

Tender # CW/05/26-27

Tender Fee: Rs. 5000/-

(Non-Refundable)

**TENDER FORM**  
**FINANCIAL DOCUMENT**  
**Tender # CW/05/26-27**

**Design, Supply, Installation, Testing & Commissioning of  
146.26 kWp Carport Grid Tied Utility Interactive Photo  
Voltaic Solar Power System at IBA Main Campus Karachi**

INSTITUTE OF BUSINESS ADMINISTRATION IBA KARACHI  
IBA MAIN CAMPUS KARACHI UNIVERSITY ENCLAVE  
KARACHI

UAN 111-422-422 (92-21) 38104701 [www.iba.edu.pk](http://www.iba.edu.pk)

## INVITATION FOR BIDS



### INSTITUTE OF BUSINESS ADMINISTRATION IBA KARACHI

#### NOTICE INVITING TENDER

The Institute of Business Administration, Karachi (IBA) invites sealed bids from active taxpayers of manufacture / firm / companies / supplier registered with relevant tax authorities for the following tender.

| Tender Title (Ref. No.)                                                                                                                                                                                                                                                                                                                                                                                                                  | Procedure                    | Bid Security |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------|
| Design, Supply, Installation, Testing & Commissioning of 146.26 kWp Carport Grid Tied Utility Interactive Photo Voltaic Solar Power System at IBA Main Campus Karachi– CW/05/26-27                                                                                                                                                                                                                                                       | Single Stage<br>Two Envelope | 2%           |
| <ul style="list-style-type: none"> <li>• <b>Site Visit:</b> August 04, 2026 at 11 AM at IBA Main Campus</li> <li>• Fee: Rs.5,000/- each</li> <li>• Issuance start date: July 20, 2026 at 9 AM</li> <li>• Issuance end date &amp; time: August 12, 2026 at 2:30 PM</li> <li>• Submission date &amp; time: July 20, 2026 to August 12, 2026 from 9 AM to 2:30 PM</li> <li>• Opening date &amp; time: August 12, 2026 at 3:00 PM</li> </ul> |                              |              |

Tender Document may be collected after submission of paid fee challan from the Office of **Head of Procurement, Fauji Foundation Building, IBA Main Campus, University Enclave, Karachi** on any working day (Monday to Friday). Alternatively, the tender document can be downloaded from the website. The Tender fee challan is to be generated from the IBA website <https://www.iba.edu.pk/tenders/> which may be deposited in any branch of Meezan Bank Ltd. Sealed bids should be dropped in Tender Box placed at the Security Office, Gate # 4, IBA Main Campus University Enclave Karachi and will be opened on same date & venue in the presence of the bidders representatives who may wish to attend. In case of holiday the tender shall be opened / received on the next working day at same place and time. Bid Security in the form of Pay Order or Demand Draft has to be submitted in favor of “**IBA Karachi**” along with the Financial Proposal.

Kindly mention “Tender Number” at top left corner of the envelope.

**N.B.** IBA Karachi reserves the right to reject any bid or cancel the bidding process subject to relevant provision of SPP Rules 2010.

#### **REGISTRAR**

IBA, Main Campus, University Enclave, Karachi 75270

111-422-422 Fax (92-21) 99261508

Contact Person Assistant Manager Procurement on 38104700 ext: 2150

Email [tenders@iba.edu.pk](mailto:tenders@iba.edu.pk)

Website <https://www.iba.edu.pk/tenders/>

SPPRA EPADS: <https://portalsindh.eprocure.gov.pk/#/>

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***SCHEDULE - A TO BID: SCHEDULE OF PRICES*****A. Price Schedule of Solar PV Systems:****SUMMARY OF BID PRICES**

| <b>Item No.</b> | <b>Description</b>                                                                                                                        | <b>TOTAL INSTALLED CAPACITY kWp</b> | <b>AMOUNT (PKR)</b> | <b>TOTAL UNIT GENERATION YEARLY (Minimum) KWh</b> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------|---------------------------------------------------|
| <b>(A)</b>      | Design, Supply, Installation, Testing & Commissioning of 146.26kWp Carport Grid Tied Utility Interactive Photo Voltaic Solar Power System | 146.26                              |                     |                                                   |
|                 | <b>TOTAL COST OF THE PROJECT WITH OUT TAX</b>                                                                                             |                                     |                     |                                                   |
|                 | <b>TOTAL COST OF THE PROJECT WITH TAX</b>                                                                                                 |                                     |                     |                                                   |
|                 | <b>TOTAL COST OF THE PROJECT PER WATT WITH TAX</b>                                                                                        |                                     |                     |                                                   |

**PROJECT TITLE: Design, Supply, Installation, Testing & Commissioning of 146.26 kWp Carport Grid Tied Utility Interactive Photo Voltaic Solar Power System at IBA Main Campus Karachi**

**ABSTRACT OF COST**

| Sr No. | Product                                                                                                                                                                                                                                                                                                                                                             | Capacity | Unit | Quantity | Price (PKR) |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|----------|-------------|
|        | <b><u>Photovoltaic Solar System works</u></b>                                                                                                                                                                                                                                                                                                                       |          |      |          |             |
|        | General: The system is designed to cover the Essential loads in IBA Main campus Karachi                                                                                                                                                                                                                                                                             |          |      |          |             |
| 1      | The system will be grid interactive connected which will allow many power sources options. The system will import from the grid when loads are being more than the generated from PV and supply surplus electricity to the grid when PV generates more than the loads.                                                                                              |          |      |          |             |
| 2      | Contractor shall submit shop drawings for all civil, electrical and a complete photovoltaic solar system works, including a single line diagram showing all the components of the PV system, DC & AC distribution boards, PV Arrays layout, connections and cables, wire cross section for all the system to be approved by the Engineer before executing the work. |          |      |          |             |
| 3      | Contractor shall submit the catalogs of each component showing the requested specifications stated at the bill of quantity.                                                                                                                                                                                                                                         |          |      |          |             |
| 4      | The contractor shall submit the Manufacture testing certificate, country of origin, certified characteristics, test performance curves, As recommended by manufacturer, maintenance manuals and manufacturer's warranty for each component of the system.                                                                                                           |          |      |          |             |
| 5      | As-built drawings shall be submitted after handing over the work.                                                                                                                                                                                                                                                                                                   |          |      |          |             |
| 6      | All DBs will be lockable type.                                                                                                                                                                                                                                                                                                                                      |          |      |          |             |
| 7      | Upon completion of the installation, the contractor shall organize an on-site training program involving nominated employer's staff. Such a program shall be carried out during the commissioning phase. The cost of the training shall be deemed to have been included in the tendered rates.                                                                      |          |      |          |             |
| 8      | The price includes all builder's work, making good and reinstatement including necessary materials and workmanship as well as removal of unwanted materials to dump sites approved by the engineer to complete the job successfully.                                                                                                                                |          |      |          |             |
| 9      | All the following items include Supply, Installation, Testing, Commissioning and Operate of the complete installed PV Solar System                                                                                                                                                                                                                                  |          |      |          |             |
| 10     | All materials that are not naturally corrosion-resistant shall be treated or finished to protect surface and functional integrity under the ambient conditions prevailing at the site.                                                                                                                                                                              |          |      |          |             |
| 11     | To protect metallic accessories from corrosion two epoxy coats of paint before the two coats of red oxide will be made on material. Approved paint brand is Jotun.                                                                                                                                                                                                  |          |      |          |             |
| 12     | Contractor must provide Bank Maintenance Guarantee for Period of One year for all components of the Solar System.                                                                                                                                                                                                                                                   |          |      |          |             |
| 13     | If any necessary upgrades of copper links/circuit breakers/etc required in IBA existing LV Panel for AC cable connections, Contractor must include the price in the financial proposal as per existing material.                                                                                                                                                    |          |      |          |             |

**BOQ SOLAR PV SYSTEM AT IBA MAIN CAMPUS ESTIMATED CAPACITY\_146.26kWp**

|          | Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Unit | Qty    | Unit Price (PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|------------------|--------------------------|------------------|-----------------------|
| <b>1</b> | <b>MODULE MOUNTING STRUCTURE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |        |                  |                          |                  |                       |
|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |        |                  |                          |                  |                       |
|          | <b>BOUNDARY WALL CARPORT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |        |                  |                          |                  |                       |
| i)       | Supply of PV Mounting structure in MS Iron with footings. The mounting structures and the civil concrete footings must be designed structurally to be suitable to withstand all static loads (weight of modules, wind loads etc) minimum wind speed 35m/s with 3sec of gust pressure in harsh environment. The design submission must be as per ASTM-A36 and ASCE 7-10. The mounting structure components are bonded together to guarantee potential equalization. The work is to be carried out strictly as per attached drawings approved by IBA Engineer. Supply, Fabrication and the rate quoted is inclusive of the following: | Watt | 146260 |                  |                          |                  |                       |
| a        | Layout at Site approved by IBA Engineer as per attached drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |        |                  |                          |                  |                       |
| b        | Civil work as per attached drawing and specifications approved by IBA Engineer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |        |                  |                          |                  |                       |
| c        | Placing of J Bolts, Nuts bolts as per attached drawing approved by IBA Engineer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |        |                  |                          |                  |                       |
| d        | Tilt angle is to be maintained as per recommended.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |        |                  |                          |                  |                       |
| e        | The Contractor shall remove all the debris and clear the site before & after the completion of work as per IBA direction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |        |                  |                          |                  |                       |
| f        | After completion of the work the contractor shall submit the as-built drawing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |        |                  |                          |                  |                       |
| g        | All Allen bolts, nuts, bolts, washers, spring washers and screws for the project should be Stainless steel (SS 316).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |        |                  |                          |                  |                       |
| h        | Applying protective coating system on MS steel structure, including proper surface preparation by mechanical cleaning to remove rust, mill scale, dust, oil, grease, and other contaminants. The coating system shall comprise two coats of Jotun Jotamastic 90 epoxy primer followed by two coats of Jotun Hardtop XP polyurethane topcoat, complete as per manufacturer's specifications, including all materials, labor, tools, equipment, and surface preparation.                                                                                                                                                              |      |        |                  |                          |                  |                       |

| 2  | PV MODULES-186.66KWp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Unit | Qty    | Unit Price(PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|-----------------|--------------------------|------------------|-----------------------|
| i) | <p>Supply of N-Type or any latest tech. Bifacial Photovoltaic Solar Modules Tier 1 Type anti-reflective high transparency low iron tempered glass, with earthing provision. The modules STC parameters must be as under</p> <p>(a) Min Power Pmax 710 or above Wp rated power</p> <p>(b) Junction Box Protection Degree, IP 68</p> <p>(c) Connection box, 4.0mm<sup>2</sup> conductor cross section,</p> <p>(d) Cable with, MC4 male and female connectors,</p> <p>(e) Anodized Aluminum Frame and Support Bars</p> <p>(f) PVC duct, Clamps &amp; Accessories, support and labels to be installed under PV Array.</p> <p>The Contractor shall provide manufacturer warranty for solar panel for a period not less than 25 years. Contractor must submit all the required certificates for each PV solar panel from manufacturer as per specification. All works and materials must be according to the drawings, specifications and supervisor engineer instruction's and approval.</p> <p>Make: Jinko/Longi/Canadian</p> | Watt | 146260 |                 |                          |                  |                       |

| 3  | GRID-TIED INVERTER (PCU)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Unit | Qty | Unit Price (PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------------------|--------------------------|------------------|-----------------------|
| i) | <p>Supply of DC/AC grid tie 3-phase inverter with data communication unit with Ethernet connection. The inverter with must be suited to any PV module configuration, and depending on the system design and installation proposed and for the future extended also. (Leading Market brand, having annual production greater than 1GW). The DC max power input rating should be at least 1.2 times of AC power at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65. The inverter must include safety concepts such as (triple protection with Opti protect, electronic strings fuses, self-learning string failure detection, DC surge arrestor type (2) to ensure max availability. The inverter includes online monitoring with Wi-Fi Dongle. All works and materials must be according to the drawings, specifications and supervisor engineer instructions and approval.</p> <p>Make: Sungrow/Huawei/SMA<br/>Power Rating: 110KW to 125KW.</p> | Each | 1   |                  |                          |                  |                       |
|    | <b>Brief specification is as under:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |     |                  |                          |                  |                       |
| a  | Max Input DC Voltage: 1100V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |                  |                          |                  |                       |
| b  | MPPT Operating Voltage Range: 200V~1000V,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |     |                  |                          |                  |                       |
| c  | Min 09 Independent MPPT Trackers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |     |                  |                          |                  |                       |
| d  | Minimum Efficiency 98.0%,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |     |                  |                          |                  |                       |
| e  | Warranty: 5 Years (Extendable to 10 Years)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |     |                  |                          |                  |                       |
| f  | Minimum IP rating should be IP65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |     |                  |                          |                  |                       |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |   |  |  |  |  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|--|--|--|--|
| ii) | <p>Supply of DC/AC grid tie 3-phase inverter with data communication unit with Ethernet connection. The inverter with must be suited to any PV module configuration, and depending on the system design and installation proposed and for the future extended also. (Leading Market brand, having annual production greater than 1GW). The DC max power input rating should be at least 1.2 times of AC power at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65. The inverter must include safety concepts such as (triple protection with Opti protect, electronic strings fuses, self-learning string failure detection, DC surge arrester type (2) to ensure max availability. The inverter includes online monitoring with Wi-Fi Dongle. All works and materials must be according to the drawings, specifications and supervisor engineer instructions and approval.</p> <p>Make: Sungrow/Huawei/SMA<br/>Power Rating: 50KW to 60KW.</p> | Each | 1 |  |  |  |  |
|     | <b>Brief specification is as under:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |   |  |  |  |  |
| a   | Max Input DC Voltage: 1100V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |   |  |  |  |  |
| b   | MPPT Operating Voltage Range : 200V~1000V,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |   |  |  |  |  |
| c   | Min 04 Independent MPPT Trackers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |   |  |  |  |  |
| d   | Minimum Efficiency 98.0%,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |   |  |  |  |  |
| e   | Warranty: 5 Years (Extendable to 10 Years)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |   |  |  |  |  |
| f   | Minimum IP rating should be IP65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |   |  |  |  |  |

| 4  | COMBINER BOXES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Unit | Qty | Unit Price (PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------------------|--------------------------|------------------|-----------------------|
| a  | <b>DC COMBINER BOX</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |     |                  |                          |                  |                       |
| i) | <p>Supply of DC box/Array Junction Box 14-gauge wall/frame mounted, Colour Code: RAL7035, MS Powder Coated with all accessories for outdoor usage IP65, proper cable glands as per cable size, slotted cable ducts should be installed for internal DC cabling. DC Combiner Box shall be provided with One DC Breaker 4Pole per string.</p> <p>DC Breaker 4Pole 25A/32A,1000VDC, Qty=20</p> <p>DC Breaker Make: ABB/Zjbeny/Dehn/Chint</p>                                                                                                                                                                                              | Each | 1   |                  |                          |                  |                       |
| b  | <b>AC COMBINER BOX (LV PANEL)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |     |                  |                          |                  |                       |
| i) | <p>Supply of AC Combiner Box (LV Panel) with RCC pad floor standing Locally fabricated in 14 gauge with complete frame structure fitting scheme, Railing, Colour Code: RAL7035, MS Powder Coated minimum 2 coats, Phase indication lights, Tin Coated Copper Busbar for 3 Phases with colour coded heat shrinkable sleeves, Neutral &amp; Earth with Polycarbonate cover sheet. Brass glands at bottom In &amp; Out, CT's, Energy meter, Nameplates and labeling, Door-activated light, flame retardant low smoke (FRLS) cable Color-coded, ferruled, and properly terminated with all related accessories for outdoor usage IP65.</p> | Each | 1   |                  |                          |                  |                       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| <p>AC Breaker 250A, I<sub>sc</sub>= 36kA,<br/>4P,MCCB,400V/415V, Qty:01</p> <p>AC Breaker 125A, I<sub>sc</sub>=36kA,<br/>4P,MCCB,400V/415V, Qty:01</p> <p>Main AC Breaker 400A Adj, I<sub>sc</sub>=50kA, 4P,<br/>MCCB, 400V/415V, Qty:01</p> <p>AC SPD 4Pole Type-II, 65kA with HRC Fuses</p> <p>Energy Meter: Janitza</p> <p>CT's: Ficco/Saci</p> <p>MCCB Make: ABB/Schneider</p> <p>SPD Make: ABB/Schneider/Dehn</p> <p>Busbar Make: Luvata Tin Coated Copper<br/>Busbar</p> <p>HRC Fuses Make: Schnieder/ABB/Voltron or<br/>Equivalent</p> <p>Documentation: (Wiring diagram, Panel GA<br/>drawing, Manufacturer's test certificates, IP<br/>rating certification)</p> <p>Protection &amp; Safety: (Overload, short-circuit,<br/>and earth fault protection, Lockable doors<br/>and breakers for safety, Earthing studs<br/>provided inside and outside the panel, Door<br/>Hinged type with gasket for<br/>weatherproofing; pad lockable handle,<br/>Gasket Neoprene or EPDM for dust and<br/>water seal, IP Rating: Certified IP65 as per IEC<br/>60529 – fully dust-tight and protected<br/>against water jets)</p> <p>Note: For the AC combiner box, use tin<br/>coated copper links for each breaker on both<br/>the incoming and outgoing sides, including<br/>the main breaker. Direct cable termination at<br/>the breaker will not be allowed.</p> |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|

| 5    | CABLES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Unit  | Qty  | Unit Price (PKR) | Amount with out Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|------------------|---------------------------|------------------|-----------------------|
| a    | <b>DC CABLES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |      |                  |                           |                  |                       |
|      | Supply of DC Cable, 1 Core 6mm <sup>2</sup> Cu/XLPO/XLPO cable complete in all respect with accessories to connect the PV solar cells together and to the inverter directly to have a complete operational circuit, clamps, trays and cable end terminations which shall be DC plug and socket connectors. The allowable voltage drop for DC cables between PV Arrays and inverter should be less than 2%. Minimum voltage capacity 1500VDC, Highest permissible voltage conductor/conductor should be 1.5kV DC, Standard Double insulated: Cross link polyolefin, Tinned copper conductor: Cable should be Certified from TUV Approved. Standard: EN50618<br><br>Make: Pakistan Cable/Fast Cable/Kuka/ Jiukai as IBA Engineer Approved. | Meter | 4500 |                  |                           |                  |                       |
| b    | <b>AC Cables</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |      |                  |                           |                  |                       |
|      | Supply of the power cables with all required works in different sizes of ducts/pipes, Cable lugs, Clamps and all needed fittings to connect cables terminals from source to destination with LV termination kit (Raychm). According to drawings, specifications, instructions, and demand of the supervising engineer as follow: Brand: Pakistan Cable/Fast Cable as IBA Engineer Approved.                                                                                                                                                                                                                                                                                                                                              |       |      |                  |                           |                  |                       |
| i)   | 4C x 95mm <sup>2</sup> ,0.6/1kV Cu/PVC/PVC STD Pure Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Meter | 15   |                  |                           |                  |                       |
| i)   | 4C x 35mm <sup>2</sup> ,0.6/1kV Cu/PVC/PVC STD Pure Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Meter | 15   |                  |                           |                  |                       |
| iii) | 4Cx240mm <sup>2</sup> ,0.6/1kV Cu/PVC/PVC STD Pure Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Meter | 35   |                  |                           |                  |                       |
| c    | <b>Earthing Cables</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |      |                  |                           |                  |                       |
|      | Supply, Installation & Testing of Earthing Cable, Including uPVC Pipe with related accessories. Brand: Pakistan Cable/Fast Cable as IBA Engineer Approved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |      |                  |                           |                  |                       |
| i)   | 1 core 2.5 sqmm, CU/PVC/FLEX (Green) from panel to panel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Meter | 270  |                  |                           |                  |                       |
| ii)  | 1 core 6 sqmm, CU/PVC/FLEX (Green) from panel/Structure to ECP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Meter | 60   |                  |                           |                  |                       |

|      |                                                               |       |    |  |  |  |  |
|------|---------------------------------------------------------------|-------|----|--|--|--|--|
| iii) | 1 core, 50 sqmm, CU/PVC/STD (Green) from Inverter to LV Panel | Meter | 15 |  |  |  |  |
| iv)  | 1 core, 16 sqmm, CU/PVC/STD (Green) from Inverter to LV Panel | Meter | 15 |  |  |  |  |
| v)   | 1 core, 120 sqmm, CU/PVC/STD (Green) from LV Panel to ECP     | Meter | 30 |  |  |  |  |

| 6  | EARTHING SYSTEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Unit | Qty | Unit Price (PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------------------|--------------------------|------------------|-----------------------|
| i) | Supply, Installation, testing and commissioning of Earth Electrodes (Rod Type) for Earthing System with 25mm Dia 3 meters (10feet) long driven Pure copper Solid rod, tin coated pure copper busbar 50 mm (width) × 6 mm (thickness). complete with clamps lugs, washer/bolts, connected with 1x70mmsq bare copper 50mm diaG.I pipe/UPVC pipe class 'D/E' up to Earth chamber, job includes copper conductor to earth electrode rod at one end and provision/fixing of cable lugs at other end, including all accessories and RCC inspection chamber, heavy duty G.I. Cover having earth symbol, etc as per the specifications and drawings and to the entire satisfaction and approval of the IBA Engineer. Minimum depth of the earth pit should be 80ft, Earthing result should be less than 1 Ohm for AC/DC/LA | Each | 3   |                  |                          |                  |                       |
| 7  | <b>DATA LOGGER REMOTE MONITORING SYSTEM</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |                  |                          |                  |                       |
| i) | Supply of Data Logger Remote Monitoring System with cat6/fiber cable as per site requirement for internet connectivity consists of the following parameter:<br>a) Total energy generation of PV Plant.<br>b) Instantaneous Power been generated by solar PV plant.<br>c) Current load of client.<br>d) Load profile v/s energy generation.<br>e) Daily Solar Plant generation report in PDF/Excel format.                                                                                                                                                                                                                                                                                                                                                                                                          | Each | 1   |                  |                          |                  |                       |

|     |                                                                                                                                                                                                                                                                                                                                                                   |       |     |  |  |  |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|--|--|--|
| 8   | <b>CABLE TRAY</b>                                                                                                                                                                                                                                                                                                                                                 |       |     |  |  |  |
| i)  | Supply of following sizes 14SWG heavy Duti Perforated Powder coated Colour Code RAL 7035 as per site requirement. Cable Tray 150mm x 100mm. Complete with all installation material such as angle iron support of size, round bar, elbows, Tee, Nuts, Bolts, Washer, Hilti drop-in anchour, etc. Complete in all respects, as per the specification and drawings. | Meter | 20  |  |  |  |
| ii) | Supply of following sizes 14SWG heavy Duti Perforated Powder coated Colour code RAL 7035 as per site requirement. Cable Tray 100mm x 75mm. Complete with all installation material such as angle iron support of size, round bar, elbows, Tee, Nuts, Bolts, Washer, Hilti drop-in anchour, etc. Complete in all respect, as per the specification and drawings.   | Meter | 135 |  |  |  |

| 9    | MISCELLANEOUS ITEMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Unit  | Qty | Unit Price (PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|------------------|--------------------------|------------------|-----------------------|
| i)   | Supply of 3-inch UPVC SCH 40 conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects.<br><br>Make: Dadex/Jeddah/Galco/Steelex as IBA Engineer Approved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Meter | 30  |                  |                          |                  |                       |
| ii)  | Supply of 2-inch UPVC SCH 40 conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects.<br><br>Make: Dadex/Jeddah/Galco/Steelex as IBA Engineer Approved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Meter | 50  |                  |                          |                  |                       |
| iii) | Supply of 1-inch UPVC SCH 40 conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects.<br><br>Make: Dadex/Jeddah/Galco/Steelex as IBA Engineer Approved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Meter | 40  |                  |                          |                  |                       |
| iv)  | Supply of 6-inch G.I conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects.<br><br>Make: IIL as IBA Engineer Approved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Meter | 20  |                  |                          |                  |                       |
| v)   | Supply and installation of a shed structure fabricated from 10-gauge steel, designed for Inverters, AC combiners, and DC combiners. The structure shall be engineered to safely withstand all relevant static loads, including the weight of equipment, and wind pressure corresponding to a minimum wind speed of 35 m/s. Structural and Installation Requirements:<br><br>*The structure shall include complete footing works suitable for site conditions.<br>*Minimum spacing of 500 mm shall be maintained between each inverter.<br>*RCC Concrete 3000PSI footing pads shall be constructed.<br>*Shed dimensions shall be adequate to accommodate the installation of at least two inverters, DC combiner boxes and AC combiner box, or as per actual site layout requirements.<br>*All fasteners including nuts, bolts, plain washers, spring washers, Rawal bolts, and any other hardware components shall be of | Job   | 1   |                  |                          |                  |                       |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |   |  |  |  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|--|--|--|
|     | stainless steel grade SS316 to ensure corrosion resistance and durability. *The complete shed structure shall be finished with a minimum of two coats of weather-resistant powder coating suitable for outdoor environmental conditions.                                                                                                                                                                                                 |     |   |  |  |  |
| vi) | Supply & Installation of 400A TP MCCB in existing LV Panel, including installation, testing, and commissioning. Ensure new breakers should be compatible with physical size and mounting to fit existing panels. Use appropriate insulation sleeves or heat shrink for phase identification. All installations to follow manufacturer's torque settings and guidelines. Ensure proper alignment and mechanical fixing using SS hardware. | Job | 1 |  |  |  |

| 11    | SERVICES                                                                                                                                                                                                                | Unit | Qty    | Unit Price (PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|------------------|--------------------------|------------------|-----------------------|
|       | Designing, Fabrication, Installation, Testing & Commissioning of following items complete in all respects:                                                                                                              | Watt | 146260 |                  |                          |                  |                       |
| i)    | Fabrication, Installation, Testing & Commissioning of PV Mounting structure                                                                                                                                             |      |        |                  |                          |                  |                       |
| ii)   | Installation, Testing & Commissioning of Photovoltaic Solar Modules                                                                                                                                                     |      |        |                  |                          |                  |                       |
| iii)  | Installation, Testing & Commissioning of Grid tie 3-phase Inverter with data communication unit with Ethernet connection                                                                                                |      |        |                  |                          |                  |                       |
| iv)   | Installation, Testing & Commissioning of DC Box/Array Junction Box 14-gauge wall mounted with all accessories for outdoor usage                                                                                         |      |        |                  |                          |                  |                       |
| v)    | Installation, Testing & Commissioning of AC Combiner Box (LV Panel) 14 gauge with all accessories for outdoor usage                                                                                                     |      |        |                  |                          |                  |                       |
| vi)   | Installation, Testing & Termination of DC Cable, 1 Core 6mm <sup>2</sup> Cu/XLPO/XLPO cable complete in all respect with accessories.                                                                                   |      |        |                  |                          |                  |                       |
| vii)  | Installation, Testing & Termination of the AC power cables complete in all respect with accessories.                                                                                                                    |      |        |                  |                          |                  |                       |
| viii) | Installation, Testing & Termination of Earthing Cables complete in all respect with accessories.                                                                                                                        |      |        |                  |                          |                  |                       |
| ix)   | Installation, Testing and Commissioning of data Manager with Remote Monitoring System complete in all respect with accessories                                                                                          |      |        |                  |                          |                  |                       |
| x)    | Installation of following sizes 16SWG heavy Duty Perforated as per site requirement Cable Tray complete with all installation material.                                                                                 |      |        |                  |                          |                  |                       |
| xi)   | Installation of UPVC conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects.                                                                                                                    |      |        |                  |                          |                  |                       |
| xii)  | Re-fixing pavers/Tiles/ Road Cutting as in position including providing sand, backfilling etc for AC & DC cables as per site requirements.                                                                              | Job  | 1      |                  |                          |                  |                       |
| xiii) | Removal/Cutting of trees or shrubs at designated places for avoiding shadow at solar structure. Contractor also removes the debris/Tress from the site before start of the project and after completion of the project. | Job  | 1      |                  |                          |                  |                       |

|      |                                                                                                                                                                                                                                                   |      |   |  |  |  |  |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|--|--|--|--|
| xiv) | Removal/dismantling of street lighting poles at designated places for avoiding shadow at solar structure. The dismantled poles were subsequently transported safely from the IBA Main Campus to the IBA Staff Town scrap yard without any damage. | Job  | 1 |  |  |  |  |
| xv)  | Construct of concrete manholes/cable chambers (600mm x 600mm x 600mm deep) with heavy duty RCC covers with anti-rust paint, including all required sleeves for pulling underground power cables laid in pipes.                                    | Each | 5 |  |  |  |  |

| 12 | OPERATION & MAINTENANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Unit | Qty    | Unit Price (PKR) | Amount without Tax (PKR) | Tax Amount (PKR) | Amount with Tax (PKR) |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|------------------|--------------------------|------------------|-----------------------|
| i) | <p>Two years of operations and maintenance is an integral activity of this EPC project, which will determine the success of this project. It is to be noted that 2 years O&amp;M will be initiated after project closet is intended that the project performs as per design "Performance Commitment Table" while also maintaining the project to ensure reliability and longevity for 25 years. Industry best practices to be used to operate and maintain the solar PV Project. All necessary preventive and corrective actions to be shared and implemented before the start of the O&amp;M contract. The following key performance metrics to be monitored and reported are as follows:</p> <ul style="list-style-type: none"> <li>• Cleaning of solar panels to remove dirt, dust, and debris ( minimum twice in a month).</li> <li>• Inspection of cables, connectors, junction boxes, and grounding systems.</li> <li>• Tightening of bolts, screws, and clamps in mounting structures.</li> <li>• Identifying and resolving faults in modules, inverters, or other components.</li> <li>• Rapid response to critical failures to minimize downtime.</li> <li>• Tracking key performance indicators (KPIs) such as energy output, PR (performance ratio), and system availability.</li> <li>• Implementing software updates for inverters and monitoring systems.</li> <li>• Managing claims for defective components under warranty.</li> <li>• Implementing and maintaining safety measures for O&amp;M personnel.</li> </ul> <p>Performance Ratio (burn test) to be carried out for 15 days once project is completely installed and ready for testing. Monthly reports to be shared covering all aspects of solar PV performance including an event log. Any system under performance or failure of equipment will automatically trigger the requirement of a detailed root cause analysis RCA (based on site-based tests) and a report will have to be submitted at the earliest completion of an RCA.</p> | Watt | 146260 |                  |                          |                  |                       |

|  |                                    |  |
|--|------------------------------------|--|
|  | Total Cost in PKR without Tax      |  |
|  | Tax Amount                         |  |
|  | Grand Total Amount in PKR with Tax |  |

Grand Total Amount Rupees in Words: Rs. \_\_\_\_\_

\_\_\_\_\_