessories
 - f. Tool kit
 - g. Control room having LV Switch gear system and fuel savor
- vii. Spares for ONE year

The supplied equipment must comply the below mentioned specifications:

2.3.1 Panel Mounting Structure

- (i) The structure design shall be appropriate and innovative. It must follow the existing roof and steel structure profile. Whereas for ease of bidders our proposed requirement of mounting structure drawings are attached.
- (ii) The PV solar panel mounting galvanized structure should be fixed, mounted on concrete 1 cubic feet would be paved on each column of solar array structure above roof level.
- (iii) The Surface azimuth angle of PV Module (140-200) ° and the Tilt angle (slope) of PV Module should be 10° or more.
- (iv) Module should be fixed with the frame through galvanized bolts. The bolts should be tightened at the required angle.
- (v) The Nuts, Bolts & Washers for modules & Mounting structures must be galvanized material with appropriate gauge.

- (vi) The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.
- (vii) The array structure shall be grounded properly using maintenance free earthing kit.
- (viii) The array structure may preferable be made of hot dipped galvanized steel of suitable size. The thickness of galvanization should be as per the relevant standards for galvanization but minimum of 80 microns. It is to ensure that before galvanization the steel surface shall be thoroughly cleaned of any paint, grease, rust, scale, acid or alkali or such foreign material as are likely to interfere with the galvanization process.
- (ix) Shading shall be avoided all over the year (around) from 30 minutes after the sunrise to 30 minutes before sunset (For installation purpose only).
- (x) To allow regular cleaning of the solar modules, they should be easily accessible for personnel (For installation purpose only).
- (xi) The support structure design & foundation shall be designed with reference to the existing roof and steel structure conditions in order to withstand wind speed applicable for the zone (Site Location), using relevant Pakistani wind load codes. The structures and foundations shall also conform to the seismic conditions pertaining to the zone using relevant Standards and codes.
- (xii) Roof top can be used to accommodate PV mounting structure as indicated in layout.
- (xiii) Execution drawings with material selected and their standards shall be shared with Campus management before commissioning.
- (xiv) For multiple module mounting structures located in a single row, the alignment of all modules shall be within minimum error limit.
- (xv) Bidder must submit the all the quality test documents and test certificates complying with the requirement of the structure.

2.3.2 PV Module

- i) The provided PV Module should be of tier-1 quality.
- ii) The manufacture Logo must be engraved inside the tinted glass.

- iii) The PV module(s) shall contain mono/Multi crystalline silicon solar cells.
- iv) The PV module have an ability to Works well with high-voltage input Inverters/ charge controllers
- v) PV Module(s) should be provided with MC-4 Cable and Connector and IP-65 Rated.
- vi) The PV Panel must have clear anodized aluminum frame with Anti-reflection cover glass.
- vii) The power output of the module(s) under STC should be at optimum level.
- viii) The operating voltage corresponding to the power output must be mentioned.
- ix) The open circuit voltage of the PV modules under STC must be mentioned.
- x) The terminal box on the module should have a provision for opening for replacing the cable, if required and it should be waterproof
- xi) Limited performance guarantee: panel power, in standard conditions, will not be less than 90% of nominal power for first 10 years of operation and at least 80% for the second 20 years of operation with 25-year limited power warranty.
- xii) The PV Module should have at least ten-year workmanship warranty.
- xiii) The PV Module should have over twenty (20%) percent cell efficiency.
- xiv) Solar panel should have to pack for safe transportation on non-metallic roads.
- xv) The Solar Module(s) shall meet the requirement set in IEC 61215:2000, IEC61730. All the supportive valid, genuine and traceable documents must be provided. Strict action will be taken in case of fake documents.

Note: Bidder should justify the specs with appropriate lab test reports/certifications from the principle manufacturer.

2.3.3 Power and Control Cables

Power Cables of adequate rating shall be required for interconnection of:

- Modules/panels within array
- Array & Inverter
- Distribution Box & Loads

- i) As per the proposed design 70mm² (Adj.) Flexible Multicore cable would be used for synchronization of each inverter with grid/load. Whereas the other type cable can also be used like 1.1 grade, heavy duty, stranded copper conductor, PVC type an insulated, galvanized steel wire/strip armored, flame retardant low smoke (FRLS) extruded PVC type ST-1 outer sheathed. The cables shall, in general conform to IS-1554 P+I & other relevant standards.
- ii) External cables should be specifically adapted to outdoor exposure (see IEC 60811). Especially the outer insulation must be sunlight (UV)-resistant, weatherproof. Preferably PVC/XLPE, LSZH and EPR coated cables shall be used.
- iii) The temperature resistance of all interconnecting wires and cables should be (70-90°) C. The minimum acceptable cross-section of the wire in each of the following sub-circuits is as in ISO IEC prescription:
- iv) Notwithstanding the ISO /IEC requirements, all wires must be sized accordingly to keep line voltage losses to less than 3% between PV Inverter & grid/generator all of them at the maximum current conditions.
- v) All wiring shall be color-coded (and/ labeled for troubleshooting/manual)
- vi) All supplied wires must be in UV-resistant conduits or be firmly fastened to the building and/or support structure. Cable binders, clamps and other fixing material must also be UV-resistant, preferably made of polyethylene.
- vii) All connections should be properly terminated, soldered and/or sealed from outdoor and indoor elements. Relevant codes and operating manuals must be followed.
- viii) Cable should pass from Pipes and Cable-ties shall be used to hold and guide the Pipes (cables/wires) from the modules to inverters or junction boxes. All the cables were aesthetically tied to module mounting structure

2.3.4 Grid Tied Inverter

In a grid interactive system AC power should be fed to the grid at three phase 440V AC bus. Inverter should supervise the grid condition continuously and in the event of grid failure (or) under voltage (or) over voltage, Solar System should be disconnected to share with National Grid circuit Breaker / Auto switch provided in the inverter.

Other important Features/Protections required in the Inverter.

- i) The grid-connected inverters shall comply with UL 1741 standard.
- ii) Power generated from the solar system during the daytime is utilized fully by powering the all building loads and feeding excess power to the grid as long as grid is available, In case of failure of grid the offered inverter must have the capability to synchronize with the generator power. If solar power is not sufficient due to more demand or cloud cover etc. the building loads should be served by drawing power from the grid. The inverter should always give preference to the Solar Power and will use Grid power only when the Solar Power is insufficient to meet the load requirement.
- iii) The inverters should be net metering compliant.
- iv) The output of the inverter must synchronize automatically its AC output to the exact AC voltage and frequency of the grid.
- v) Inverter equipped with array ground fault detection option.
- vi) Grid voltage should also be continuously monitored and in the event of voltage going below a pre-set value and above a pre-set value, the solar system should be disconnected from the grid within the set time. Both over voltage and under voltage relays should have adjustable voltage and time settings.
- vii) The inverter control unit should be so designed so as to operate the PV system near its maximum Power Point (MPP), the operating point where the combined values of the current and voltage of the solar modules result in a maximum power output.
- viii) The inverter should be a true sine wave inverter for a grid interactive PV system.
- ix) The degree of protection of the outdoor inverter panel should be at least IP-65.
- x) Typical technical features of the suggested inverters must mention as per following sequence.
 - Continuous output power rating
 - Nominal AC output voltage and frequency
 - Accuracy of AC voltage control
 - Accuracy of frequency control
 - Grid Frequency Control range
 - Maximum Input DC Voltage range
 - MPPT Range DC

- Ambient temperature
 - Relative Humidity 0-100%
 - Protection of Enclosure IP-65 (minimum)
 - Over Current & Over Voltage Protection
 - Power factor control 1 (Adjustable 0.8 leading to 0.8 lagging)
 - Inverter efficiency (minimum) plus 98%
 - Liquid crystal display should at least be provided on the inverters front panel or on separate data logging/display device to display following
 - a. DC Input Voltage
 - b. DC Input current
 - c. AC Power output (kW)
 - d. Current time and date
 - e. Time active
 - f. Time disabled
 - g. Time Idle
 - h. Temperatures (C)
 - i. Converter status
 - Following should also be displayed like Protective function limits, over voltage, AC under voltage, over frequency, under frequency, ground fault, PV starting voltage, PV stopping voltage, over voltage delay, under voltage delay over frequency, ground fault delay, PV starting delay, PV stopping delay.)
- xi) Nuts & bolts and the inverter enclosure should have to be adequately protected taking into consideration the atmosphere and weather prevailing in the area.
- xii) Dimension and weight of the inverter should be indicated by the bidder in the offer.
- xiii) All doors, covers, panels and cable exits should be gasketed or otherwise designed to limit the entry of dust and moisture. All doors should be equipped with locks.
- xvi. Operation Mode:
- a. Night or sleep mode: where the Inverter is almost completely turned off, with just the timer and control system still in operation.
 - b. Standby mode: where the control system continuously monitors the output of the solar generator until pre-set value is exceeded.
 - c. Operational of MPP tracking mode: the control system continuously adjusts the voltage of the generator to optimize the power available. The power conditioner should automatically re-enter standby mode input power reduces below the standby mode threshold. Front panel should provide display of status of the inverter.
- xvii. The offered inverter must comply with following standards. UL1741, IEEE1547, , UL 1998, CE,EN 50178, EN 62109-1, EN 62109-2, EN 61000-6-2, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, FCC Part 15, NEMA3R/ NEMA 3R, DIN VDE V 0126-1-1, ENEL Guidelines (DK 5940)

AS 4777, RD 1663/2000, RD 661/2007, EN 50178, IEC 62103, EN 55011, IEC 61000-3-11, IEC 61000-3-12, IEC 61000-6-3

Note: Bidder should justify the specs with appropriate lab test reports/certifications from the principle manufacturer.

And Pakistani Nominated Labs.

2.3.5 Synchronizing Equipment

Solar PV systems should be provided with synchronizing equipment having three input for comparison i.e. grid supply vs. solar output, DG output vs solar output so as to connect the SPV systems in synchronism with grid or DG. In case of grid failure, solar PV system should be disconnected from the grid and out of synchronization for a period DG supply is not restored. PV system should be synchronized with the DG supply after DG is started.

2.3.6 Protections and Control

- i. PV system software and control system should be equipped with islanding protection as described above. In addition to disconnection from the grid (islanding protection i.e. on no supply), under and over voltage conditions, PV systems should be provided with adequate rating circuit breakers, circuit breakers on inverter input side (DC) as well as output side (AC) side for overload and short circuit protection and disconnecting switches to isolate the DC and AC system for maintenances are needed. Circuit Breakers of adequate rating should also be provided in each solar array module to protect them against short circuit.
- ii. A manual disconnect switch beside automatic disconnection to grid should also be provided at utility end to isolate the grid connection by the utility personal to carry out any maintenance.

2.3.7 Integration of PV Power with Grid/Generator:

The output power from Solar PV system would be fed to the On-Grid inverter and converts DC produced by SPV array to AC and feeds it into the main electricity grid/generator after synchronization. In case of grid/generator failure, or low or high

voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid/generator.

2.3.8 Harmonics Standard:

As per the standard of IEEE 519, the permissible individual harmonics level shall be less than 3% (for both voltage and current harmonics) and Total Harmonics Distortion (THD) for both voltage and current harmonics of the system shall be less than 5%.

2.3.9 Miscellaneous Items for Installation

a. Earthing Material:

- i. Earthing is essential for the protection of the equipment & manpower. Two main grounds used in the power equipment are:
 - System earth
 - Equipment earth
 - Lightning Protection system
- ii. System earth is earth which is used to ground one leg of the circuit. For example in AC circuits the Neutral is earthed.
- iii. In case of equipment earth all the non-current carrying metal parts are bonded together and connected to earth to prevent shock to the man power & also the protection of the equipment in case of any accidental contact.
- iv. To prevent the damage due to lightning the one terminal of the lightning protection arrangement is also earthed. The provision for lightning & surge protection of the SPV power source is required to be made.
- v. In case the SPV Array cannot be installed close to the equipment to be powered & a separate earth has been provided for SPV System, it shall be ensured that all the earths are bonded together to prevent the development of potential difference between and two earths.

- vi. Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earths are bonded together to make them at the same potential.
- vii. The Earthing conductor shall be rated for the maximum short circuit current. & shall be 1.56 times the short circuit current. The area of cross-section shall not be less than 1.6 sq mm in any case.
- viii. The array structure of the PV modules shall be grounded properly using adequate numbers of earthing pits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.

b. Wiring PVC/GI Channel Ducts

A product of good quality standard material with suitable size to be provided / used.

c. Flexible PVC Pipe

The flexible GI PVC coated pipe should be of good quality material with suitable size should be used.

d. Combiner Box

Combiner Box should be manufactured through powder coated material with 100% copper strip in it for termination of PV Arrays.

e. Junctions Boxes or Combiners

Dust, water and vermin proof junction boxes of adequate rating and adequate terminal facility made of fire resistant Plastic (FRP) shall be provided for wiring.

Each solar shall be provided with Circuit breakers of adequate rating to protect the solar arrays from accidental short circuit.

f. Civil Works

The following civil works should be carried out.

- i. Laying of earthing equipment /structures and connecting to the main ground mat as per the statutory requirements.
- ii. Excavation of cable trenches etc. wherever necessary

- iii. PV Mounting Structure concrete work of ratio 1:2:4 or as mentioned in BOQ/Drawings.

g. Meter Configuration Options

The metering system for On-Grid Solar Energization under net-metering arrangement will be the responsibility of the contractor.

2.3.10 Other Features:

- (i) The PV Module(s) should be warranted for a minimum period of 10 years from the date of supply, inverter with five years from the date of installation. The warranty card to be supplied with the system must contain the details of the system. The manufacturers can also provide additional information about the system and conditions of warranty as necessary.
- (ii) Adequate space should be provided behind the PV module/array for allowing unobstructed airflow for passive cooling.
- (iii) Cable of appropriate size should be utilized to keep electrical losses to a bare minimum (e.g. length of the wire from module to combiner Box and Combiner Box to On-Grid Inverter should be as minimum as possible).
- (iv) The control electronics should not be installed directly. All wiring should be in proper conduit of capping casing. Wire should not be hanging loose.
- (v) Every major Component of the Plant should be suitably named/numbered for easy traceability, identification and maintenance.
- (vi) Instruction and O&M manuals
 - ✓ Two copies of Instruction and Operation and Maintenance Manual in English and the local language should be provided with the system.
 - ✓ The manual shall be furnished at the time of dispatch of the equipment and shall include the following aspects:
 - a. Precautions during unpacking
 - b. Instructions for handling at site.

- c. Erection drawings with written assembly instructions that would enable the Purchaser to carry out erection with his own personnel if opted by him.
- d. Detailed instructions and procedures for the installation operation and maintenance.
- e. Pre-commissioning tests.
- f. About solar PV system – its components and expected performance.
- g. Clear instructions about mounting of PV module (s)
- h. About electronics
- i. DO's and DONT's
- j. Principle of Operation of various equipment
- k. Safety and reliability aspects
- l. Metering scheme
- m. About power conditioning units software and controls
- n. Clear instructions on regular maintenance and troubleshooting of solar power plant.
- o. Name and address of the person or service center to be contacted in case of failure or complaint.
- p. Outline dimension drawings showing relevant cross sectional views, earthing details, constructional features. Rated voltages and current etc.

Technical and interconnection requirements

Overall conditions of service	State Distribution/Supply Code	State Distribution/Supply Code
Overall Grid Standards	Central Electricity Authority (Grid Standard) Regulations 2010	Central Electricity Authority (Grid Standard) Regulations 2010
Equipment	BIS / IEC / IEEE	BIS / IEC / IEEE
Meters	Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time	Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time
Safety and supply	Central Electricity Authority(measures of safety and electricity supply) Regulations, 2010	Central Electricity Authority(measures of safety and electricity supply) Regulations, 2010
Harmonic Requirements Harmonic Current	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013

<p style="text-align: center;">Synchronization</p>	<p>IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013</p>	<p>Photovoltaic system must be equipped with a grid frequency synchronization device. Every time the generating station is synchronized to the electricity system. It shall not cause voltage fluctuation greater than +/- 5% at point of connection.</p>
<p style="text-align: center;">Voltage</p>	<p>IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013</p>	<p>The voltage-operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 second, the photovoltaic system must isolate itself from the grid.</p>

<p align="center">Flicker</p>	<p>IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013</p>	<p>Operation of Photovoltaic system should not cause</p>
<p align="center">Frequency</p>	<p>IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013</p>	<p>When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), There should be over and under frequency trip functions with a clearing time of 0.2 seconds.</p>
<p align="center">DC injection</p>	<p>IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013</p>	<p>Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.</p>

Power Factor	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The photovoltaic system in the event of fault, voltage or frequency variations must island/disconnect itself within IEC standard on stipulated period.
Overload and Overheat	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored.
Paralleling Device	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Paralleling device of photovoltaic system shall be capable of withstanding 220% of the normal voltage at the interconnection point.

Any minor equipment and material may not be specifically mentioned in this specifications but are required to make the system complete in a every respect in accordance with technical specification shall be deemed to have been covered under the scope of this specification and shall be provided by the tenderer/supplier within the quoted

Quantitative Evaluation Yardstick .

**Quantitative Evaluation Yardstick for Procurement of Solrization at
Fazaia Ruth Pfau Medical College, Karachi**

A. Relevant Experience	Total Points = 30
1. Firm should done more then 10 Projects with 90 KW or above.	15
2. Ongoing works of similar nature (supported by Documents)	15
B. Profile of Firm	Total Points = 40
1. Length of experience in relevant field	05
2. Head Office location at Rawalpindi/Islamabad	10
3. FBR sales tax & income tax registered.	10
4. Technical staff with relevant experience	05
5. Enlistment with other organizations (with evidence)	10
C. Services Delivery & Program	Total Points = 10
1. Delivery Method / Work Plan & Ability to meet time frame / Work schedule	10
D. After Sales Service Capability	Total Points = 10
1. Technical Support & Training	05
2. Warranty Certificate	05
E. Financial Capability	Total Points = 10
1. Average working capital for the last 03 years supported by Audited Financial Statements.	05
2. Average annual turnover during last 03 years supported by Tax Returns.	05



**FAZAIA RUTH PFAU MEDICAL COLLEGE
PAF BASE FAISAL, KARACHI**



**PROVISIONING AND INSTALLATION OF SOLAR
POWER PLANT AT
FAZAIA RUTH PFAU MEDICAL COLLEGE,
KARACHI
F.Y 2023-24**

**Volume: 2
BOQ's & Drawings**

MAY 2024

FAZAIA RUTH PFAU MEDICAL COLLEGE, KARACHI

BOQ NO.	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	Remarks
1	Providing and fixing of Threading Rods including making of Holes having 3/4" dia, 5" deep in RCC slab for Threading Rod having 14" long, 5/8" dia with Expansion Bolt mechanism at lower end of threading rod as shown in drawings, embedded in RCC foundation, including water proofing of holes with epoxy / Chemical (Sika), complete in all respect and as directed by the Engineer.	No's.				
2	Providing and making of Holes (6 Nos in one foundation) 3/4" dia, 3" deep in RCC slab for Reinforcement of RCC Foundation, including water proofing of holes with epoxy / chemical (Sika), complete in all respect and as directed by the Engineer.	No's.				
3	Providing and laying RCC concrete 1:2:4 using ordinary Portland cement & Fine & course aggregates, including formwork and its removal, leveling, compacting and curing; complete as per drawings, and instructions of Engineer.	Cft				
4	Supply and fixing bars deformed steel bars grade 40 including cutting, bending, binding and placing reinforcement in position. complete as per drawings, and instructions of Engineer.	Kg				
5	Providing fabrication and fixing of Columns in round steel sections (Hot dipped Galvanized) having at least 3-inch internal diameter and at least 4mm wall thickness. Complete in all respect and as directed by the Engineer in charge.	Rft				
6	Providing fabrication and fixing of Base and Top plates for columns (Hot dipped Galvanized) having section details of 7"x7"x12mm including making of holes as required / as per drawing. Complete in all respect and as directed by the Engineer in charge.	No's.				

BOQ NO.	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	Remarks
7	Providing fabrication and fixing of Connecting Ribs for both Base and Top plates with columns (Hot Dipped Galvanized) having section details of 3"x6"x10mm. Complete in all respect and as per structural detail and as directed by the Engineer in charge.	No's.				
8	Providing fabrication and fixing of Connecting beams in C-sections (Cold Rolled Galvanized Steel) having at least 2.0mm thickness as per attached section details. Complete in all respect as per drawings and as directed by the Engineer in charge.	Rft				
9	Providing fabrication and fixing of Angle Iron Cleats (Hot Dipped Galvanized)with top plate to connect beams with columns top plates having section details of 2"x4"x6mm. Complete in all respect as per structural details and as directed by the Engineer in charge.	No's.				
10	Providing fabrication and fixing of Top beams/solar module mounting structure with C-sections (Cold Rolled Galvanized Steel) having at least 2.0mm thickness. Complete in all respect as per structural details and as directed by the Engineer in charge.	Rft				
11	Providing fabrication and fixing of Bracing for columns with angle Iron (Hot Dipped Galvanized) having size 2"x2"x3mm. Complete in all respect and as directed by the Engineer in charge.	Rft				
12	Providing fabrication and fixing of MS Frame pipe 1.5"x1.5"x18SWG with Door & Frame MS Pipe 1"x1.5"X18swg, and internal MS pipe 1/2"x1/2"x18SWG @ 8" c/c Both Ways, with wire mesh 1.5"x1.5" x 18SWG with door locking arrangements complete, with 1 coat of red oxide and 3 coats of enamel paint, complete in all respects as per drawings and as directed by the Engineer in charge.	Sft				

BOQ NO.	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	Remarks
13	Providing, fixing, installing, testing, and commissioning Solar Modules Tier 01, A Grade, Efficiency more than 22%, N-type(Topcon, HJT) or HPBC Operating Temperature -40C to 80C Mono facial half cut Technology Monitoring complete in all respect including the cost of Aluminum U & Z sections as required with nuts Bolts etc. for fixing of Solar Modules with Structure (top beam) as per drawings and instructions of the Engineer in charge	Cumulative	280KW			Longi/ JA Solar/ Jinko/ Trina Solar/ Equivalent
14	Providing, installing, testing, and commissioning of 80 kW Grid-Tie Solar Inverters with smart logger for Online Monitoring including data cable as required complete in all respect as per instructions of the Engineer in charge	No.				Huawei/ Goodwe/ Sungrow OR Equivalent
15	Distribution Box 16 Swg IP65, powder coated, rust free, incoming breaker 200 amps adj 4p including volt meter ampere meter, indication lights Compact Design, pre-fabricated, pole/wall mounted completely in all respect as per instructions of the Engineer in charge	No.				Local Pre-fabricated (High Quality)
16	supply and installation of MCCB breaker 200 amps adj 4p as per instructions of the Engineer in charge	No.				schneider/ ABB
16	Providing, installing, testing & commissioning of DC MCB – DC, 1000 Vdc, 2P,25 Amp's including 16 swg distribution box complete in all respect as per instructions of the Engineer in charge	No.				Chint OR Equivalent
17	Providing, installing, and testing of SPD-DC, 1000 Vdc, and 2P including distribution box complete in all respect as per instructions of the Engineer in charge	No.				Chint OR Equivalent
19	Providing and laying of XLPE, 3 layers, UV-Resistive, 6mmsq, 99.9% pure tint copper, black and red single core (For string wiring) complete in all respect as per instructions of the Engineer in charge	Rft				Pakistan Cables / Newage/ Fast Cables OR Equivalent

BOQ NO.	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	Remarks
20	Providing and laying of 4x120mm ² copper cable complete in all respects as per instructions of the Engineer in charge	Rft				Pakistan Cables / Newage/ Fast Cables OR Equivalent
21	Providing and laying of 1X70mm ² bare copper conductor for Earthing cable, complete in all respects as per instructions of the Engineer in charge	Rft				Pakistan Cables / Newage/ Fast Cables OR Equivalent
22	Providing and laying of 1x25mmsq pvc copper earth cable	Rft				Pakistan Cables / Newage/ Fast Cables OR Equivalent
23	Earthing : Pure copper rod 3 no's 20mm dia 10 ft long for each pit and 30 ft deep and 6 inch dia earthing bore with 1.5 ft x 1.5 ft x 1ft Earthing pits with complete fitting including heavy duty cast iron covers, complete fitting in all aspects Along with testing of Earthing system as per Standards	Job				Local
24	MC4 and accessories, IEC-approved standard, 99.9% pure copper.	No.				Imported
25	Providing and installing of 6x4 inch 16 gauge perforated cable tray with cover along with all fitting accessories as per instruction of engineer in charge.	Rft				High quality
26	Providing and installation of 2inch PVC conduit with steel spiral wire	Rft				Adamjee or equivalent
27	Providing and fixing Slotted duct PVC/UPVC 40mmx 40mm	Rft				Adamjee OR Equality
28	Installation and commissioning of Genset Synchronizer Panel	Job				High quality
29	Renewal and Extension of NEPRA Generation License 580KW TO 670KW (All the approvals required to the above item including load flow study from all departments/agencies that is WAPDA/NEPRA etc. from approvals to execution along with all documentation required).	Job				

BOQ NO.	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	Remarks
30	providing and fixing of Lightening Arrester of Pure Copper rod 3ft long with 1.5" dia GI pipe around 15 ft long for each arrester complete fitting in all aspects Along with testing of Earthing system as per Standards	Job				High quality
	TOTAL Rs:					

Note: (a) All required accessories such as fixing arrangements of solar panels with MS structure, such as Nuts, Bolts, Screws, washers, welding, paint, steel cable tie etc. to complete the works as per drawings and specification for above BOQ items are included in each item where as required.

(b) Coted Rates against each item will be consider as inclusive of all applicable Government Taxes.