Tender Fee: Rs. 5,000/-

(Non-Refundable)

TENDER FORM

FINANCIAL DOCUMENT

Tender # CW/05/25-26

Design, Supply, Installation, Testing & Commissioning of 186.66 kWp Carport Grid Tied Utility Interactive Photo Voltaic Solar Power System at Staff Town IBA 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

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Notice Inviting Tender (NIT)

IBA Karachi invites sealed bids from active taxpayers of manufacture / firm / companies / supplier registered with relevant tax and other energy regulatory authorities for the following tender.

Tender Title (Ref. No.)	Procedure	Bid Security
1. Design, Supply, Installation, Testing & Commissioning of 186.66 kWp Carport Grid Tied Utility Interactive Photo Voltaic Solar Power System at Staff Town IBA Karachi *(CW/05/25-26)* ▪ *Mandatory Site Visit: July 28, 2025 at 11 AM at IBA Main Campus*	Single Stage Two Envelope	2%
▪ Fee: Rs.5,000/- ▪ Issuance start date: July 15, 2025 at 9 AM ▪ Issuance end date & time: August 06, 2025 at 3 PM ▪ Submission date & time: July 15, 2025 to August 06, 2025 from 9 AM to 3 PM ▪ Opening date & time: August 06, 2025 at 3:30 PM		

Tender Document containing detailed terms and conditions are available at Office of Head of Procurement, Fauji Foundation Building, IBA Main Campus, University Enclave, Karachi on any working day (Monday to Friday). The tender document can also be downloaded from IBA and SPPRA EPADS system. 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. Bidders are required to submit their bids (duly signed and stamped) on the uploaded Tender Document (along with a copy of Earnest Money and all supporting documents) through SPPRA EPADS system (www.eprocure.gov.pk). The original bid security along with the Original Bid (duly signed and stamped) must be delivered to IBA, Karachi on below mentioned address before bid opening and will be opened on same date & venue in the presence of the bidders' representatives who may wish to attend. Bid Security in the form of Pay Order or Demand Draft has to be submitted in favour of "**IBA Karachi**".

N.B. **1)** IBA Karachi reserves the right to reject any bid or cancel the bidding process subject to relevant provision of SPP Rules 2010.

2) Only uploaded bid along with supporting documents will be accepted. In case there is a contradiction between bidder's EPADS submitted bid and manually submitted bid, bid submitted on EPADS will be considered valid for evaluation purpose.

REGISTRAR OFFICE

IBA Main Campus, Karachi University Enclave, Karachi-75270 | UAN: 111-422-422
Contact Person Assistant Manager Procurement on 38104700 ext: 2150
Email: tenders@iba.edu.pk, IBA Website: https://www.iba.edu.pk/tenders/
SPPRA EPADS Website: https://portalsindh.eprocure.gov.pk/#/

CONTENTS

SCHEDULE - A TO BID: SCHEDULE OF PRICES

A. Price Schedule of Solar PV Systems:

SUMMARY OF BID PRICES

Item No.	Description	TOTAL INSTALLED CAPACITY kWp	AMOUNT (PKR)	TOTAL UNIT GENERATION YEARLY (Minimum) KWh
(A)	Design, Supply, Installation, Testing & Commissioning of 186.6kWp Carport Grid Tied Utility Interactive Photo Voltaic Solar Power System	186.66		255,351
	TOTAL COST OF THE PROJECT WITH OUT TAX			
	TOTAL COST OF THE PROJECT WITH TAX			
	TOTAL COST OF THE PROJECT PER WATT WITH TAX			

PROJECT TITLE: Design, Supply, Installation, Testing & Commissioning of 186.66 kWp Carport Grid Tied Utility Interactive Photo Voltaic Solar Power System at Staff Town IBA Karachi

ABSTRACT OF COST

Sr No.	Product	Capacity	Unit	Quantity	Price (PKR)
	Photovoltaic Solar System works				
	General: The system is designed to cover the Essential loads in Staff Town IBA 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 catalogues 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 works, 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 material 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 anticorrosive coats of paint will be made on material.				
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 STAFF TOWN ESTIMATED CAPACITY_186.66kWp							
Sr No	**Product**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
1	**MODULE MOUNTING STRUCTURE**						
	FACULTY APPARTMENT CARPORT						
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 pressure 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 guaranty potential equalization. The work is to be carried out strictly as per attached drawing approved by IBA Engineer. Design, Supply, Fabrication and the rate quoted is inclusive of the following:	Watt	186660				
a	Layout at Site approved by IBA Engineer as per attached drawing						
b	Civil work as per attached drawing and specification 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 304).						

	STAFF TOWN MASJID CARPORT	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
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 pressure 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 guaranty potential equalization. The work is to be carried out strictly as per attached drawing approved by IBA engineer. Design, Supply, Fabrication and the rate quoted is inclusive of the following:	Watt	117120				
a	Layout at Site approved by IBA Engineer as per attached drawing						
b	Civil work as per attached drawing and specification 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 304).						

2	**PV MODULES-186.66KWp:**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
i)	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 (a) Min Power Pmax 610 or above Wp rated power (b) Junction Box Protection Degree, IP 68 (c) Connection box, 4.0mm2 conductor cross section, (d) Cable with, MC4 male and female connectors, (e) Anodized Aluminium Frame and Support Bars (f) PVC duct, Clamps & Accessories, support and labels to be installed under PV Array. 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. Make: Jinko/Longi/Canadian	Watt	186660				

3	**GRID-TIED INVERTER (PCU)**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
i)	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 the 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 instruction's and approval. Make: Sungrow/Huawei/SMA Power Rating: 110KW to 125KW.	Each	1				
	Brief specification is as under:						
a	Max Input DC Voltage: 1100V						
b	MPPT Operating Voltage Range : 200V~1000V,						
c	Min 10 Independent MPPT Trackers						
d	Minimum Efficiency 98.0%,						
e	Warranty: 10 Years (Extendable to 15 Years)						
f	Minimum IP rating should be IP65						

ii)	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 the 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. Make: Sungrow/Huawei/SMA Power Rating: 50KW to 60KW.	Each	1				
	Brief specification is as under:						
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: 10 Years (Extendable to 15 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	**DC COMBINER BOX**						
i)	Supply of DC box/Array Junction Box 14gauge wall mounted, Colour Code: RAL7035, MS Powder Coated with all accessories for outdoor usage IP56, proper cable glands as per cable size, slotted cable ducts should be installed for internal DC cabling. DC Combiner Box shall be provided One DC Breaker 4Pole per string. DC Breaker 4Pole 25A/32A,1000VDC, Qty=14 DC Breaker Make: ABB/Zjbeny/Dehn/Chint	Each	1				
ii)	Supply of DC box/Array Junction Box 14gauge wall mounted, Colour Code: RAL7035, MS Powder Coated minimum 2 coats with all accessories for outdoor usage IP56, proper cable glands as per cable size, slotted cable ducts should be installed for internal DC cabling. DC Combiner Box shall be provided One DC Breaker 4Pole per string. DC Breaker 4Pole 25A/32A,1000VDC, Qty=06 DC Breaker Make: ABB/Zjbeny/Dehn/Chint	Each	1				

b	**AC COMBINER BOX (LV PANEL)**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
i)	Supply of AC Combiner Box (LV Panel) 6in 3out 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 & Earth with Polycarbonate cover sheet. Brass glands at bottom In & Out, CT's, Energy meter, Nameplates and labelling, Door-activated light, Flame retardant low smoke (FRLS) cable Color-coded, ferruled, and properly terminated with all related accessories for outdoor usage IP65. AC Breaker 250A, Isc=36kA,4P,MCCB,400V/415V, Qty:02 AC Breaker 125A, Isc=36kA 4P,MCCB,400V/415V, Qty:01 Main AC Breaker 630A Adj, Isc=50kA 4P, MCCB, 400V/415V, Qty:01 AC SPD 4Pole Type-II, 100kA with HRC Fuses Energy Meter: Janitza CT's: Ficco/Saci MCCB Make: ABB/Schneider SPD Make: ABB/Schneider/Dehn Busbar Make: Luvata Tin Coated Copper Busbar HRC Fuses Make: Schnieder/ABB/Voltron/DF Documentation: (Wiring diagram, Panel GA drawing, Manufacturer's test certificates, IP rating certification) Protection & Safety: (Overload, short-circuit, and earth fault protection, Lockable doors and breakers for safety, Earthing studs provided inside and outside the panel, Door Hinged type with gasket for weatherproofing; pad lockable handle, Gasket Neoprene or EPDM for dust and water seal, IP Rating: Certified IP65 as per IEC 60529 – fully dust-tight and protected against water jets) Note: For the AC combiner box, use tin coated copper links for each breaker on both the incoming and outgoing sides with complete supports, including the main breaker. Direct cable termination at the breaker will not be allowed.	Each	1				

5	**CABLES**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
a	**DC CABLES**						
	Supply of DC Cable, 1 Core 6mm2 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 Make: Pakistan Cable/Fast Cable/Kuka/ Jiukai as IBA Engineer Approved.	Meter	5200				
b	**AC Cables**						
	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 (Raychem). 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 95mm2,0.6/1kV Cu/PVC/PVC STD Pure Copper	Meter	15				
i)	4C x 35mm2,0.6/1kV Cu/PVC/PVC STD Pure Copper	Meter	15				
iii)	4Cx300mm2,0.6/1kV Cu/XLPE/PVC STD Pure Copper (Per Phase *2)	Meter	300				

c	**Earthing Cables**						
	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	360				
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, 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	5				

7	**DATA LOGGER REMOTE MONITORING SYSTEM**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount with out Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
i)	Supply of Data Logger Remote Monitoring System with cat6/fibre cable as per site requirement for internet connectivity consists of the following parameter: a) Total energy generation of PV Plant. b) Instantaneous Power been generated by solar PV plant. c) Current load of client. d) Load profile v/s energy generation. e) Daily Solar Plant generation report in PDF/Excel format.	Each	1				
8	**CABLE TRAY**						
i)	Supply of following sizes 16SWG heavy Duti HDGI Perforated/Non-Perforated as per site requirement. Cable Tray 150mm x 100mm with 14 SWG HDGI. 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	20				

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. Make: Dadex/Jeddah/Galco/Steelex as IBA Engineer Approved.	Meter	200				
ii)	Supply of 2-inch UPVC SCH 40 conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects Make: Dadex/Jeddah/Galco/Steelex as IBA Engineer Approved.	Meter	80				
iii)	Supply of 1-inch UPVC SCH 40 conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects. Make: Dadex/Jeddah/Galco/Steelex as IBA Engineer Approved.	Meter	30				
iv)	Supply of 6-inch G.I conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects. Make: IIL as IBA Engineer Approved.	Meter	15				
v)	Supply and installation of a shed structure fabricated from 12-gauge steel, designed to house 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: *The structure shall include complete footing works suitable for site conditions. *Minimum spacing of 500 mm shall be maintained between each inverter. *RCC pads shall be constructed with a minimum height of 600 mm from Natural Ground Level (NGL). *The minimum height of the shed from the top of the RCC pad shall be 2600 mm. *Shed dimensions shall be adequate to accommodate the installation of at least three inverters, three DC combiner boxes, and one AC combiner box, or as per actual site layout requirements. *All fasteners including nuts, bolts, plain washers, spring washers, Rawal bolts, and any other hardware components shall be of stainless steel grade SS304 to ensure corrosion resistance and durability.	Job	1				

	*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 & replace 800A TP MCCB with 1000A TP MCCB in existing LV Panel, including installation, testing, and commissioning *Supply & replace 400A TP MCCB with 630A TP MCCB in existing LV Panel, including installation, testing, and commissioning *Supply & install Tin coated copper busbar droppers (links) for above breakers, sized per derating and existing busbar specs. Ensure all new breakers are of compatible physical size and mounting to fit existing panel. Replace associated copper busbar droppers (links) with new copper links matching or exceeding original busbar specifications. Ensure current-carrying capacity of new links exceeds the breaker rating, considering derating factors (temperature rise, enclosure, proximity, etc.). Use appropriate insulation sleeves or heat shrink for phase identification. All installation to follow manufacturer's torque settings and guidelines. Ensure proper alignment and mechanical fixing using SS hardware. Ensure breaker kA rating matches or exceeds system fault level	Job	1				

10	**PV FUEL SAVER CONTROLLER**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
i)	Supply of Deif/Encombi PV Fuel Saver Controller System Solution for the Integration of PV Power Plant into Electrical Network based on Gensets. Fuel Save controller should performs the following tasks: a) Monitoring of the genset's power and operating status b) Monitoring of the load and grid status c) Calculation of suitable values for the maximum power output of the PV inverters according to defined parameter settings and the current status of gensets and load d) Control and communication interface to PV inverters e) Internal logging of all relevant system data f) Provision of relevant system data for local and remote monitoring g) Emergency shutdown of the PV inverters in case of a system malfunction h) Online Dashboard access to monitor solar power plant, Gensets & Grid and daily plant report in excel file & PDF File. *The bidder shall provide the complete technical details of the system. *The Contractor shall supply and install a PV fuel saver controller that integrates the existing system with the newly installed solar system and includes provisions for future expansion.	Each	1				

11	**SERVICES**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount with out Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
	Designing, Fabrication, Installation, Testing & Commissioning of following items complete in all respects:	Watt	186660				
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 RCC pad floor standing Locally fabricated in 14 gauge.						
vi)	Installation, Testing & Termination of DC Cable, 1 Core 6mm2 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, Testing and Commissioning of PV Fuel saver controller with monitoring system complete in all respect with accessories.						
xi)	Installation of following sizes 16SWG heavy Duti HDGI Perforated/Non-Perforated as per site requirement. Cable Tray 150mm x 100mm complete with all installation material.						
xii)	Installation of UPVC conduit sockets, Bends, Elbows, T-Joints, G.I Clamps, complete in all respects.						

xiii)	Re-fixing pavers/Tiles/ Road Cutting as in position including providing sand, backfilling etc for AC & DC cables as per site requirements	Job	1				
xiv)	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				
xv)	Construct of concrete manholes/cable chambers (900mm x 900mm x 900mm deep) with heavy duty RCC covers with anti-rust paint, including all required sleeves for pulling underground power cables laid in pipes.	Each	3				
xvi)	Construct of cable trench minimum depth of 750 mm from final ground level to top of cable and minimum width of 750mm, Excavation will be Straight lines with vertical sides and flat bottom Remove sharp stones and debris, Sand or screened soil 100 mm thick (below and above the cable), Cable Placement will be Laid neatly without crossing over. Use spacers for multiple cables are laid in the same trench, Route markers/tags at intervals and at both ends. Backfilling with compacted earth in layers, avoid using stones or debris. Installed warning tape 300 mm above cable Bright colour (typically red or yellow) with warning text: “Caution: Electrical Cable Below”. Accessible manholes with concrete covers properly sealed.	Job	1				
xvii)	Service of Net metering application process for extension of new system & existing solar system at staff town IBA, handling as per K.E approved criteria complete in all respects or directed by Engineer. This also include the services charges & fee for assessment of Grid load flow study of Existing & new installed system, service charges for Load Inspector etc. Only the cost of K. Electric/Nepra Challan shall be paid by IBA.	Job	1				

12	**OPERATION & MAINTENANCE**	**Unit**	**Qty**	**Unit Price (PKR)**	**Amount without Tax (PKR)**	**Tax Amount (PKR)**	**Amount with Tax (PKR)**
i)	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&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&M contract. The following key performance metrics to be monitored and reported which are as follows: • Cleaning of solar panels to remove dirt, dust, and debris (minimum twice in a month). • Inspection of cables, connectors, junction boxes, and grounding systems. • Tightening of bolts, screws, and clamps in mounting structures. • Identifying and resolving faults in modules, inverters, or other components. • Rapid response to critical failures to minimize downtime. • Tracking key performance indicators (KPIs) such as energy output, PR (performance ratio), and system availability. • Implementing software updates for inverters and monitoring systems. • Managing claims for defective components under warranty. • Implementing and maintaining safety measures for O&M personnel.	Watt	312660				

	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 an 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.						
	Total Amount in PKR without Tax						
	Tax Amount						
	Grand Total Amount in PKR with Tax						

Grand Total Amount Rupees in Words: Rs. _____

_____