

NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY (NUST)

PMU USPCAS-E | H-12, Islamabad

CORRIGENDUM NO. 01

Installation of 3.50 MWp Solar PV Carport / Parking Shed System at 11 Sites

NUST Campus, H-12, Islamabad, Pakistan

Tender Reference:	PMU-USPCAS-E-NUST / Solar-3.5MW / 2026
Corrigendum No.:	01
Date of Issue:	13 April 2026
Pre-Bid Meeting Date:	April 2026
Revised Bid Submission:	28 April 2026 (Same Time as Original)
Project Capacity:	3.50 MWp across 11 Sites, NUST H-12 Islamabad
Issuing Authority:	Technical Committee, PMU USPCAS-E, NUST

IMPORTANT NOTICE TO ALL BIDDERS

This Corrigendum is issued by the Technical Committee of PMU USPCAS-E, NUST in response to:

- i. Queries received via email from prospective bidders and
- ii. Clarifications discussed during the Pre-Bid Meeting held on 7th of April 2026.

All registered bidders shall read this document in conjunction with the original Tender Document.

- Where this Corrigendum conflicts with the original Tender Document, this Corrigendum shall prevail.
- Clauses not addressed herein remain unchanged.
- Acknowledgement of receipt of this Corrigendum must be included in the Technical Bid.

SECTION 1: FORMAL AMENDMENTS TO TENDER DOCUMENT

1.1 Typographical Correction – Affidavit / Undertaking Payee (IB.3, Sr. #10)

Original Text (to be deleted):

"PMAS AAUR" [as appearing in IB.3, Sr. #10 of the Tender Document]

Corrected Text:

"NUST SELF GENERATION INCOME AND EXPENSE (NUST-SGR)"

Account No for reference/direct deposit. HBL 2292-7000267401

NUST FTN #: 9013704-3

All undertakings, affidavits, and legal stamp papers shall be made in favour of NUST using the correct account title above. The reference to "PMAS AAUR" was a typographical error and is hereby deleted.

1.2 Defect Liability Period – Retained to Two Years

The Defect Liability Period (DLP) is hereby retained to Two Years from the date of Taking Over Certificate (TOC). Contract Data, Item 12 is clarified accordingly:

"Defect Liability Period: Two year from the date of Taking Over Certificate (TOC)."

All references to a '2-year' DLP in the Tender Document are not changed from TOC. All obligations, O&M only requirements, and concerned warranty provisions shall be read as a 1-year period commencing from TOC.

1.3 O&M Period – Revised to One (1) Year

The minimum Operation & Maintenance (O&M) period is hereby revised from Two (2) Years to One (1) Year. Appendix-G warranty note and all related clauses are amended accordingly:

"Minimum O&M Period: One (1) year from the date of Taking Over Certificate (TOC), concurrent with the Defect Liability Period."

The 1-year O&M scope includes routine maintenance, panel washing/cleaning, monitoring, performance reporting, and all corrective maintenance. This obligation is an integral part of the lump-sum EPC price and shall not be priced separately.

1.4 Performance Security / Bank Guarantee – Revised from 10% to 5%

The Performance Security (also referred to interchangeably as Bank Guarantee or Performance Guarantee in the Tender Document) is hereby revised. Contract Data, Item 8 is amended as follows:

Parameter	Original	Revised
Amount	10% of Total Contract Value	5% of Contract Total Contract Value
Validity Period	25 months from TOC	No Change: 25 months from TOC (24 months DLP + 1 month for claims)
Form (pre-TOC)	Bank Guarantee from scheduled bank	Bank Guarantee from scheduled bank (unchanged)
Form (post-TOC)	Insurance Guarantee (AA-rated) permitted	Insurance Guarantee (AA-rated) not permitted (unchanged)

Note: The terms 'Bank Guarantee', 'Performance Guarantee', and 'Performance Security' are used interchangeably throughout the Tender Document and all refer to this single instrument.

1.5 Bid Submission Deadline – Extended to 28 April 2026

The bid submission deadline is hereby formally extended to **28 April 2026** at the same time as originally stipulated. This extension is granted to allow bidders sufficient time to incorporate the clarifications, site data, and revised terms provided in this Corrigendum and the accompanying addendum. All other bid submission requirements (venue, format, envelopes) remain unchanged.

1.6 Contractor Eligibility Clarification (IB.3, Sr. #1)

EPC contractors registered with PEC in Category C-2 or above with solar code EE-11 are eligible. Pure consultancy experience without project execution does not satisfy the mandatory criteria. The scoring criterion in Appendix-B, Sr. i (3 MW solar parking shed consultancy) applies only to general experience scoring and is not a prerequisite for eligibility.

1.7 Scoring Adjustment – Solar Project Experience (Appendix-B, Sr. i)

To ensure fair evaluation while prioritising relevant structural experience, the following scoring weights are adopted:

Parking Shed / Elevated Carport Solar Structure	100% of allocated marks	Directly applicable
Rooftop Solar Projects	70% of allocated marks	Partially applicable
Ground-Mounted Solar (Utility Scale)	50% of allocated marks	Structurally different
Parking Shed / Elevated Carport Solar Structure	100% of allocated marks	Directly applicable

Note: The mandatory requirement for at least one single-site parking shed project of 1.5 MWp or more remains unchanged and is not affected by the above scoring adjustment.

1.8 Solar Engineer Definition – PEC Registration (Appendix-C, Sr. i)

A 'Specialized Solar Engineer' for the purposes of Personnel Capabilities scoring means:

- A PEC-registered engineer (preferably Electrical) with a valid PEC solar code (EE-11); and
- Minimum 3 years of demonstrated solar project experience.

Electrical, Mechanical, and Civil engineers with relevant degrees and documented experience will be considered for their respective technical categories as listed in Appendix-C. Marks remain as allocated in the Tender Document.

1.9 Site-wise Provisional Acceptance Certificate (PAC) – New Provision

The Employer agrees to introduce a Provisional Acceptance Certificate (PAC) mechanism for individual sites, subject to the following conditions:

Issuance Conditions:

- Successful completion of installation, testing, and commissioning of the individual site.
- 14-day continuous performance test demonstrating proportionate share of NMGG based on installed capacity.
- Submission of as-built drawings and O&M manuals for that site.

- All safety and grid interconnection requirements met.

Effect of PAC:

- The Contractor is released from Liquidated Damages attributable to delay in completing that individual site.
- Security and care of the site transfers to the Employer (risk of theft/vandalism passes to Employer).
- The Contractor remains fully responsible for warranty obligations, defect rectification, and achieving the overall NMGG for the entire project.

Final Acceptance Certificate (FAC):

- FAC issued only after all 11 sites have achieved PAC and one full year of operational data confirms overall NMGG compliance (annual average ≥ 4.0 kWh/kW/day).

The staged payment milestones remain unchanged. Pro-rata payments within the 25% commissioning milestone may be considered by the Engineer on a site-by-site basis.

IB.41 Employer's Right to Re-Tendering/Cancellation of Tender.

Notwithstanding anything contained herein, if the achieved rates are much exorbitant, the Employer reserves the right to,

1. Increase/Decrease in Quantity.
2. Retendering even after opening
3. Cancellation if over budget.

IB.42. Provision of internships

Internships will be provided by the successful bidder to NUST students during Project execution period without any financial liability.

SECTION 2: PRE-BID MEETING & EMAIL QUERIES – CONSOLIDATED RESPONSES

The following queries were received via email or raised during the Pre-Bid Meeting. Duplicate and similar queries have been consolidated. The reference clause numbers refer to the original Tender Document unless otherwise stated.

2A. Financial, Commercial & Guarantee-Related Queries

Sr.	Query / Clarification Requested	Employer's Response / Clarification
2A-1	<p>Tender Fee & Bid Security Payee</p> <p>Clarify whether tender fee is payable to NUST SELF GENERATION INCOME AND EXPENSE NUST-SGR (HBL2292-7000267401) and bid security to PMU USPCAS-E NUST.</p>	<p>Confirmed – no change required:</p> <ul style="list-style-type: none"> • Tender Fee (PKR 10,000/-): Pay Order in favour of NUST-SGR (IB.3, Sr. #10). • Bid Security (2% of quoted cost): Pay Order, Demand Draft, or Bank Guarantee in favour of PMU USPCAS-E, NUST (Bidding Data, IB.15).
2A-2	<p>Bid Security – 2% vs. Fixed Amount</p> <p>Suggestion to fix bid security at PKR 8 million (as per EPADs portal) instead of 2% of quoted price, to avoid indirect disclosure of financial bids.</p>	<p>[REJECTED]</p> <p>Bid Security shall remain 2% of the bidder's quoted cost (Bidding Data, IB.15), consistent with PPRA Rule 36(2)(a). Bid security amounts are not publicly disclosed at technical bid opening; financial bids remain sealed until technical qualification. No change.</p> <p><i>(Note: Bidder Should not attach the photo copy of Bid Security Pay Order with Technical Offer)</i></p>
2A-3	<p>Insurance Guarantee as Alternative to Bank Guarantee</p> <p>(a) May an insurance guarantee replace a bank guarantee for bid/performance security?</p>	<p>[PARTIALLY ACCEPTED]</p> <ul style="list-style-type: none"> • Bid Security / Earnest Money (2%): Only Demand Draft, Pay Order, CDR, or Bank Guarantee from a scheduled bank accepted. Insurance guarantee is not accepted for bid security. • Performance Security / Bank Guarantee (5% – Revised from 10%): Must be a Bank Guarantee from a scheduled bank for the initial period post-LOA. • After TOC: The Contractor may replace the Bank Guarantee with an Insurance Guarantee

		<p>from an AA-rated insurer for the remaining DLP period (Clause 4.4(b)) is not permitted.</p>
<p>2A-4</p>	<p>Mobilization Advance – Optional or Mandatory? (b) Is the 15% mobilization advance mandatory?</p>	<p>[CLARIFIED] Optional for the Contractor. The Employer offers an interest-free Mobilization Advance of up to 15% of Contract Price (Contract Data, Item 16). If taken, the Contractor must submit an unconditional, irrevocable Bank Guarantee for the full advance amount. Advance recovered in equal installments from subsequent IPCs.</p>
<p>2A-5</p>	<p>Bid Security / Earnest Money– Clarification Clarify the distinction between retention money, bid security, and earnest money. Request to waive retention since Performance Security (Bank Guarantee) is already in place.</p>	<p>[CLARIFIED] Terminology Clarification: In the context of this tender, Bid Security = Earnest Money, all refer to the same instrument that is 2% of total quoted price as bid security deposit submitted with the bid to demonstrate commitment. They are used interchangeably in the tender documents. Retention: The 2% retention (bid security= earnest money) is mandatory and non-waivable. The bid security= earnest money = 2% will be returned to Successful firm/bidder on receipt of 5% of total contact price (that is Performance Security = Bank Guarantee = Retention Money) within 7 days after letter of acceptance as per clause IB.15 Bid Security of the tender document. Likewise, the bid security will be returned to unsuccessful bidders within 30 days. <i>Note: The firms/contractor should not be attached copy of bid security DD/Cheque, etc., with the technical proposal.</i></p>

2A-6	<p>Performance Security / Bank Guarantee / Retention Money – Revised to 5%</p> <p>Clarify whether one or two Performance Securities are required. Clarify relationship between Bank Guarantee and Performance Guarantee.</p>	<p>[REVISED & CLARIFIED]</p> <p>Terminology Clarification: Bank Guarantee and Performance Guarantee and Retention Money refer to the same instrument in this contract. They are used interchangeably.</p> <p>Revised Requirement: The Performance Security (Bank Guarantee / Performance Guarantee) is hereby revised from 10% to 5% of the Total Contract Value.</p> <p>Its validity shall be 25 months from TOC (24 months DLP + 1 month for claims notification). Even after TOC, substitution with an Insurance Guarantee from an AA-rated insurer is permitted (Clause 4.4(b)) is not permitted.</p>
2A-7	<p>Payment Terms – Structure & Frequency</p> <p>Request for LOT-based payments and clarification of IPC timeline.</p>	<p>[REJECTED (LOT-BASED) / CLARIFIED (MILESTONES)]</p> <p>LOT-based payment is rejected. Payment milestones (Contract Data, Item 14 & Clause 11.2) are final – see Section 3 Payment Table below.</p> <p>IPC Frequency: Monthly or upon milestone. Engineer certifies within 15 days; Employer pays within 30 days of certification.</p>
2A-8	<p>Advance Guarantee Release</p> <p>When is the Mobilization Advance Bank Guarantee released?</p>	<p>[CLARIFIED]</p> <p>The Mobilization Advance Bank Guarantee is released to the Contractor when the advance has been fully recovered from IPCs, as per clauses 11.2 and 18.1 of the contract.</p>
2A-9	<p>Bid Security Return Timeline</p>	<p>[CLARIFIED]</p>

	Clarify the exact period for return of bid security to unsuccessful bidders.	Bid security of unsuccessful bidders will be returned within 15 days after expiry of the 90-day bid validity period. Successful bidder's security is returned after signing the Contract Agreement and furnishing the Performance Security.
2A-10	Liquidated Damages Rate & Cap Clarify LD rate and maximum cap.	[CLARIFIED] As per Contract Data, Item 11: <ul style="list-style-type: none"> • LD Rate: 0.33% of Contract Price per day of delay for the unfinished portion. • Maximum Cap: 10% of Contract Price.
2A-11	Taxation & Duties – Future Changes How will future changes in tax laws or customs duties be treated?	[CLARIFIED] Per Clause IB.12.2: After bid submission deadline, any additional or reduced duties, taxes, and levies resulting from subsequent legislation shall be reimbursed or deducted accordingly. The Contractor shall include all taxes known at bid submission in the lump-sum price.
2A-12	Variation Orders – Mechanism & Pricing How are scope changes and variation orders priced under this lump-sum contract?	[CLARIFIED] Per Conditions of Contract, Clause 10: Variations require written instruction from the Employer. Valuation by mutual agreement prior to execution (Clause 10.2). Contractor to submit itemized quotation within 14 days. If no agreement, Employer determines value; Contractor may dispute through claims procedure.
2A-13	Contract Terms – Negotiation & Deviations at Bid Stage	[REJECTED] No negotiation is permitted after award (IB.31.2). Bids containing material deviations or reservations will be declared non-responsive and

	<p>Are contract terms negotiable post-award? Can we submit legal/commercial deviations?</p>	<p>rejected (IB.26.2). Bidders must submit in full compliance with all terms.</p>
<p>2A-14</p>	<p>Currency – Exchange Rate & Split Contracts</p> <p>(a) Will exchange rate fluctuations be allowed? (b) Can contract be split into supply vs. service for tax optimization?</p>	<p>[REJECTED]</p> <p>(a) Bids shall be quoted entirely in Pak Rupees (PKR). Exchange rate risk and PV price fluctuations are solely the Contractor's responsibility. No escalation clause.</p> <p>(b) Split contracts not permitted. This is a single lump-sum EPC contract. All taxes included in quoted price.</p>

2B. Technical Queries

Sr.	Query / Clarification Requested	Employer's Response / Clarification
2B-1	<p>NMGG – Request to Replace with Performance Ratio (PR)</p> <p>Multiple bidders requested replacing the 4.0 kWh/kW/day generation guarantee with a PR-based metric, citing international market practice and PVsyst methodology.</p>	<p>[REJECTED]</p> <p>The Net Minimum Guaranteed Generation (NMGG) of 4.0 kWh/kW/day (annual average) is a firm, non-negotiable contractual obligation (Conditions of Contract, Sub-Clause 5.3). PR alone does not guarantee absolute energy output. Bidders must design to achieve this yield using local irradiance data for H-12, Islamabad.</p>
2B-2	<p>NMGG – Adjustment for Force Majeure, Degradation, and Grid Outages</p> <p>Clarify mechanism for NMGG adjustment under irradiation variability, force majeure, PV degradation, and grid outages.</p>	<p>[CLARIFIED]</p> <ul style="list-style-type: none"> • Normal variability: No adjustment for year-to-year solar irradiance variation. • Force Majeure (prolonged grid outage, extreme weather): NMGG target proportionately reduced for duration, subject to Contractor notification and mitigation (Clause 13.2). • Degradation: Standard PV degradation ($\leq 0.5\%$/year) factored into Contractor's design – no adjustment. • Shortfall not covered by FM: Contractor to add capacity or pay compensation deducted from Performance Security.
2B-3	<p>Parking Layout Modification & Orientation Change</p> <p>Many parking areas are not true-south facing. Request to amend parking orientation at Employer's cost to achieve NMGG.</p>	<p>[REJECTED (Cost Transfer) / CLARIFIED (Flexibility)]</p> <p>The Contractor may propose optimized module tilt and layout within the existing parking footprint. Any structural modification to change parking shed orientation shall be at the</p>

		Contractor's own cost and risk. The Employer will not bear additional costs. The NMGG target remains binding regardless of existing orientation.
2B-4	<p>PV Panel Specifications – Brand Flexibility</p> <p>Specification references 'LONGI HI-MO X10 645W or Bi-Facial equivalent.' Can we propose >24% efficient bi-facial panels from other Tier-1 brands?</p>	<p>[CONFIRMED]</p> <p>Yes. Minimum requirements:</p> <ul style="list-style-type: none"> • Mono-crystalline / Mono-PERC half-cut, N-type, efficiency >22.5%. • Bloomberg NEF Tier-1 brand. • 12-year product warranty, 25-year linear performance warranty. <p>Acceptable brands include (but are not limited to): LONGI, Jinko, Trina, JA Solar, Canadian Solar. 'LONGI HI-MO X10 645W' is a reference example only.</p>
2B-5	<p>Inverter & Data Logger Specifications – Brand Flexibility</p> <p>Specification says 'Preferably Huawei.' Can other brands be proposed?</p>	<p>[CONFIRMED]</p> <p>Yes. Required specifications: Multi-MPPT, 3-phase 400V, efficiency \geq98%, IP67, communication ports (RJ45/RS485/WiFi/GPRS/USB). Acceptable brands: Sungrow, SMA, Fronius, Growatt, or other internationally recognized manufacturers meeting all parameters. Contractor bears responsibility for SCADA compatibility.</p>
2B-6	<p>Inverter Combination Flexibility</p> <p>Can we propose any suitable combination of inverters to achieve the kW rating for each site?</p>	<p>[CONFIRMED]</p> <p>Yes. BOQ inverter sizes are indicative. Contractor may propose any combination of string inverters provided:</p> <ul style="list-style-type: none"> • Total AC output \geq 80% of DC nameplate.

		<ul style="list-style-type: none"> • All inverters from the same manufacturer family for SCADA compatibility. • Proposed combination submitted in Technical Bid for Engineer's approval.
2B-7	<p>Inverter DC/AC Ratio – Reduction Allowed?</p> <p>If design shows DC/AC ratio <1, may we propose smaller inverters?</p>	<p>[CLARIFIED]</p> <p>A DC/AC oversizing ratio of 1.1 to 1.2 is typical and acceptable. Total AC inverter capacity shall not be less than 80% of DC nameplate unless site-specific constraints are justified in writing and approved by the Engineer. NMGG must still be achieved.</p>
2B-8	<p>SCADA – Standalone System & No ICT Network Integration</p> <p>Authorization to access NUST ICT network and provision of dedicated network ports.</p>	<p>[CLARIFIED]</p> <p>The Contractor shall design and implement a standalone, centralized SCADA system. No integration with NUST ICT infrastructure unless agreed in writing. No network ports will be provided. Contractor to provide all communication hardware (fiber optic, switches, data loggers) and arrange independent data backhaul. All costs included in BOQ (Appendix-G, Item 15).</p>
2B-9	<p>SCADA – Remote Monitoring via IP Address</p> <p>Confirm SCADA monitoring via IP address (remotely). No control cable required between sites.</p>	<p>[CONFIRMED]</p> <p>Confirmed. Centralized SCADA using fiber optic backbone (or wireless where feasible), remote monitoring via IP/TCP-IP to central server designated by NUST. No hardwired control cables between sites required. Within each site, control cables for inverter communication, breakers, and sensors shall be provided. Remote on/off and data logging required (Appendix-G, Item 15).</p>

<p>2B-10</p>	<p>HT Panel – SLDs, CT Access & SCADA Demand Data Provision of HT Panel SLDs, access to CTs, and responsibility for demand data in SCADA.</p>	<p>[CLARIFIED]</p> <ul style="list-style-type: none"> • SLDs: Provided to successful bidder post-award (for reference; field verification remains Contractor's responsibility). • New CTs: Contractor not required to install new HT CTs. SCADA shall display demand data if available from existing metering. • LV Panel CTs: Employer will provide access to existing LV CTs where available. If absent or incompatible, Contractor to install additional CTs at own cost. • Liability: If existing HT panels lack compatible CTs/ports, Contractor not held responsible for absence of demand data, provided written notification was submitted prior to bid.
<p>2B-11</p>	<p>Genset Synchronization – Zero Export & Backfeed Control Confirm scope of genset synchronization including zero export and backfeed prevention.</p>	<p>[CONFIRMED]</p> <p>Yes. Synchronization system shall prevent solar export during genset (islanding) mode and prevent backfeed into the generator. Auto changeover/load sharing as applicable. Scope includes generator ratings: 250 kVA, 350 kVA, 400 kVA, 200 kVA, 250/500 kVA (indicative; Contractor to confirm from site data in addendum).</p>
<p>2B-12</p>	<p>Bi-Directional Net Metering Meter – Scope Clarify scope of bi-directional meter and IESCO coordination.</p>	<p>Net metering is not included in 3.5 MW Solar PV project scope.</p>

2B-13	<p>Sanctioned Load Approval – Client vs. Contractor Responsibility</p> <p>If sanctioned load approval/enhancement is required from IESCO, who is responsible?</p>	<p>[CLARIFIED]</p> <p>Sanctioned load approval or enhancement from IESCO (if required) is the Employer's (NUST's) responsibility. Contractor to provide all necessary technical data and assist in the application. Contractor remains responsible for obtaining NEPRA/IESCO net metering and generation license exemption as applicable (Conditions of Contract, Clause 2.2).</p>
2B-14	<p>Load Flow / Short Circuit Studies & NEPRA/IESCO Permits</p> <p>Will the Employer provide load flow/short circuit studies?</p>	<p>[CLARIFIED]</p> <p>No. The Employer will not provide these studies. The Contractor is responsible for all design calculations, grid interconnection feasibility, and obtaining NEPRA/IESCO approvals. Employer will assist with documentation as required by law. All costs borne by Contractor.</p>
2B-15	<p>Mounting Structure – HDG Micron Limit</p> <p>What is the minimum permissible hot-dip galvanizing coating thickness?</p>	<p>[CLARIFIED]</p> <p>HDG coating shall conform to ASTM A123 / ISO 1461:</p> <ul style="list-style-type: none"> • Steel \geq 6mm thickness: Minimum 85 microns average. • Steel 3–6mm thickness: Minimum 65 microns average. <p>Test certificates shall be submitted.</p>
2B-16	<p>Inverter & LV Panel Protective Sheds – Material</p> <p>What material is required for protective sheds over inverters and LV panels?</p>	<p>[CLARIFIED]</p> <p>Mild Steel (MS) with hot-dip galvanized finish, or Fiber-Reinforced Plastic (FRP) of adequate strength, UV-resistant, with minimum IP67 rating. Bidder to specify material in Technical Proposal.</p>

<p>2B-17</p>	<p>LV Panel / Cable Breaker & Cable Size Variation</p> <p>May we propose different breaker sizes and cable capacities based on detailed design?</p>	<p>[CONFIRMED]</p> <p>Yes. BOQ quantities and sizes are indicative. Contractor's detailed design may adjust breaker ratings, cable cross-sections, and busbar capacities in compliance with IEC standards, subject to Engineer's approval. No price adjustment for such changes in a lump-sum contract.</p>
<p>2B-18</p>	<p>Transformer Shifting & Installation Scope Clarification</p> <p>Clarify scope of 'shifting and installation of transformer' in BOQ.</p>	<p>[CLARIFIED]</p> <p>Scope includes: disconnect existing transformer, transport to NUST central store (max 2 km), bring replacement transformer from store to site, install and commission (including oil testing, busbar connections, grounding, plinth civil works). All lifting and rigging included.</p>
<p>2B-19</p>	<p>Parking Shed Capacity Redistribution Among Sites</p> <p>If specifications for a location cannot be implemented due to site constraints, can capacity be redistributed?</p>	<p>[CONDITIONALLY ACCEPTED]</p> <p>Yes, subject to:</p> <ul style="list-style-type: none"> • Total capacity remains exactly 3.50 MWp. • Structural safety and shading analysis provided. • Prior written approval from Employer. <p>No change in contract price for any redistribution.</p>
<p>2B-20</p>	<p>Third-Party Inspection – Scope, Firms & Cost</p> <p>Which items require FAT third-party validation? Can local companies be used?</p>	<p>[CLARIFIED]</p> <p>FAT required for: Inverters, PV modules, LV panels, and other imported electrical equipment specified by Engineer. Sampling per IEC 61215 (modules) and applicable IEC standards. All inspection costs (travel, lodging, testing fees) borne by Contractor (Clause 4.7). Approved</p>

		agencies: SGS, Intertek, TUV, PSQCA, or equivalent firm approved by Engineer.
2B-21	<p>Panel Washing – Scope, Responsibility & Water Supply</p> <p>Washing not clearly defined.</p> <p>Contractor to provide washing for one year. Who supplies water and distribution?</p>	<p>[CLARIFIED]</p> <p>Contractor to provide panel washing (manual or automated) for the first 12 months of operation as part of the 1-year O&M. Water to be arranged by Contractor; Employer may allow access to nearby hydrants but Contractor bears all costs. Washing frequency shall be sufficient to maintain NMGG; failure to wash does not excuse generation shortfall.</p>
2B-22	<p>Design Approval – Liability Transfer</p> <p>Does design approval by the Employer/Engineer transfer any liability to the Employer?</p>	<p>[CLARIFIED]</p> <p>No. Per Clause 5.1: 'Notwithstanding that the Contractor Design is submitted and approved by the Employer, the Contractor shall solely remain responsible for his rendered design and fitness for intended purposes.' Approval is for conformity with specifications only.</p>
2B-23	<p>Subcontracting / Outsourcing Scope</p> <p>Clarify if civil works, structural fabrication, and SCADA/HMI can be outsourced.</p>	<p>[CLARIFIED]</p> <p>Permitted to subcontract: civil works, structural fabrication, SCADA/HMI development, earthing/lightning systems (Clause 4.3). Main Contractor remains fully responsible for all subcontracted work. Key components (PV modules, inverters, LV panels) shall not be subcontracted without prior written approval. Subcontracting of the whole Works is not allowed.</p>
2B-24	<p>Qualification – E&M Works Definition</p>	<p>[CONFIRMED]</p>

	Do E&M works refer to turnkey solar works (in-hand and completed)?	Yes. For Appendix-B, Sr. ii, the Employer accepts turnkey solar power projects (design, supply, installation, commissioning) as well as other electrical/mechanical infrastructure projects of equivalent value.
2B-25	Enlistment with Government Agencies – Scoring Enlistment with NADRA, NTC, SBP, NBP – will marks be awarded?	[CONFIRMED] Yes. Appendix-B, Sr. iii accepts federal/provincial agencies, autonomous bodies, and public sector corporations including NADRA, NTC, State Bank, National Bank, etc. (1 mark each, max 3 marks). Valid enlistment proof required.
2B-26	Shared Human Resources from Parent/Group Company Will resources from XYZ power vertical (parent company) be credited in technical evaluation?	[CONDITIONALLY ACCEPTED] Yes, subject to submitting for each shared resource: <ul style="list-style-type: none"> • Formal secondment agreement committing the individual for required duration. • PEC registration certificate and degree. • Proof of experience (pay slips, project completion certificates). • Declaration of exclusive availability for this contract. Failure to provide documentation results in non-crediting. Direct employees with PEC documentation preferred.
2B-27	BOQ vs. BOM in Technical Bid Suggest all bidders furnish BOM in Technical Bid to standardize quantities and reduce price variation.	[REJECTED] The priced BOQ (Appendix-F) is part of the Financial Bid only. The Technical Bid shall not contain pricing. Quantity variations are expected

		under a lump-sum contract. Evaluation is on total quoted price basis. No change.
2B-28	<p>Bid Validity – Request to Reduce from 90 Days</p> <p>Request to reduce bid validity below 90 days.</p>	<p>[REJECTED]</p> <p>Bid validity remains 90 days from date of bid opening (Bidding Data, IB.14). Standard period for government procurement at this scale.</p>
2B-29	<p>O&M Scope – Separate Pricing</p> <p>Can O&M scope and pricing be submitted separately from the EPC cost?</p>	<p>[REJECTED]</p> <p>Minimum 1-year O&M is an integral part of the Works. It shall be included in the lump-sum EPC price. Separate O&M pricing will be treated as non-responsive.</p>
2B-30	<p>Mandatory Construction Schedule with Bid</p> <p>Is a tentative construction schedule required with the bid?</p>	<p>[CONFIRMED]</p> <p>Yes. Appendix-A to Bid (Proposed Construction Schedule) is mandatory in the Technical Bid. Format: bar chart (CPM/PERT) showing sequence and duration of each work item. Time for Completion is 240 days from Commencement Date (Engineer's Notice to Commence, issued within 14 days after contract signing).</p>
2B-31	<p>Qualification Criteria – Parking Shed Experience Details</p> <p>(a) Is 1.5 MW at single site compulsory or accumulated? (b) Is 3 MW consultancy compulsory or accumulated? (c) If a firm has done 1.2 MW, how many marks?</p>	<p>[CLARIFIED]</p> <p>(a) 1.5 MW at a single site: Mandatory criterion (Appendix-B, Sr. i). Must be a single project; accumulated smaller projects do not satisfy.</p> <p>(b) 3 MW consultancy: Accumulated over multiple projects is acceptable.</p> <p>(c) 1.2 MW project: Falls under the 1.0 MW scoring band (6 marks) if mandatory 1.5 MW requirement is separately met. If no 1.5 MW project exists, firm is disqualified.</p>

		Additionally: Elevated solar structures (carports, canopy) are considered equivalent to parking shed structures for scoring purposes.
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2C. Site Data, Surveys & Civil Works

Sr.	Query / Clarification Requested	Employer's Response / Clarification
2C-1	<p>Coordinates, Photographs & Survey Data</p> <p>GPS coordinates, site layout drawings, photographs, and pre-bid presentation requested.</p>	<p>[TO BE PROVIDED IN ADDENDUM]</p> <p>The following will be issued in a separate addendum within 5 working days:</p> <ul style="list-style-type: none"> • GPS coordinates of each parking shed. • Site layout drawings (existing parking, building boundaries, electrical rooms). • Photographs and video walkthrough of all 11 sites. • Single-line diagrams of existing electrical networks (as available). • Transformer and generator ratings, locations, distances. • Generator SLDs for synchronization design. • Pre-bid meeting presentation slides and Minutes of Meeting (MoM) by 15 April 2026.
2C-2	<p>LT Cable Lengths – Inverter to LV Panel & LV Panel to Transformer</p> <p>Cable lengths not given; required for quoting.</p>	<p>[PROVIDED BELOW (INDICATIVE)]</p> <p>See cable distance table in Section 3 of this Corrigendum. These are estimates for budgeting only. The Contractor shall quote lump-sum for each site. No post-award claims for distance variation will be entertained under this lump-sum contract.</p>
2C-3	<p>Thrust Boring – Road Measurements Not Given</p> <p>BOQ items for thrust boring appear in Sites A, B, C, F but road measurements not given.</p>	<p>[PROVIDED BELOW (INDICATIVE)]</p> <p>See thrust boring table in Section 3 of this Corrigendum. These are estimates. Contractor to include sufficient provision in lump-sum price.</p>

2C-4	<p>Excavation & Cable Laying – Layout Not Available</p> <p>BOQ mentions excavation for cables but layout drawings are not available.</p>	<p>[CLARIFIED]</p> <p>Modified BoQ is attached. BOQ quantities for excavation, trenching, and cable laying are estimates based on typical distances. Contractor to finalize cable routes after award (detailed survey). Lump-sum price to cover all excavation, trenching, backfilling, reinstatement (including road cutting and thrust boring). No variation for actual length differences in a lump-sum contract.</p>
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SECTION 3: REFERENCE TABLES

3A. Payment Milestone Schedule (Contract Data, Item 14 & Clause 11.2)

Milestone	Percentage	Certification Requirement
Mobilization Advance (optional)	15%	Against unconditional Bank Guarantee
FAT – imported items (third-party validation)	10%	FAT report + third-party certificate
Bill of Lading (imported items)	10%	Copy of B/L
Delivery at site	20%	Receiving/damage report + warranty certificates verified by Engineer
Installation (civil & mechanical)	30%	Installation completion certificate from Engineer
Testing & Commissioning	25%	Commissioning report + all relevant documents
Taking Over Certificate (TOC)	2.5%	Issuance of TOC
Completion of Defect Liability Period	2.5%	Satisfactory performance review by NUST Technical Committee

Note: IPC frequency – monthly or upon milestone achievement. Engineer certifies within 15 days; Employer pays within 30 days of certification.

3B. Warranty & DLP Timeline (Contract Data, Item 12)

Obligation	Duration	Start Date
Defect Liability Period (DLP)	2 Years	From Taking Over Certificate (TOC)
Contractor's O&M (minimum)	1 Year (Revised)	From TOC
PV Module Product Warranty	12 Years	From TOC
Inverter Warranty	10 Years	From TOC
Labor / Material / Installation Warranty	5 Years	From TOC

Note: All obligations run concurrently from TOC. DLP and O&M are revised to 1 year from TOC per this Corrigendum.

3C. Indicative LT Cable Distances by Site

: All distances are estimates for budgeting purposes. No price adjustment will be made post-award for actual distance variations. Total installed capacity is 3.50 MWp across all 11 sites. Detailed BoQ along with the measurements are attached separately in the end of the document.

SECTION 4: CONSOLIDATED SUMMARY OF CHANGES

The table below summarises all formal amendments and key clarification decisions in this Corrigendum.

Sr.	Topic	Action / Status	Addendum Required
1	Affidavit Payee (IB.3 Sr.#10)	Corrected: 'PMAS AAUR' replaced with NUST Account Title	Yes – formal deletion/correction "NUST SELF GENERATION INCOME AND EXPENSE (NUST-SGR)"

			Account No for reference/direct deposit. HBL 2292-7000267401 NUST FTN #: 9013704-3
2	Earthing Bore Depth (Appendix-G, Item 12)	As per IEC Standards.	As per IEC standards.
3	Defect Liability Period (DLP)	Unchanged: 2 years from TOC	Contract Data Item 12 is retained.
4	O&M Period	REVISED: 2 years reduced to 1 year from TOC	Yes – Appendix-G warranty note amended
5	Performance Security / Bank Guarantee	REVISED: Reduced from 10% to 5% of Contract Price. Note: Bank Guarantee and Performance Guarantee are the same instrument.	Yes – Contract Data Item 8 amended
6	Bid Security / Earnest Money / Retention	CLARIFIED: All three terms refer to the same 2% instrument. No change to amount.	No – clarification only
7	Bid Submission Deadline	EXTENDED: New deadline – 28 April 2026 (same time as original)	Yes – confirmed
8	Contractor/Consultant Eligibility	Clarified: EPC contractors eligible; pure consultancy does not qualify	Yes
9	Solar Experience Scoring (App-B Sr.i)	New: Graded weights – Parking 100%, Rooftop 70%, Ground-mounted 50%	Yes – scoring matrix updated
10	Site-wise Provincial Acceptance Certificate (PAC)	PAC per site	Not accepted

11	NMGG (4.0 kWh/kW/day)	No Change: Firm contractual requirement; PR-only not acceptable	No
12	Payment Terms (LOT-based)	Rejected: Milestones remain as per Contract Data, Item 14	No
13	Retention Money Waiver	Rejected: Mandatory 2%	No
14	O&M Separate Pricing	Rejected: Must be included in lump-sum EPC price	No
15	Currency & Split Contracts	Rejected: PKR only; single lump-sum EPC contract	No
16	Survey Data (Coordinates, SLDs, Photos)	To be issued in a separate addendum within 5 working days	Yes – data addendum
17	Cable & Boring Distances	Indicative distances provided in Section 3 tables	Partial – in updated BoQ
18	PV Panels & Inverter Brand	Confirmed: Equivalent Tier-1 brands acceptable (per specifications)	No
19	SCADA – Standalone / Remote IP	Confirmed: Standalone system; remote IP monitoring; no ICT integration	No
20	Genset Synchronization Scope	Confirmed: Zero export + backfeed control included in scope	No
21	Bid Validity	Rejected: Remains 90 days from date of bid opening	No
22	Contract Negotiation / Deviations	Rejected: No deviations; non-responsive bids rejected	No

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

592KW Parking shed-1 NCLS

A

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	592,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei or equivalent, including all accessories with protection shed	1			
a)		115KW	2.00	Nos		
b)		150KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45/RS485 complete in all respects preferably Huawei or equivalent compatible	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross	592,000.00	Watt		

		column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD), complete in all aspects (150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	10,000.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un- armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV Panel)	30.00	Mtr		
b)		120mm ² CU 3.5 Core (150 KW inverter to LV panel)	30.00	Mtr		
c)		240mm ² CU 1 Core (LV Panel to Transformer) 2xNo Runs	500.00	Mtr		
d)		120mm ² CU 1 Core (LV Panel to Transformer for N)	50.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 1000A</p> <p>Incoming: 2xTP, 250A, 40KA MCCB 2xTP, 320A, 40KA MCCB</p> <p>Outgoing: 1xTP, 1250A MCCB 65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki</p> <p>Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	UPVC Pipe, and MC4 Connectors	<p>Supply and Laying UPVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4</p>	1.00	Job		

		connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)				
10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian) 16 SWG	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equillent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		16mm ² , CU, 1C Green color PVC 1KV				
c)		50mm ² , CU, 1C Green color PVC 1KV				
d)		70mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		

13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6” pipe and manholes complete in all aspects	15.00	Mtr		
15	Shifting and installation of Transformer	Disconnecting and/ Shifting of 400KVA transformer from site to store maximum distance of 2km away at site and then 1000KVA transformer from store to at site placing and installation.	1.00	Job		
16	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
	The above job should be completed in all aspects					
A.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

197KW Parking shed-2 NCLS

B

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	197,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		50 KW	1.00	Nos		
b)		115 KW	1.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanize non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) ,	197,000.00	Watt		

		complete in all aspects (150km/hr+ windspeed with standable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU. XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	3,900.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		25mm ² CU 3.5 Core (50 KW inverter to LV Panel)	15.00	Mtr		
b)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	15.00	Mtr		
c)		150mm ² CU 3.5 Core (LV Panel to Transformer)	60.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 400A</p> <p>Incoming: 1xTP, 250A, 30KA MCCB 1xTP, 100A, 30KA MCCB Outgoing: 1xTP, 400A MCCB 65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki</p> <p>Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC, 1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian)</p> <p>IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta</p>	1.00	Job		

		pipe, Plasco pipe or equivalent and best quality of MC4)				
10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of different sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		10mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		

13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6” pipe and manholes complete in all aspects	15.00	Mtr		
15	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
	The above job should be completed in all aspects					
B.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

348KW Parking shed-2 CIPS

C

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	348,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		150KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 350 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD), complete in all aspects	348,000.00	Watt		

		(150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	7,900.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		120mm ² CU 3.5 Core (150 KW inverter to LV Panel)	30.00	Mtr		
b)		240mm ² CU 1-Core (LV panel to transformer single run)	60.00	Mtr		
c)		120mm ² CU 1-Core for neutral (LV Panel to Transformer)	20.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 630A</p> <p>Incoming:2xTP, 320A, 30KA MCCBOutgoing: 1xTP, 630A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombi ner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		70mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		

13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6” pipe and manholes complete in all aspects	1.00	Job		
15	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
	The above job should be completed in all aspects					
C.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

270KW Parking shed CEMTECH

D

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	270,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 200 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD), complete in all aspects	270,000.00	Watt		

		(150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	4,500.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	30.00	Mtr		
b)		240mm ² CU 3.5 Core (LV Panel to Transformer)	45.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 500A</p> <p>Incoming:2xTP, 250A, 30KA MCCBOutgoing: 1xTP, 500A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombi ner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)	1.00	Job		
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV				
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		

13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
D.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

300KW Parking shed Sports Complex

E

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	300,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115 KW	1.00	No		
b)		150 KW	1.00	No		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 350 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanize non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) ,	300,000.00	Watt		

		complete in all aspects (150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	4,500.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	15.00	Mtr		
b)		120mm ² CU 3.5 Core (150KW inverter to LV Panel)	15.00	Mtr		
c)		120mm ² CU 1-Core (LV Panel to Transformer, 2runs)	120.00	Mtr		
d)		70 mm ² CU 1-Core (LV Panel to Transformer, for N)	20.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 630A</p> <p>Incoming: 1xTP, 250A, 30KA MCCB 1xTP, 320A, 30KA MCCB</p> <p>Outgoing: 1xTP, 630A MCCB 65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki</p> <p>Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4</p>	1.00	Job		

		connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)				
10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		

13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
E.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

406KW Parking shed SNS

F

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	406,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115 KW	3.00	No		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 400 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects	406,000.00	Watt		

		(150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	6,500.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV Panel)	45.00	Mtr		
b)		150mm ² CU 1-Core (LV Panel to Transformer) 2xNo Runs	420.00	Mtr		
c)		70mm ² CU 1-Core (LV Panel to Transformer for N)	70.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 800A</p> <p>Incoming:3xTP, 250A, 30KA MCCBOutgoing: 1xTP, 800A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombi ner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)	1.00	Job		
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV				
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		

13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6” pipe and manholes complete in all aspects	25.00	Mtr		
15	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
	The above job should be completed in all aspects					
F.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

68KW Parking shed Central Library

G

Sr N o	ITEM NAME	DESCRIPTION	Qty	UNI T	RAT E (Rs)	AMOU NT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	68,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		30 KW	2.00	No		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronizati on	Supply & installation of Synchronization system with 250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects	68,000.00	Watt		

		(150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	1,000.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		16mm ² CU 3.5 Core (30 KW inverter to LV panel)	30.00	Mtr		
b)		70mm ² CU 3.5 Core (LV Panel to Transformer)	120.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 100A</p> <p>Incoming:3xTP, 63A, 20KA MCCBOutgoing: 1xTP, 125A MCCB30 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombi ner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		10mm ² , CU, 1C Green color PVC 1KV				
d)		16mm ² , CU, 1C Green color PVC 1KV				
e)		35mm ² , CU, 1C Green color PVC 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		

13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
G.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

542KW Parking shed-1 CIPS

H

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	542,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		150KW	3.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Synchronization	Supply & installation of Synchronization system with 250/500 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects	542,000.00	Watt		

		(150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	10,100.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		120mm ² CU 3.5 Core (150 KW inverter to LV panel)	45.00	Mtr		
b)		240mm ² CU 1-Core (LV Panel to Transformer) 2xNo Runs	180.00	Mtr		
c)		120mm ² CU 1-Core (LV Panel to Transformer for N)	30.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 1000A</p> <p>Incoming:3xTP, 320A, 30KA MCCBOutgoing: 1xTP, 1000A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombi ner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta</p>	1.00	Job		

		pipe, Plasco pipe or equivalent and best quality of MC4)				
10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of different sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		10mm ² , CU, 1C Green color PVC 1KV				
d)		16mm ² , CU, 1C Green color PVC 1KV				
e)		35mm ² , CU, 1C Green color PVC 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with	4.00	Nos		

		manhole and cover complete in all aspects				
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1.00	Job		
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
H.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

373KW Parking shed NSHS

I

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	373,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ R485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		150KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 350 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects	373,000.00	Watt		

		(150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	7,900.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		120mm ² CU 3.5 Core (150 KW inverter to LV Panel)	30.00	Mtr		
b)		120mm ² CU 1-Core (LV panel to transformer single run)	450.00	Mtr		
c)		70mm ² CU 1-Core for neutral (LV Panel to Transformer)	75.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 630A</p> <p>Incoming:2xTP, 320A, 30KA MCCBOutgoing: 1xTP, 630A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombi ner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		10mm ² , CU, 1C Green color PVC 1KV				
d)		16mm ² , CU, 1C Green color PVC 1KV				
e)		35mm ² , CU, 1C Green color PVC 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightning Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ±	1.00	Job		

		130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
I.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

257KW Parking shed NBS-Student

J

Sr N o	ITEM NAME	DESCRIPTION	Qty	UNI T	RAT E (Rs)	AMOU NT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	257,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ R485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115 KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronizati on	Supply & installation of Synchronization system with 400/250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects	257,000.00	Watt		

		Column to column distance 18 ft. (150km/hr+ windspeed withstandable)				
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	5,600.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un- armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	30.00	Mtr		
b)		240mm ² CU 1-Core (LV Panel to Transformer)	240.00	Mtr		
c)		120 mm ² CU 1-Core (LV Panel to Transformer)	80.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 500A</p> <p>Incoming:2xTP, 250A, 30KA MCCBOutgoing: 1xTP, 500A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombi ner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave	1.00	Job		

		10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
J.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

147KW Parking shed NBS-Faculty

K

Sr No	ITEM NAME	DESCRIPTION	Qty	UNI T	RAT E (Rs)	AMOU NT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	147,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ R485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
(a)		150KW	1.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronizati on	Supply & installation of Synchronization system with 400/250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		

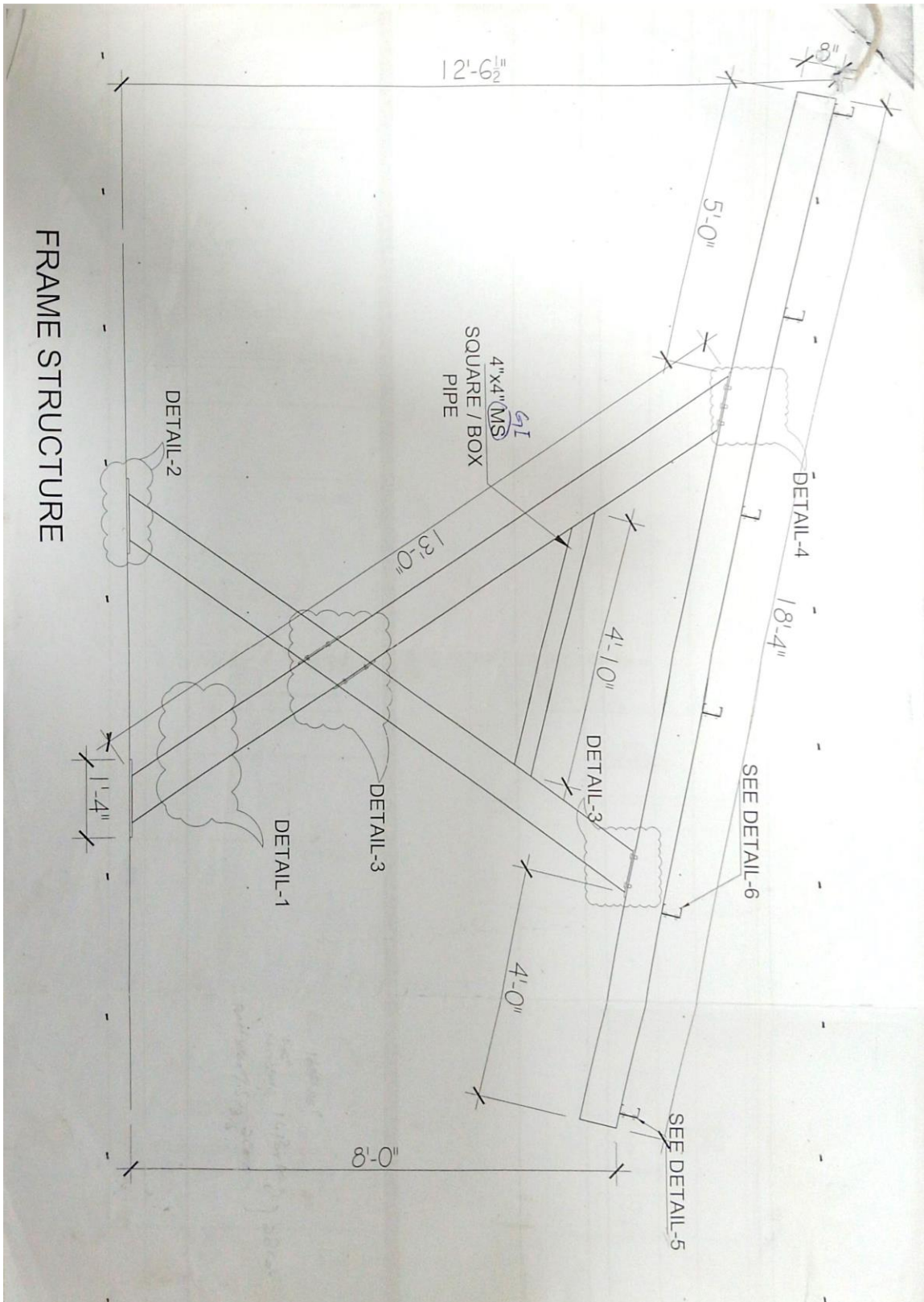
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6'x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD), complete in all aspects Column to column dististance 18 ft. (150km/hr+ windspeed withstandable)	147,000.00	Watt		
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	3500	Mtr		
7a	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
b)		120mm ² CU 3.5-Core (150KW inverter to LV Panel)	30	Mtr		
c)		120mm ² CU 1-Core (LV Panel to Transformer)	90	Mtr		
d)		70mm ² CU 1-Core (LV Panel to Transformer for N)	30	Mtr		

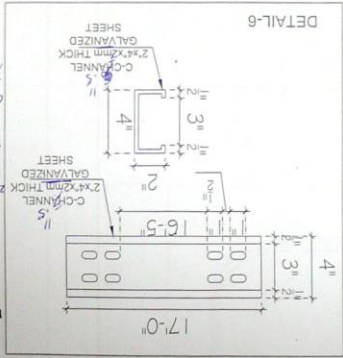
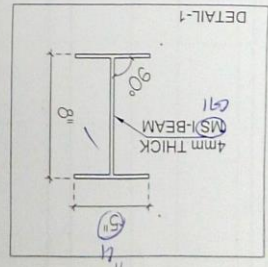
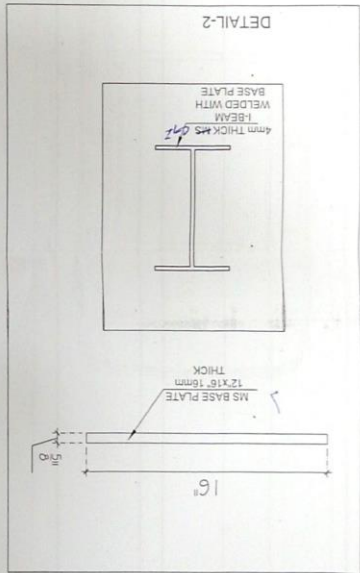
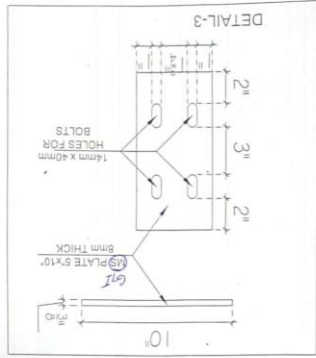
8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 250A</p> <p>Incoming 1xTP, 320A, 40KA MCCB</p> <p>Outgoing: 1xTP, 320A MCCB 65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1	Job		
9	PVC Pipe, and MC4 Connectors	Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4	1	Job		

		connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)				
10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 0.75KV				
b)		4mm ² , Copper 1C Green color PVC 1KV				
c)		6mm ² , CU, 1C Green color PVC 1KV				
d)		10mm ² , CU, 1C Green color PVC 1KV				
e)		16mm ² , CU, 1C Green color PVC 1KV				
f)		35mm ² , CU, 1C Green color PVC 1KV	1	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft (10'x4''x4mm) dia 25mm, 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4	Nos		

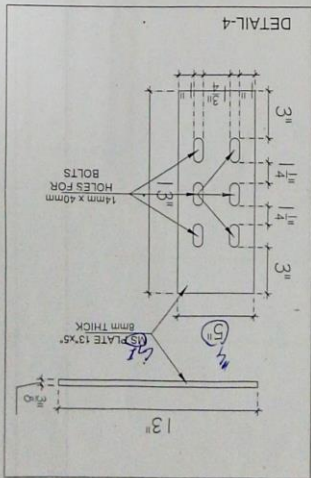
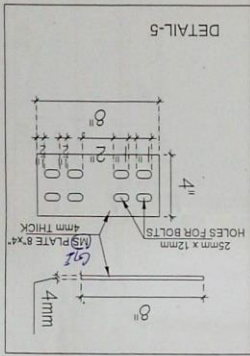
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	1	Job		
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects		Job		
15	SCADA System	Supply and installation of complete SCADA Control scope including but not limited to Solar Shed Control Cabinet, SCADA system for all sites, Ethernet Patch Cords, Fiber Optic LC/SC Duplex Multimode Pig tails, Ethernet cable, Control Cable 1.5mm sq 16 core CU Flexible, Fiber Optic cable multimode mode (4/6 Cores) , LCD size 85" etc including all related items (complete in all aspects i.e. Must ensure observability and controlability along with protection and control.)	1	Job		
K.Total Amount (Rs.)						

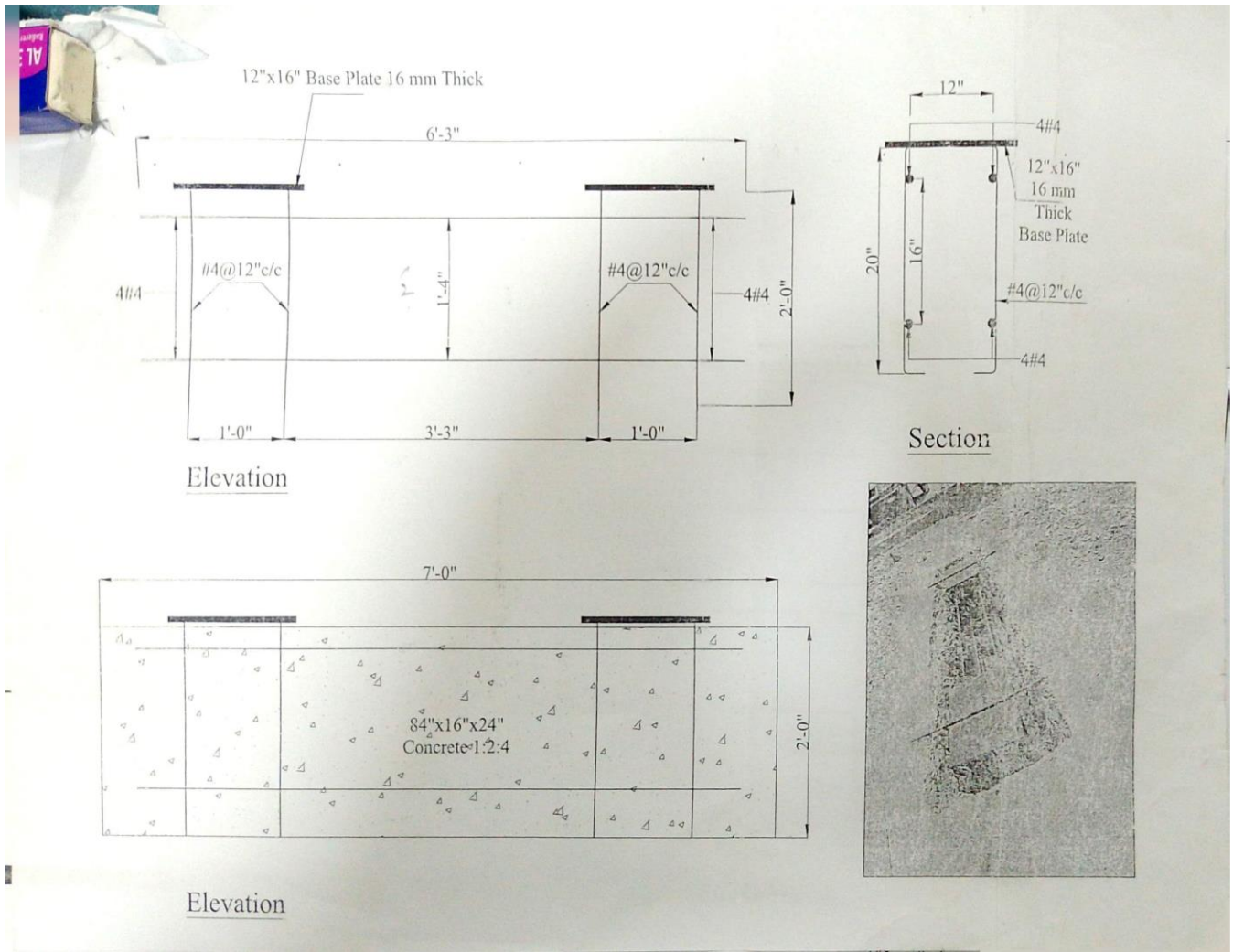
Civil Structure:





Handwritten notes:
 1/8 inch = 12 gauge
 2.75 mm = 12 gauge
 2.75 mm = 12 gauge





Solar PV Layout Design

Installation Area	Tilt	Panel Wattage	Quantity	Total System Size
CEM TECH Car Parking	P3 (15°)	645	417	268.96
NCLS Car Parking 1+2	P3 (15°)	645	918+306	592.11+197.37
NBS Student Car Parking	P3 (15°)	645	399	257.35
CIPS Building Car Parking - 1	P3 (15°)	645	840	541.80
NBS Faculty Car Parking	P3 (15°)	645	228	147.06
CIPS Building Car Parking - 2	P3 (15°)	645	540	348.30
NSHS Car Parking	P3 (15°)	645	579	373.45
SNS Car Parking	P3 (15°)	645	465	299.92
Sports Complex Car Parking	P3 (15°)	645	630	406.35
Central Library Car Parking	P3 (15°)	645	105	67.725
TOTAL	P3 (15°)	645	=5427	=3.50MWp

GPS Coordinates Key Project Sites

The 3.50 MW system will be distributed across 11 parking shed locations on campus:

Sr. #	NUST Site Location	GPS Coordinates	
1	CEM TECH Car Parking	33°38'43.18"N	72°59'53.82"E
2	NCLS Car Parking 1	33°38'37.61"N	73° 0'10.18"E
3	NCLS Car Parking 2	33°38'36.31"N	73° 0'8.81"E
4	NBS Student Car Parking	33°38'41.77"N	72°59'28.19"E
5	CIPS Building Car Parking-1	33°38'37.61"N	72°59'37.33"E
6	NBS Faculty Car Parking	33°38'39.86"N	72°59'25.86"E
7	CIPS Building Car Parking - 2	33°38'44.93"N	72°59'11.28"E
8	NSHS Car Parking	33°38'51.20"N	72°59'40.66"E
9	SNS Car Parking	33°38'14.23"N	72°59'23.51"E
10	Sports Complex Car Parking	33°38'25.63"N	72°59'38.69"E
11	Central Library Car Parking	33°38'30.08"N	72°59'34.43"E

Key Project Sites (Parking Sheds)

CEM Tech Car Parking – 270 kWp



Key Project Sites (Parking Sheds)

NCLS Car Parking 1 (592 kWp) & 2 (197 kWp)



Key Project Sites (Parking Sheds)

NBS Student Car Parking (257 kW) & NUST Faculty Car Parking (147 kW)



Key Project Sites (Parking Sheds)

CIPS Building Car Parking 1 (542 kWp) & 2 (348 kWp)



Key Project Sites (Parking Sheds)

NSHS Car Parking (373 kWp) & SNS Car Parking (406 kWp)



Key Project Sites (Parking Sheds)

Sports Complex Car Parking (300 kWp) & Central Library Car Parking (68 kWp)



Minutes of Meeting

NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY (NUST)

PMU USPCAS-E | H-12, Islamabad

MINUTES OF PRE-BID MEETING

Installation of 3.50 MWp Solar PV Carport / Parking Shed System at 11 Sites

NUST Campus, H-12, Islamabad, Pakistan

Tender Reference:	PMU-USPCAS-E-NUST / Solar-3.5MW / 2026
Document Type:	Minutes of Pre-Bid Meeting (MoM)
Date of Meeting:	11 April 2026
Time:	11:00 AM
Venue:	USPCAS-E Seminar Hall, NUST H-12 Campus, Islamabad
Chaired By:	Dr. Syed Ali Abbas Kazmi – Project Director / Head, Technical Committee
MoM Prepared By:	Technical Committee, PMU USPCAS-E, NUST
Date of Issue:	13 April 2026
No. of Bidder Firms:	More than 26 firms represented

Related Document:	Corrigendum No. 01 dated 13 April 2026 (all formal decisions therein)
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Agenda:

Item	Agenda Topic	Description
1	Welcome & Introduction	The Chair, Dr. Syed Ali Abbas Kazmi, welcomed all participants and introduced the NUST Technical Committee and PMU USPCAS-E team.
2	Project Overview	Presentation of the project was delivered by Dr. Atif Naveed and detail explanation for answering the questions from Dr Syed Ali Abbas Kazmi on installation of 3.50 MWp Solar PV Carport / Parking Shed System across 11 locations on NUST H-12 Campus, Islamabad.
3	Tender Document Walkthrough	Key sections of the Tender Document were reviewed including Conditions of Contract, Specifications (Appendix-G), BOQ (Appendix-F), and Qualification Criteria (Appendix-B & C).
4	Site Overview & Layout Presentation	Presentation of the 11 proposed parking shed sites, indicative layouts, and discussion of site-specific constraints (orientation, shading, electrical injection points).
5	BOQ & Specifications Review	Review of indicative quantities in the BOQ, key specification requirements (PV panels, inverters, SCADA, mounting structures), and performance requirements (NMGG 4.0 kWh/kW/day).
6	Open Q&A Session	Bidders raised queries on technical, commercial, contractual, and qualification-related matters. All points recorded in Section 3 of these Minutes.
7	Closing Remarks	Chair summarised key decisions.
8	Site Visit	Detailed site visit was organized for all contractors

DISCUSSION POINTS, QUERIES & DECISIONS

The following queries and discussion points were raised by the participating bidder firms during the Open Q&A session. All formal Employer responses are recorded herein and are cross-referenced to Corrigendum No. 01 dated 13 April 2026, which constitutes the official and binding document.

Sr.	Topic	Query / Discussion Summary	Decision / Response Summary	Status & Ref.
1	Bid Validity Period	Multiple bidders requested reduction of the 90-day bid validity period, citing that it is too long for a procurement of this nature.	Rejected. The 90-day bid validity period stands as per Bidding Data, IB.14. This is standard for government EPC contracts of this scale under PPRA rules.	No Change <i>Corrigendum No. 01 – Section 2A, Q.2A-28</i>
2	Parking Shed Experience – 1.5 MW at Single Site	Bidders queried whether the mandatory requirement of 1.5 MW parking shed experience at a single site is absolute. Bidders requested that accumulated experience across multiple sites be accepted.	The mandatory requirement of at least one completed parking shed / elevated solar carport project of 1.5 MWp or more at a single site remains firm and non-negotiable. Accumulated smaller projects do not satisfy this criterion. However, elevated solar structures (carports, canopy structures) equivalent in structural complexity to parking sheds shall be	Clarified – No Change to Mandatory Criterion <i>Corrigendum No. 01 – Section 2B, Q.2B-31</i>

			considered. The marks scale (0.5 MW, 1.0 MW, 1.5 MW) applies for scoring.	
3	Consultancy Requirement (1 MW & 3 MW)	Bidders raised the dual consultancy requirement: 1 MW and 3 MW solar parking shed consultancy experience. It was queried whether EPC execution experience qualifies and whether consultancy is a separate mandatory requirement.	Clarified. EPC contractors (design, supply, install, commission) are fully eligible. The 3 MW consultancy scoring criterion in Appendix-B is for scoring purposes only and is not a mandatory eligibility gate. Pure consultancy without execution does not satisfy mandatory criteria. An addendum will formally clarify contractor vs. consultant eligibility.	Clarified <i>Corrigendum No. 01 – Section 1.7 & Section 2B, Q.2B-24</i>
4	Payment Terms	Multiple bidders requested revision of the payment structure from project-completion-based to LOT-based / site-wise progressive payments to improve cash flow. The detailed payment milestone schedule was also requested.	LOT-based payments: Rejected. The payment milestones as defined in Contract Data, Item 14 and Clause 11.2 are final. The milestone structure (15% advance, 10% FAT, 10% B/L, 20% delivery, 30% installation, 25% commissioning, 2.5% TOC, 2.5% DLP)	Rejected (LOT-based) / Clarified (Schedule) <i>Corrigendum No. 01 – Section 2A, Q.2A-7</i>

			provides adequate progressive disbursements. IPCs to be submitted monthly or on milestone achievement; Engineer certifies within 15 days; payment within 30 days.	
5	Bill of Lading of Panels	Bidders sought clarification on the Bill of Lading (B/L) milestone i.e specifically whether the 10% payment upon B/L applies to all imported items or only PV panels, and what documentation is required.	The 10% Bill of Lading payment applies to all imported equipment (PV modules, inverters, and other major imported electrical items). The Contractor shall submit a copy of the B/L endorsed by the shipping agent along with the packing list and commercial invoice. Engineer to verify and certify within 15 days.	Clarified <i>Corrigendum No. 01 – Section 3A (Payment Table)</i>
6	SCADA Requirement – Complete 3.5 MW Coverage	Bidders sought clarification on the extent of the SCADA system — whether it must cover all 11 sites aggregating to the full 3.5 MW, and whether integration with NUST's existing ICT network is required.	The SCADA system must provide complete centralized monitoring and control coverage of all 11 sites (total 3.5 MWp). The system shall be standalone and self-contained — no integration with NUST ICT network is required	Confirmed / Clarified <i>Corrigendum No. 01 – Section 2B, Q.2B-8 & Q.2B-9</i>

			or permitted unless explicitly agreed in writing. Remote monitoring via IP/Ethernet is the accepted architecture. All communication hardware (fiber optic, switches, data loggers) to be provided by the Contractor.	
7	Letter of Credit (LC) to be Opened by NUST	Bidders requested that NUST open a Letter of Credit (LC) to facilitate procurement of imported equipment (PV modules, inverters), to reduce financial burden and foreign exchange risk on the Contractor.	Not accepted as a contractual obligation. This is a lump-sum EPC contract quoted in PKR. The Contractor is solely responsible for procurement arrangements including foreign exchange management. NUST will not open an LC. Exchange rate risk and import arrangements are the Contractor's responsibility. No escalation clause for currency variation.	Rejected <i>Corrigendum No. 01 – Section 2A, Q.2A-14</i>
8	Advance Payment Guarantee	Bidders sought clarification on whether the Mobilization Advance is mandatory,	The Mobilization Advance (up to 15% of Contract Price) is optional that is at the	Clarified <i>Corrigendum No. 01 –</i>

		what form of guarantee is required, and when the advance guarantee is released.	Contractor's discretion. If taken, an unconditional, irrevocable Bank Guarantee from a scheduled bank in Pakistan must be submitted for the full advance amount. The guarantee is released when the advance is fully recovered from IPCs (typically after 5–6 IPCs). Insurance guarantees are not acceptable for the advance guarantee.	<i>Section 2A, Q.2A-4 & Q.2A-8</i>
9	Retention Money	Bidders requested waiver of retention money, arguing that the Performance Security (Bank Guarantee) already provides sufficient protection. Clarification on release timeline was also requested.	Retention is mandatory and will not be waived. In the context of this tender, Bid Security = Earnest Money, and all refer to the same 2% instrument.	Rejected (Waiver) / Clarified (Terminology & Release) <i>Corrigendum No. 01 – Section 2A, Q.2A-5</i>
10	Clarification of Performance Guarantee, Bank Guarantee &	Significant confusion existed among bidders regarding the three terms — Performance Guarantee, Bank Guarantee, and	Formal clarification issued: (a) Bank Guarantee and Performance Guarantee and Retention Money are the same instrument; used	Clarified + REVISED (PG reduced from 10% to 5%)

	Retention Money	Retention Money — and whether they represent three separate financial instruments. A query was also raised about whether retention is 3% or Performance Guarantee is 1%.	interchangeably in the Tender Document. This has been REVISED from 10% to 5% of Contract Price. (b) Bid Security, Earnest Money, and Retention Money are the same instrument at 2% of quoted cost i.e. no change. These are two distinct instruments; they are not the same as each other.	<i>Corrigendum No. 01 – Section 1.5 & Section 2A, Q.2A-3, Q.2A-5, Q.2A-6</i>
11	GPS Coordinates & Site Locations	All bidders requested GPS coordinates of all 11 parking shed sites to enable preliminary design, shading analysis, and logistics planning prior to bid submission.	Accepted. GPS coordinates, site layout drawings, photographs, video walkthrough, SLDs of existing electrical networks, and transformer/generator data for all 11 sites will be provided via a separate data addendum within 5 working days of this meeting.	Accepted – Data Addendum to Follow <i>Corrigendum No. 01 – Section 2C, Q.2C-1</i>
12	Structural Design to be Included in Scope	Bidders sought confirmation that the structural design of parking shed/carport mounting structures is part of the Contractor's	Confirmed. The complete structural design of the solar carport/parking shed mounting structure is the Contractor's responsibility, including calculations for wind,	Confirmed <i>Corrigendum No. 01 – Section 2B, Q.2B-12</i>

		scope and not provided by the Employer.	seismic, and dead loads. Structural drawings must be submitted for Engineer's approval as part of the detailed design phase after award. No structural design will be provided by the Employer.	<i>(design liability)</i>
13	Payment Terms – Can They Be Further Relaxed?	Bidders asked whether payment terms could be further relaxed beyond the existing milestone structure, specifically requesting front-loading of payments.	Rejected. The payment milestone structure is final as per Contract Data, Item 14. No further relaxation will be considered. The existing structure already provides 75% of the contract value before commissioning (15% advance + 10% FAT + 10% B/L + 20% delivery + 30% installation), which adequately supports contractor cash flow.	Rejected <i>Corrigendum No. 01 – Section 2A, Q.2A-7</i>
14	Site-wise / LOT-wise Handover	Bidders requested that individual sites be handed over progressively as they are completed, transferring security and risk to the Employer on a site-by-	Partially Accepted. A new Provisional Acceptance Certificate (PAC) mechanism has been introduced. PAC will be issued per site upon completion of installation, 14-day	Partially Accepted – New PAC Mechanism Introduced

		site basis rather than waiting for all 11 sites.	performance test, and submission of as-built documents. Upon PAC: security/risk transfers to Employer; Contractor released from site-specific LDs. Final Acceptance Certificate (FAC) issued only after all 11 sites achieve PAC and 1-year NMGG is verified.	<i>Corrigendum No. 01 – Section 1.10</i>
15	PR vs. NMGG (2% Deviation Requested)	Bidders proposed replacing the Net Minimum Guaranteed Generation (NMGG) of 4.0 kWh/kW/day with a Performance Ratio (PR) metric, citing international market practice. A 2% deviation tolerance was also requested.	Rejected. The NMGG of 4.0 kWh/kW/day (annual average) is a firm, non-negotiable contractual requirement. PR alone does not guarantee absolute energy output. No deviation tolerance will be accepted. Bidders must design to achieve this yield based on H-12 Islamabad's solar resource. Force Majeure adjustments are available for prolonged grid outages.	Rejected <i>Corrigendum No. 01 – Section 2B, Q.2B-1 & Q.2B-2</i>
16	Third Party Validation	Bidders requested clarification on which equipment items require third-party Factory	FAT is required for: PV modules, inverters, LV panels, and other imported electrical	Clarified <i>Corrigendum No. 01 –</i>

		Acceptance Testing (FAT), which agencies are acceptable, and who bears the cost.	equipment. Acceptable agencies: SGS, Intertek, TUV, PSQCA, or equivalent approved by Engineer. All inspection costs (travel, lodging, testing fees) are borne by the Contractor per Clause 4.7. One inspection per equipment type per manufacturing location; additional inspections at Contractor's cost if initial fails.	<i>Section 2B, Q.2B-20</i>
17	Panel Testing from USPCAS-E	A bidder proposed / queried whether PV panel testing could be conducted through USPCAS-E's own testing facilities rather than an external third-party agency.	The Employer will consider USPCAS-E's testing facilities as an approved testing venue for PV module validation, subject to the facility meeting the relevant IEC testing standards (IEC 61215, IEC 61730). This will be confirmed in the data addendum. The Contractor shall still bear all testing costs regardless of venue.	Under Consideration – Confirmation in Addendum <i>Corrigendum No. 01 – Section 2B, Q.2B-20</i>
18	Water Supply – Contractor's Responsibility	Bidders sought clarification on who is responsible for providing	Water supply is the Contractor's responsibility. The	Clarified – Contractor's Responsibility

		<p>water for panel washing/cleaning during the O&M period, and whether NUST would provide access to water supply.</p>	<p>Employer may allow access to nearby hydrants/water points on NUST campus as a convenience, but the Contractor shall bear all costs for water procurement, distribution piping, and cleaning equipment. Washing frequency shall be sufficient to maintain the NMGG target; inadequate washing shall not excuse generation shortfall.</p>	<p><i>Corrigendum No. 01 – Section 2B, Q.2B-21</i></p>
19	<p>O&M Period – Revised to 1 Year</p>	<p>The minimum O&M period was discussed. The original tender specified a 2-year O&M requirement.</p>	<p>REVISED. The minimum O&M period is reduced from 2 years to 1 year from the date of Taking Over Certificate (TOC). The 1-year O&M runs concurrently with the Defect Liability Period. The O&M scope (routine maintenance, cleaning, monitoring, performance reporting) remains the same and must be included in the lump-sum EPC price. Separate O&M pricing is not</p>	<p>REVISED – Reduced from 2 Years to 1 Year</p> <p><i>Corrigendum No. 01 – Section 1.4</i></p>

			permitted. All the Water and cleaning responsibility will rest with contractor.	
20	Defect Liability Period (DLP) –	The DLP was discussed. The original tender and Contract Data specified a 2-year DLP.	The Defect Liability Period is same 2 years from the date of Taking Over Certificate (TOC). Contract Data, Item 12 is retained same accordingly. The Performance Security (Bank Guarantee) validity is correspondingly revised to 25 months from TOC (24 months DLP + 1 month for claims notification).	No Change – 2 Years <i>Corrigendum No. 01 – Section 1.3 & Section 1.5</i>
21	Joint Venture (JV) – Not Allowed	Bidders queried whether they could submit bids as a Joint Venture to pool resources and meet eligibility criteria.	Joint Ventures are not permitted for this tender. Each bidder must qualify independently on the basis of their own financial, technical, and experience credentials. Shared resources from parent/group companies are conditionally accepted with proper documentation (secondment agreements,	Confirmed – JV Not Permitted <i>Corrigendum No. 01 – Section 2B, Q.2B-26</i>

			PEC registration, etc.) as clarified separately.	
22	Subcontracting – Allowed	Bidders requested confirmation that subcontracting of civil works, structural fabrication, and SCADA/HMI development is permitted.	Subcontracting is permitted for specialized activities per Clause 4.3, including: civil works, structural fabrication, SCADA/HMI development, and earthing/lightning systems. The main Contractor remains fully liable for all subcontracted work. Key components (PV modules, inverters, LV panels) shall not be subcontracted without prior written approval. Subcontracting of the entire Works is prohibited.	Confirmed – Permitted with Conditions <i>Corrigendum No. 01 – Section 2B, Q.2B-23</i>

Summary of Key Discussion Points

The following key decisions were taken during the meeting and are formally incorporated in Corrigendum No. 01:

Sr.	Subject	Decision	Status
1.	DLP	2 years from TOC	NO CHANGE

2.	O&M Period	Reduced from 2 years to 1 year from TOC	REVISED
3.	Performance Security / Bank Guarantee	Reduced from 10% to 5% of Total Contract Value	REVISED
4.	Bid Submission Deadline	Extended to 28 April 2026 (same time)	EXTENDED
5.	Terminology	Bid Security = Earnest Money = 2%. Bank Guarantee = Performance Guarantee = Retention Money = 5%	CLARIFIED
6.	NMGG (4.0 kWh/kW/day)	Firm requirement: not change; PR not acceptable	NO CHANGE
7.	Payment Terms	LOT-based rejected; milestone schedule confirmed	NO CHANGE
8.	JV	Not permitted	CONFIRMED
9.	Subcontracting	Permitted for civil, structural, SCADA/HMI (with conditions of IB.38 for the Sub-Contractors)	CONFIRMED
10.	Bid Validity	Remains 90 days – no reduction	NO CHANGE

CLOSING REMARKS & SIGNATURES

The Chair, Dr. Syed Ali Abbas Kazmi, concluded the meeting with the following closing remarks, all formal Employer responses to queries raised during this meeting and via email will be issued through Corrigendum No. 01.

NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY (NUST)
PMU USPCAS-E | H-12, Islamabad

CORRIGENDUM

**TENDER ENQUIRY NO. USPCASE/PMU/01/2026 (TS0000002311E)
EXTENSION IN CLOSING DATE**

This refer to tender enquiry No USPCASE/PMU/01/2026 published on PPRA website vide reference (TS0000002311E). Due to emails/requests received during pre-bid meeting from the bidders and due to delays from the (4 days) lockdown, the bid opening date is extended upto 28 Apr 2026 at 11:00 Hours, which was 21 Apr 2026. However, venue and other terms and conditions will remain unchanged except those amended through Corrigendum No.1 uploaded on EPAD.



**DEPUTY PROJECT DIRECTOR
USPCAS-E, NUST
051-9085-5287 & 051-9085-5272**

Tender Documents

**NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY
(NUST)**

**THE DESIGN, SUPPLY, INSTALLATION, TESTING AND
COMMISSIONING OF 3.50 MW GRID-TIED SOLAR SYSTEM
AT NATIONAL UNIVERSITY OF SCIENCES AND
TECHNOLOGY, SECTOR H-12, ISLAMABAD.**

TENDER DOCUMENT



Instruction to Bidders

Tender & Appendices

Forms

Contract Data

General Conditions of Contract

Specifications

11 March 2026

P &LP Office and USPCAS-E,
NUST CAMPUS SECTOR H-12 ISLAMABAD

SUMMARY OF CONTENTS

SUBJECT

- I. INVITATION FOR BIDS
- II. INSTRUCTIONS TO BIDDERS
- III. FORM OF BID & SCHEDULES TO BID
- IV. BILL OF QUANTITIES (BoQ)
- V. CONTRACT DATA
- VI. CONDITIONS OF CONTRACT
- VII. SPECIFICATIONS
- VIII. PROPOSED SITES

INVITATION FOR BIDS

USPCASE/PMU/01/2026

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS GENERAL

IB.1 Scope of Bid

- 1.1. The Employer (as defined in the Bidding Data) wishes to receive bids for the Establishment of 3.05 MW Grid Tied Solar Power System at NUST Campus Sector H-12, Islamabad as described in these Bidding Documents, and summarized in the Bidding Data hereinafter referred to as the "PMU USPCAS-E."
- 1.2. The Successful Bidder will be expected to complete the Works within the time specified in Appendix-A to the Bid.

IB.2 Source of Funds

- 2.1 The Employer has available to it sufficient resources/funds to completely finance the supply construction and completion of the Works.

IB3 Eligible Bidders

- 3.1. This Invitation for Bids is open to all bidders registered with PEC in relevant category. Bidding is open to firms and contractors meeting the following requirements:

This Invitation for Bids is open to all bidders meeting the following requirements: This is the minimum eligibility criteria for the bidder to participate, failing to meet in a single clause shall cause the bidder to stand disqualified.

Sr #	Mandatory Criteria	Required Documents
1	<p>Registration with Pakistan Engineering Council (PEC) Duly licensed by the Pakistan Engineering Council (PEC) in the category relevant to the value of the Works along with relevant specialized code(s).</p>	<ul style="list-style-type: none"> • Active Registration with Pakistan Engineering Council (PEC) with minimum required Category C-2 and above (in case of JV lead partner) with specialized codes. • Registration with solar codes from PEC i.e., EE11 (Solar). • Active Registration with AEDB/PPIB in C-2 category (in case of JV lead partner).
2	<p>Registration with Tax Authorities/ Departments Registered with relevant Tax Authorities / Departments.</p>	Documentary evidence must be attached.
3	<p>Establishment of Firm Minimum 3 years of establishment of entity.</p>	Years of establishment will be assessed from SECP / Registrar registration certificate or NTN Registration.
4	<p>Financial Soundness (Liquid Assets) Having liquid assets of at least 75% of the project cost against which the bidder is interested to bid / participate.</p>	Last wealth statement submitted to FBR (FY 2024-25) or audited accounts (FY 2024-25) from QCR rated firm by ICAP or valid credit facility from the scheduled bank or latest bank statement shall be considered for evaluation with maximum fifteen (15) days old from the date of closing of Bid.
Sr #	Mandatory Criteria	Required Documents
5	<p>Financial Soundness (Annual Turnover) Annual Average turnover of last three years must be at least 75% of the project cost.</p>	Last three (03) years (FY 2022-23, 2023-24, 2024-25) Income Tax Returns / Audit Reports shall only be considered for evaluation.

6	Contract / Work Done of General nature in last five (05) years Projects (General Nature i.e. supply/works etc. including): Completed or in hand contracts with accumulated value of at least 75% of cost of project.	Documentary evidence, such as a completion certificate / satisfaction report, must be provided reflecting complete details of the projects; otherwise, it will be considered as non- responsive. In the case of in hand projects, purchase order must be attached.
7	Contract / Work Done of similar nature in last five (05) years Contract / Work Done of similar nature in last five (05) years with accumulated value of at least 75% of cost of project that has been successfully completed and that are similar to the proposed works including civil works with major component.	Documentary evidence, such as completion certificate / satisfaction report, must be provided reflecting complete details of the project; otherwise, it will be considered as non- responsive. In the case of in hand projects, purchase order must be attached.
8	Contract / Works in hand of similar nature in last two (02) years Contract / Works in hand of similar nature in last two (02) years with accumulated value of at least 25% of cost of project that has been successfully completed and that are similar to the proposed works including civil works with major component.	Documentary evidence, such as Work orders, Letters of Award, satisfactory progress reports be provided reflecting complete details of the project. In the case of in hand projects, purchase order must be attached.
9	Undertaking – Not Blacklisted Submission of undertaking on legal valid and attested stamp paper in name of NUST SELF GENERATION INCOME AND EXPENSE (HBL 2292-7000267401) that the firm is not blacklisted by any of Provincial or Federal Government Department, Agency, Organization or autonomous body or Private Sector Organization anywhere in Pakistan.	Undertaking on legal valid and attested stamp paper in name of NUST SELF GENERATION INCOME AND EXPENSE (HBL 2292-7000267401) confirming the firm is not blacklisted by any Provincial or Federal Government Department, Agency, Organization, autonomous body, or Private Sector Organization anywhere in Pakistan.
10	Undertaking – Technical Specifications Compliance Bidder shall undertake on attested non- judicial / legal stamp paper or company's letterhead in name of NUST SELF GENERATION INCOME AND EXPENSE (HBL2292-7000267401) duly signed and stamped that the firm / company shall meet all the technical specifications as mentioned in bidding documents by the Procuring agency. Mandatory tender fee is 10.000/- for each participation firm in shape of pay order in favor of NUST SELF GENERATION INCOME AND EXPENSE (HBL2292-7000267401)	Undertaking on attested non-judicial / legal stamp paper or company's letterhead, in name of NUST SELF GENERATION INCOME AND EXPENSE (HBL 2292-7000267401), duly signed and stamped, confirming that the firm/company shall meet all technical specifications as mentioned in the bidding documents by the Procuring agency.
11	JV Requirement In case of JV, the Partner must fulfill the Mandatory Criteria (Must Meet Criteria) in order to be successfully qualified. In this project, no JV is allowed.	N/A because no JV is allowed.

USPCASE/PMU/01/2026

IB.4 One Bid per Bidder

4.1. Each bidder shall submit only one bid either by himself A bidder who submits or participates in more than one bid (other than alternatives pursuant to Clause IB. 16) will be disqualified.

IB.5 Cost of Bidding

5.1 The bidders shall bear all costs associated with the preparation and submission of their respective bids and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process

IB.6 Site Visit

6.1 The bidders may visit and examine the Site of Works and its surroundings and obtain for themselves on their own responsibility all information that may be necessary for preparing the bid and entering into a contract for the Works. All cost in this respect shall be at the bidder's own expense.

6.2 The bidders and any of their personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the bidders, their personnel and agents, will release and indemnify the Employer, his personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of such inspection.

BIDDING DOCUMENTS

IB.7 Contents of Bidding Documents

7.1 The Bidding Documents, in addition to invitation for bids, are those stated below and should be read in conjunction with any Addendum issued in accordance with Clause IB 9.

1. Instructions to Bidders,
2. Bidding Data,
3. Letters of Technical Bid & Price Bid;
4. Appendices to Bid;
5. Conditions of Contract,
6. Contract Data,
7. Form of Bid Security.
8. Form of Performance Security,
9. Form of Advance Payment Guarantee,
10. Form of Contract Agreement,
11. Specifications

7.2 The bidders are expected to examine carefully the contents of all the above Bidding Documents. Failure to comply with the requirements of bid submission will be at the Bidder's own

risk Pursuant to Clause IB.26, bids which are not substantially responsive to the requirements of the Bidding Documents will be rejected.

IB.8 Clarification of Bidding Documents

8.1 Any prospective bidder requiring any clarification(s) in respect of the Bidding Documents may notify the Employer in writing at the Employer address indicated in the Invitation for Bids. The Employer will respond to any request for clarification which he receives at least five (5) days prior to the deadline for submission of bids.

8.2 Copies of the Employer's response will be forwarded to all purchasers of the Bidding Documents, including a description of the enquiry but without identifying its source.

IB.9 Amendment of Bidding Documents

9.1 At any time prior to the deadline for submission of bids, The Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents by issuing addendum. Any addendum thus issued shall be part of the Bidding Documents pursuant to Sub- Clause 7.1 hereof and shall be communicated in writing to all purchasers of the Bidding Documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer.

9.2 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, The Employer may extend the deadline for submission of bids in accordance with Clause IB.20

A. PREPARATION OF BIDS

IB.10 Language of Bid

- 1.1 The bid and all correspondence and documents related to the bid exchanged by a bidder and The Employer shall be in the bid language stipulated in the Bidding Data and particular Conditions of Contract. Supporting documents and printed literature furnished by the bidders may be in any other language provided the same are accompanied by an accurate translation of the relevant parts in the bid language, in which case, for purposes of evaluation of the bid, the translation in bid language shall prevail.

IB.11 Documents Comprising the Bid

11.1 The bid shall comprise two envelopes submitted simultaneously, one called the Technical Bid and the other Financial or Price Bid, containing the documents listed in Bidding Data under the heading of **11.1 A & B respectively**, both envelopes to be enclosed together in an outer single envelope called the Bid. Each furnish all the documents as specified in Bidding Data at 11 A&B.

11.2 The Bidder shall furnish, as part of the Technical Bid, a Technical Proposal including general qualification documents and Complete Design of Solar PV System with all specifications sealed in separate envelopes Design of only generally qualified bidder will be reviewed for approval.

11.3 Financial Bid of only accepted approved designs will be opened at a date and time intimated Later.

IB.12 Bid Prices

12.1 Unless stated otherwise in the Bidding Documents, the Contract shall be for the whole of the Works as described in Sub-Clause 1.1 hereof, based on lump sum price of the Works. The criteria for evaluation of bids are provided in the Bidding Data

12.2 All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause shall be included in the rates and prices and the total Bid Price submitted by a bidder After the date of bid submission deadline, any additional/ reduced duties, taxes and levies due to subsequent additions or changes in legislation shall be reimbursed/deducted.

IB.13 Currencies of Bid and Payment

13.1 The price of the Works shall be quoted by the bidders entirely in Pak rupees.

IB.14 Bid Validity

14.1 Bids shall remain valid for the period stipulated in the Bidding Data after the Thate of Bid Opening specified in Clause IB 23.

14.2 In exceptional circumstances, prior to expiry of the original bid validity period, The Employer may request the bidders to extend the period of validity for a specified additional period which shall in no case be more than the original bid validity period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting his Bid Security A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his Bid Security for the period of the extension, and in compliance with Clause 18.15 in all respects

IB.15 Bid Security

15.1 Each bidder shall furnish, as part of his hid, a Bid Security in the amount stipulated in the Bidding Data in Pak Rupees (2% of the quoted price).

15.2 The Bid Security shall be, at the option of the bidder, in the form of Demand Draft, Call Deposit Receipt, Pay Order or a Bank Guarantee issued by a Scheduled Bank in Pakistan in favor of **NUST- SGR** and acceptable to The Employer valid for a period of thirty (30) days beyond the Bid Validity date.

15.3 Any bid not accompanied by an acceptable Bid Security shall be rejected by The Employer as non-responsive.

15.4 The Bid securities of unsuccessful bidders will be returned as promptly as possible but not later than fifteen (15) days after the expiry of the period of Bid Validity.

15.5 The Bid Security of the Successful Bidder will be returned when the bidder has furnished the required Performance Security and signed the Contract.

15.6. The Bid Security may be forfeited

- (a) If the bidder withdraws his bid except as provided at Sub-Clause 22.1;
- (b) If the bidder does not accept the correction of his/her bid Price pursuant to Sub Clause 27.2 hereof; or
- (c) In case of Successful Bidder, if he fails within the specified time limit to:

- (i) Furnish the required Performance Security; or
- (ii) Sign the Contract.

IB16 Alternate Proposal by Bidder

16.1 Should any bidder consider that he can offer any advantages to the Employer by a modification to the specifications or other conditions, he may, in addition to his bid to be submitted in strict compliance with the Bidding Documents, submit any Alternate Proposal(s) containing:

- (a) relevant design specifications/calculations,
- (b) technical specifications,
- (c) proposed construction methodology, and
- (d) any other relevant details/conditions, provided always that the total sum entered on the Form of Bid shall be that which represents complete compliance with the Bidding Documents. The technical details and financial implications involved are to be submitted in two separate sealed envelopes as so be followed in main bid proposals.

16.2 Alternate Proposal(s), if any, of the lowest evaluated responsive bidder in sole discretion of The Employer may only be considered by The Employer as the basis for the award of Contract to such bidder.

IB.17 Pre-Bid Meeting

17.1 The Employer may on its own motion discretion or at the request of any prospective bidders), hold a pre-bid meeting to clarify issues and to answer any questions on matters related to the Bidding Documents. The date, time and venue of pre-bid meeting is as stipulated in the Bidding Data. All prospective bidders or their authorized representatives shall be invited to attend such a **pre-bid meeting that will be conducted in USPCAS-E Conference Room/Seminar Hall on 7th April (Tuesday) 2026, starting from 11:00 HRS.**

17.2 The bidders are requested to submit questions, if any, in writing so as to reach the Employer not later than three (3) days before the proposed pre-bid meeting.

17.3 Minutes of the pre-bid meeting, including the text of the questions raised and the replies given, will be transmitted without delay to all purchasers of the Bidding Documents. Any modification of the Bidding Documents listed in Sub-Clause 7.1 hereof which may become necessary as a result of the pre-bid meeting shall be made by the employer exclusively through the issue of an Addendum pursuant to Clause 9 and not through the minutes of the pre-bid meeting.

17.4 Absence at the pre-bid meeting will not be a cause for disqualification of a bidder.

IB.13 Format and Signing of Bid

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

18.2 All appendices to bid are to be properly completed and signed.

18.3 No alteration is to be made in the Form of Bid not in the appendices thereto except in filling up the blanks as directed. If any such alterations be made or if these instructions be not fully complied with, the bid may be rejected.

18.4 Each bidder shall prepare by filling out the forms completely and without alterations one (1) original of the documents comprising the bid and clearly mark them "ORIGINAL" as appropriate.

18.5 The original and the copy of the bid shall be typed or written in indelible ink (in the case of copies, Photostats are also acceptable) and shall be signed by a person or person(s) duly authorized to sign on behalf of the bidder. This authorization shall consist of a written confirmation as specified in the Bidding Data and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid except for unamended printed literature, shall be signed or initialed by the person signing the bid.

18.6 The bid shall contain no alterations, omissions or additions except to instructions from the Employer or as are necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

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

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

SUBMISSION OF BIDS

IB.19 Sealing and Marking of Bids

19.1 Each bidder shall submit his bid as under:

- (a) ORIGINAL Bid shall be sealed and put in envelopes and marked as such.
- (b) The envelopes containing the ORIGINAL will be put in one sealed envelope and addressed/ identified as given in Sub-Clause 19.2 hereof.

(c) The technical bid should comprise of documents listed in 11.1 (A) of Bidding Data & the Price Bid should comprise of documents listed in 11.1 (B) of Bidding Data which shall be placed in separate envelopes in accordance with 11.1.

19.2 The inner and outer envelopes shall:

- (a) Be addressed to the Employer at the address provided in the Bidding Data;
- (b) Bear the name and identification number of the tender as defined in the Bidding Data; and
- (c) Provide a warning not to open before the time and date for bid opening, as specified in the Bidding Data.

19.3 In addition to the identification required in Sub- Clause 19.2 hereof, the inner envelope shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared "late" pursuant to Clause IB.21.

19.4 If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

IB.20 Deadline for Submission of Bids.

20.1 (a) Bids must be received by the Employer at the address specified not later than the time and date stipulated in the Bidding Data or such extended deadline as the Employer has duly notified in accordance with Clause IB.9.

(b) Bids with charges payable will not be accepted, nor will arrangements be undertaken to collect the bids from any delivery point other than that specified above. Bidders shall bear all expenses incurred in the preparation and delivery of bids. No claims will be entertained for refund of such expenses.

(c) Where delivery of a bid is by mail and the bidder wishes to receive an acknowledgment of receipt of such bid, he shall make a request for such acknowledgment in a separate letter attached to but not included in the sealed bid package.

(d) Upon request, acknowledgment of receipt of bids will be provided to those making delivery in person or by messenger.

20.2 The Employer may, at its discretion, extend the deadline for submission of bids by issuing an amendment in accordance with Clause IB.9, in which case all rights and obligations of the Employer and the bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

IB.21 Late Bids

(a) Any bid received by the Employer after the deadline for submission of bids prescribed in Clause IB 20 will be returned unopened to such bidder.

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

IB.22 Modification, Substitution and Withdrawal of Bids

22.1 Any bidder may modify, substitute or withdraw his bid after bid submission provided that the modification, substitution or written notice of withdrawal is received by the Employer prior to the deadline for submission of bids.

22.2 The modification, substitution, or notice for withdrawal of any bid shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause IB.19 with the outer and inner envelopes additionally marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" as appropriate.

22.3 No bid may be modified by a bidder after the deadline for submission of bids except in accordance with Sub-Clauses 22.1 and 27.2.

22.4 Withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in the Form of Bid may result in forfeiture of the Bid Security in pursuance to Clause IB 15.

BID OPENING AND EVALUATION FOR SINGLE STAGE TWO ENVELOPE BIDDING PROCEDURE

IB.23 Bid Opening

23.1 The Employer will open the Technical Bids (including General Qualification Criteria) in public at the address, date and time specified in the Bidding Data in the presence of Bidders designated representatives and anyone who choose to attend. Only Technical Bids will be opened while, Price Bid will remain unopened and will be held in custody of the Employer until the specified time of their opening for only technically qualified firms.

The bid will be open on 28th April 2026 at 11:30 HRS.

IB.24 Process to be Confidential

24.1 Information relating to the examination, clarification, evaluation and comparison of bid and recommendations for the award of a contract shall not be disclosed to bidders or any other person not

officially concerned with such process before the announcement of bid evaluation report which shall be done at least seven (07) days prior to issue of Letter of Acceptance. The announcement to all Bidders will include table(s) comprising read out prices, discounted prices, price adjustments made, final evaluated prices and recommendations against all the bids evaluated. Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of such bidder's bid. However, any bidder feeling aggrieved may lodge a written complaint concerning his grievances within seven (07) days of announcement of technical evaluation report and five (05) days after issuance of final evaluation report, however mere fact of lodging a complaint shall not warrant suspension of the procurement process.

IB.25 Clarification of Bids

25.1 To assist in the examination, evaluation and comparison of bids, the Employer may at its discretion, ask any bidder for clarification of his bid. The request for clarification and the response shall be in writing but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause IB.28.

25.2 If a bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

IB.26 Examination of Bids and Determination of Responsiveness

26.1 Prior to the detailed evaluation of bids, the Employer will determine whether each bid is substantially responsive to the requirements of the Bidding Documents.

26.2 A substantially responsive bid is one which (i) meets the eligibility and qualification criteria under the Bidding Documents; (ii) has been properly signed, (iii) is accompanied by the required Bid Security, and (iv) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (1) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the bidder's obligations under the Contract, or (iii) adoption/rectification whereof would affect unfairly the competitive position of other bidders presenting substantially responsive bids. Only substantially responsive bids shall be considered for further evaluation.

26.3 If a bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation. The Employer may, however, seek confirmation/clarification in writing which shall be responded in writing.

IB.27 Correction of Errors

27.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors and where there is a discrepancy between the amounts in figures and in words, the amount in words will govern.

27.2 The amount stated in the Form of Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and with the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected Bid Price, his Bid will be rejected, and the Bid Security shall be forfeited in accordance with Sub-Clause 15.6(b) hereof.

IB.28 Evaluation and Comparison of Bids

28.1 Employer will evaluate and compare only those Bids which are substantially responsive in accordance with Clause IB.26.

28.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price for errors pursuant to Clause IB.27.

28.3 The estimated effect of the price adjustment provisions of the Conditions of Contract due to Variation, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.

AWARD OF CONTRACT

IB.29 Award

29.1 Subject to Clauses 1B.30 and 1B.34, the Employer will award the Contract to the bidder whose bid has been determined by Employer to be substantially responsive to the Bidding Documents and who has offered the lowest evaluated Bid Price, provided that such bidder has been determined to be eligible in accordance with the provisions of Clause 1B.3 and qualify pursuant to criteria provided in the Bidding Document.

29.2 The Employer, at any stage of the bid evaluation, having credible max for or prima facie evidence of any defect in supplier's or contractor's capacities, may require the suppliers or contractor's provide information concerning their professional, technical, financial, legal or managerial competence whether already pro-qualified or not:

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

IB.30 Employer's Right to Accept any Bid and to Reject any or all Bids

30.1 Notwithstanding anything contained herein, the Employer reserves the right to accept or reject any Bid, and to anal the bidding process and reject all bids, at any time prior to ward of Contract with thereby ring any ability

to the affected bidders or any obligation except that the grounds for rejection of all bids shall upon request be communicated to any bidder who submitted a bid, without justification of grounds. Rejection of all bids shall be notified to all bidders promptly.

18.31 Notification of Award

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

31.2 No Negotiation with the Bidder having evaluated as lowest responsive or any other Bidder shall be permitted.

31.3 The notification of award and its acceptance by the bidder will constitute formation of the contract binding the Employer and the bidder till signing of the formal Contract.

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

IB.32 Performance Security

32.1 The successful bidder shall furnish to the Employer a Performance Security (in the form 5% of total contract value) and the amounts in the Risking Data and the Conditions of Contract within a period of seven (7) working days after the receipt of Letter of Acceptance.

32.2 The failure of the successful bidder to comply with the requirement of sub clause IB.32.1 or clauses IB.33 or IB.35 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security (2% of quoted price).

IB.33 Signing of Contract Agreement

33.1 Simultaneously with the furnishing of acceptable Performance Security under the Conditions of Contract, the formal Contract Agreement between the Employer and the Successful Bidder (s) shall be executed.

IB.34 General Performance of the Bidders

34.1 The Employer reserves the right to obtain information regarding performance of the bidders on their previously awarded contracts/works. The Employer may in case of consistent poor performance of any Bidder as reported by the employers of the previously awarded contracts, inter alia, reject his bid and/or take such action as may be deemed appropriate under the circumstances of the case including black fisting of such Bidder.

IB.35 Integrity Pact

35.1 The Bidder shall sign and stamp the Integrity Pact provided at Appendix- E to Bid in the Bidding Documents for all Federal Government procurement contracts exceeding Rupees ten million. Failure to provide such Integrity Pact shall make the bidder non-responsive.

IB.36 Instructions not Part of Contract

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

IB.37 Sufficiency of Bid

Each Bidder shall be deemed to have satisfied fully, before submitting the Bid, as to all aspects of the Works, correctness and sufficiency of his Bid and price stated in the Price Bid which price shall, except in so far as it is otherwise expressly provided in the Contract Agreement, cover all his obligations under the Contract Agreement and all matters and things necessary for the proper completion of Works Objections, excuses or claims made by the bidder after submission of his Bid to the EMPLOYER shall not be entertained.

IB.38 Sub-Contractors

Any Sub-Contractor is subject to the acceptance of the Employer and the Sub- Contract shall be subject to the same Conditions of Contract as the main Contract. A list, as set forth in Appendix "B" showing the name and address and credentials of each proposed sub-Contractor, the type of work to be sub-let and the reason for sub-letting shall be submitted with the Bid. Overall responsibility of all Works, whether parts of it subcontracted or not, shall mat with the Bidder.

18.39 Taxes & Duties

The Bidder shall obtain all information as to Pakistan Income Tax, Sales Tax Salaries Tax, Professional Tax, Company Tax, Municipal Octroi, Levies and any other taxes imposed by the local bodies, export and import duties, import surcharge, extra surcharge, etc. and necessary permits and confirm the requirements thereof at his own responsibility and include all such cost in his Bid price. The quoted rate shall also include the cost of accepting the general risks/ liability and obligations set forth or implied in the Contract.

IB.40 Insurance

The Bidder shall estimate the amounts required to be provided for all the insurances under the Contract from an Insurance company having AA rating or as approved by the Employer, in accordance with the laws applicable in Pakistan and the Bid Price shall be deemed to include all such amounts.

IB.41 Employer's Right to Re-Tendering/Cancellation of Tender.

Notwithstanding anything contained herein, if the achieved rates are much exorbitant, the Employer reserves the right to,

1. Increase/Decrease in Quantity.
2. Retendering even after opening
3. Cancellation if over budget.

IB.42. Provision of internships

Internships will be provided by the successful bidder to NUST students during Project execution period without any financial liability.

Bidding Data

USPCASE/PMU/01/2026

BIDDING DATA

The information in this section is complementary to, amend or supplement the provisions in the instructions to Bidders. Whenever there is conflict, the provisions herein shall take precedence over those in the Instructions to Bidders.

Reference to instruction to Bidder	Bidding Data
IB-I 1.1	Name of the Project & Summary of the Works "The Design, Supply, Installation, Testing and Commissioning of 3.50 MW Grid-tied Solar System at National University of Sciences and Technology, Sector H-12, Islamabad, in its Bid. The Works shall be performed/executed as per the Specifications provided in the Bidding Documents and approved Contractor Design as per the Conditions of Contract".
1.1	Name and Address of Employer PMU, USPCAS-E, NUST, Sector H-12 Islamabad
IB-10 10.1	Bid Language: English
IB-11 11.1	11.1 (A) The Bidder shall submit with its Technical Bid the following documents: (a) Letter of Technical Bid (b) Past Performance and Financial Strength (as per given General Qualification criteria in a separate envelope duly marked (Appendix-B&C) (c) Conformity to the specifications (Appendix-G) (d) Design & Design Calculations Note: Order of evaluation of Bid a. Conformity to the specifications b. General Qualification Criteria c. Design & Design Calculations Firms fulfilling all above shall be considered Technically Qualified & their financial bid (Price Bid) will be opened accordingly. In case of non-fulfillment of any mentioned at Ser a to c firm shall be technically disqualified and their financial Bid shall be returned unopened. 11.1 (B) The Bidder shall submit with its Price Bid the following documents: (a) Letter of Price Bid (b) Bid Security (1B.15) (c) Detailed and Priced Bill of Quantities (BOQ) (Appendix-E&F)
IB-12	Bid Evaluation Criteria shall be as follows: Lump sum lowest Best Value offered price for the design, supply, installation, testing & commissioning of the Works
1B-14 14.1	Bid Validity Period of Bid Validity shall be ninety (90) days from the date of Bid Opening
IB-15 15.1	Bid Security Amount of Bid Security shall be 2% of Quoted Cost in the form of Pay order, DD or Bank Guarantee from a scheduled Bank of Pakistan

BIDDING DATA (Contd.)

Reference to instruction to Bidder	Bidding Data
IB-19 19.2	Address for the purpose of Bid submission: PMU, USPCAS-E, NUST, Sector H-12 Islamabad
IB-20 20.1	Deadline for submission of Bids: 28 th April 2026 at 11:00 hours. Bids will be opened on 11:30 hours
IB-32 32.1	<u>Performance Security/Guarantee/Retention:</u> Instead of Ten (10%), Now 5% of Contract Price in the form of Bank Guarantee as per Clause 4.4 (a)

Conditions of Contract

CONDITIONS OF CONTRACT

1 GENERAL PROVISIONS

1.1 Definitions

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

The Contract

1.1.1 "Contract" means the Contract Agreement and the other documents listed therein.

1.1.2 "Specifications" means the minimum specifications of the equipment of solar PV System as set out in the Bidding Documents and any Variation to such document.

1.1.3 "Contractor Design" means the design of the solar PV System, prepared and submitted by the Contractor to the Employer under this Contract, based on the specifications of the offered equipment which design shall be acceptable to the employer.

Persons.

1.1.4 "Employer" means the person named in the Contract Data and the legal successors in title to this person, but not (except with the consent of the Contractor) any assignee.

1.1.5 "Contractor" means the person named in the Contract Data whose bid has been accepted by the Employer and the legal successors in title to such person, but not (except with the consent of the Employer) any assignee of such person.

1.1.6 "Party" means either the Employer or the Contractor Dates, Times and Periods.

1.1.7 "Commencement Date" means the date as mentioned in the Contract Data.

1.1.8 "Day" means a calendar day.

1.1.9 "Time for Completion" means the time for completion of the Works as stated in the Contract Data for an extended under Sub-Clause 7.3), calculated from the Commencement Date.

Money and Payments

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

Other Definitions

1.1.11 "Contractor's Equipment" means all machinery, apparatus and other things required for the execution of the Works but does not include Materials or System intended to form part of the Works.

1.1.12 "Country" means the Islamic Republic of Pakistan.

1.1.13 "Employer's Risks" meant those matters listed in Sub-Clause 6.1.

CONDITIONS OF CONTRACT (Contd.)

11.14 "Force Majeure means an event or situation beyond the control of a is not foreseeable, is unavoidable and its origin is not due to negligence or care on the part of such Party Such events subject to the conditions as stated in the preceding sentence may include, but not be limited to, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

1.1.15 "Materials" means things of all kinds (other than System) to be supplied and incorporated in the Works by the Contractor.

1.1.16 "System" means the machinery and apparatus intended to form or forming part of the Works.

1.1.17 "Site" means the place mentioned in the Contract Data where the Works are to be executed, and any other place(s) specified in the Contract as forming part of the Site.

1.1.18 "Variation" means a change which is instructed by the Employer under Sub- Clause 10.1.

1.1.19 "Works" means any or all the works including design, supply, installation, construction, testing and commissioning of the System to be performed by the Contractor including temporary works and any Variation thereof.

1.1.20 "The Engineer" means a qualified engineer appointed by the Employer to act as engineer for the purpose of the Contract for review of the Contractor Design, equipment inspection and verification of installed System.

1.1.21 "Engineers Representative" means a person appointed from time to time by the Engineer.

1.1.22 "Letter of Acceptance" means the formal acceptance by the Employer of the Tender.

1.1.23 "Tender" means the Contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein accordance with the provisions of the Contract, as accepted by the Letter of Acceptance.

1.2 Interpretation

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

1.3 Priority of Documents

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

1.4 Law

The rights and obligations of the Parties under the Contract shall be governed by laws of the Islamic Republic of Pakistan.

CONDITIONS OF CONTRACT (Contd.)

1.5 Communications

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

1.6 Statutory Obligations

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

2. The Employer

2.1 Provision of Site

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

2.2 Permits etc.

The Contractor shall be exclusively responsible to apply for and obtain any license from NEPRA/IESCO if so applicable. The Employer shall, if requested by the Contractor, assist him in applying for permits, licenses or approvals which are required for the Works.

2.3 Employer's Instructions

The Contractor shall comply with all instructions given by the Employer, in Respect of the Works including the suspension of all or part of the Works.

2.4 Approvals

No approval or consent or absence of comment by the Employer shall affect the Contractor's obligations required under the Contract.

3. Employer's Representatives

The Employer shall appoint with precise scope of authority and notify in writing a duly authorized person to act for him and on his behalf for the purposes of this Contract. The details and precise scope of the authority of such authorized person shall be notified in writing to the Contractor immediately after the signing of the Contract.

4 The Contractor

4.1 General Obligations

The Contractor shall carry out the Works as per the highest standards of workmanship in the solar industry and in accordance with the terms and conditions of the Contract. The Contractor shall provide all supervision, labor, materials, plant and Contractor's equipment which may be required for the execution of the Works and shall also arrange all permits and licenses at his own cost, required for installation, commissioning and operation of the System.

For avoidance of doubt, the Contractor shall arrange bi-directional meter for the System and bear all related costs.

CONDITIONS OF CONTRACT (Contd.)**4.2 Contractor's Representative**

The Contractor shall appoint a representative at site on full time basis to supervise the execution of Works and to receive instructions on behalf of the Contractor but only after obtaining the consent of the Employer for such appointment which consent shall not be unreasonably withheld by the Employer. Such authorized representative may be substituted or replaced by the Contractor at any time during the Contract Period but only after obtaining the consent of the Employer as aforesaid.

4.3 Subcontracting /Assignment

The Contractor shall not subcontract the whole of the Works. The Contractor may subcontract any part of the Works subject to restriction stipulated in the contract Data.

The Party No 2 Contractor shall not assign, transfer, or novate this Contract or any part thereof without the prior written consent of the Party No 1 NUST(USPCAS-E). The Party No 2 Contractor may subcontract portions of the Works for specialized activities, provided that the Party No 2 Contractor shall remain fully responsible and liable for all acts, omissions and performance of its sub Party No 2 Contractors as if they were its own. Details of major sub Party No 2 Contractors and suppliers of key equipment, including photovoltaic modules and inverters, shall be disclosed to and approved by the Party No 1 NUST(USPCAS-E). Any unauthorized assignment or transfer shall constitute a material breach entitling the Party No 1 NUST(USPCAS-E) to terminate the Contract.

4.4 Performance Security

- a) The Contractor shall furnish to the Employer within fourteen (14) working days after receipt of Letter of Acceptance a Performance Security, in the form of irrevocable & unconditional Bank Guarantee from any Scheduled Bank of Pakistan acceptable to the Employer for the amount and validity specified in Contract Data.
- b) Such Performance Security Bond shall be liable to release on issuance of Taking over certificate and will be returned after submission of subsequent performance Bond in the form of irrevocable & unconditional Bank Guarantee from any Scheduled Bank of Pakistan or Insurance Guarantee from an AA rating Insurance Company acceptable to the Employer for the amount and validity specified in Contract Data.

4.5 Labour/Labor

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding, transport.

4.6 Water and Electricity

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the provision of Water supply and Electricity. This is to mention that in case of water and electricity is provided by Employer, these will be charged to the contractor on actual basis and will be recovered in IPCs.

CONDITIONS OF CONTRACT (Contd.)

4.7 Third Party Validation

The contractor will arrange a third-party inspection. Third Party Validation (within Pakistan) shall be witnessed by two officers of the Employer or by renowned firm as approved by The Engineer. All costs in connection with nominated Third party representatives visit/ inspection shall be borne by the Contractor. These shall include the costs of travel from within Pakistan to place of inspection and back, including boarding/lodging, inland transportation and daily allowance for each person of third- party Validation as desired by The Engineer.

5. DESIGN BY CONTRACTOR

5.1 Responsibility for Design Notwithstanding that the Contractor Design is submitted and approved by the Employer, the Contractor shall solely remain responsible for his rendered design under this Contract, which shall not only be in strict conformity with the Employer Specifications but also be fit for intended purposes defined in the Contract. In addition, the Contractor shall also be solely responsible for any infringement of any patent or copyright in respect of such design.

5.2 At the completion of the Works under the Contract, the Contractor shall furnish to the Engineer 3 copies and one reproduceable of all drawings amended to conform with the Works as built. The price of such Drawings shall be deemed to be included in the Contract Price.

5.3 Net Minimum Guaranteed Generation (NMGG)

Contractor shall be responsible for achieving NMGG. For any short fall if any for one year corresponding to the offer, the compensation shall be recovered from the contractor's security/Final Bill. The contractor has to maintain the Solar Plant equipment/s including its repair, replacement, overhauling, etc. to give the offered NMGG per year.

Upon completion of installation of the Works, the Party No 2 Contractor shall conduct all necessary pre-commissioning tests, grid synchronization tests and performance tests in accordance with the Specifications and internationally recognized standards applicable to solar photovoltaic systems. The performance tests shall verify compliance with the Net Minimum Guaranteed Generation (NMGG) such as annual average of minimum 4.0 kWh (and above) per kW per day and other technical parameters specified in the Contract.

If the system fails to achieve the guaranteed performance levels, the Party No 2 Contractor shall, at its own cost and without delay, rectify the deficiencies and conduct retesting within 30 days. The Party 2 contractor will add additional system to complement the deficiency without any financial liability on NUST (USPCAS-E). Taking Over of the Works shall not occur unless and until successful completion of the prescribed performance tests. In the event of persistent failure attributable to the Party No 2 Contractor, the Party No 1 NUST(USPCAS-E) shall be entitled to recover compensation or adjust payments in accordance with the Contract, including recourse to the Performance Security as afore mentioned in the Warranty and defect Liability clause.

CONDITIONS OF CONTRACT (Contd.)

5.4 Warranty Period

The Party No 2 Contractor warrants that all materials, equipment, and workmanship shall be new, free from defects, and in strict conformity with the Contract. The Defect Liability Period shall be two years from issuance of the Taking Over Certificate. The Party No 2 Contractor shall promptly remedy, at its own cost, any defect notified during this period. Manufacturer warranties for photovoltaic modules, inverters, and other components shall be provided as specified in the Tender Documents and shall not derogate from the Party No 2 Contractor's overall responsibility.

It's stated that retention money as per clause 11.3 has the following distributions to guarantee an amount that will be retained till completion of such warranties.

- a. Percentage of Retention Money:** 10% of the amount of each Interim Payment Certificate (IPC).
- b. Limit of Retention Money:** 5% of Contract Price stated in the Letter of Acceptance. **Minimum limit of retention money is 5% that is against advance payment.**
- c. The defect liability period is one year at most.** However, the warrantee must be ensured on letter head and or Stamp paper by the successful bidder.

The warrantee to safeguard the system are as follows:

- ❖ 12 Year Warranty for PV Panels.
- ❖ 10 Year Warranty for Inverter
- ❖ 05 Year Warranty for Labor, material and installation.
- ❖ **Minimum One-Year O&M (from 2 to 1 years) (Where, all the Water and cleaning responsibility will rest with contractor.)**

6. EMPLOYER'S RISKS

6.1 The Employer's Risks

The Employer's Risks are:

- a) politically motivated riot, commotion or disorder by persons other than the Contractor's personnel and other employees including the personnel and employees of Sub-Contractors, directly affecting the Site and/or the Works;
- b) use or occupation by the Employer of any part of the Works, except as may be specified in the Contract;
- c) late handing over of Site,
- d) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor's failure; and
- e) physical obstructions or physical conditions other than climatic conditions, encountered on the Site during the performance of the Works, for which the Contractor immediately notified to the Employer and accepted by the Employer

6.2 Loss or Damage due to Employer's Risks

In the event of any such loss or damage happening from any of the risks defined in Sub-Clause 6.1 or force majeure, or in combination with other risks, the Contractor shall, if and to the extent required by the Employer, rectify the loss or damage and the Employer shall determine an addition to the Contract Price in accordance with Clause 10 and shall notify the Contractor accordingly. In the case of a combination of risks.

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CONDITIONS OF CONTRACT (Contd.)

causing loss or damage any such determination shall take into account the proportional responsibility of the Contractor and the Employer.

7. TIME FOR COMPLETION

7.1 Execution of the Works

The Contractor shall commence the Works on the Commencement Date and shall proceed expeditiously and without delay and shall complete the Works, subject to Sub-Clause 7.3 below, within the Time for Completion as stated in the Contract Data.

7.2 Program

Within the time stated in the Contract Data, the Contractor shall submit to the Employer a detailed program for the Works incorporating the dates, which program shall be in-line with the Proposed Construction Schedule submitted along with the Bid.

7.3 Extension of Time

The Contractor shall, within such time as may be reasonable under the circumstances, notify the Employer of any event(s) falling within the scope of Sub-Clause 6.1 or 10.3 of these Conditions of Contract and request the Employer for a reasonable extension in the time for the completion of Work Subject to the aforesaid, the Employer shall determine such reasonable extension in the time for the completion of Works as may be justified in the light of the details/particulars supplied by the Contractor in connection with the such determination by the Employer within such period as may be prescribed by the Employer for the same; and the Employer shall extend the Time for Completion as determined.

7.4 Late Completion

If the Contractor fails to complete the Works within the Time for Completion, the Contractor's only liability to the Employer for such failure shall be to pay the amount stated in the Contract Data for each day for which he fails to complete the Works.

8. TAKING-OVER

8.1 Notice of Completion by the Contractor.

The Contractor shall notify in writing to the Employer when he considers that the Works are complete in all aspects.

8.2 Taking-Over Notice

Within fifty (50) days of receipt of notice of completion from the Contractor, the Engineer shall determine the conformity of the installed System with the approved Contractor Design and notify the Contractor through Employer that the Works are complete in accordance with the Contract. The Employer shall take over the Works upon the issue of this notice and issue Taking Over Certificate to the Contractor. Alternatively, the Contractor shall be notified that the Works are not ready for taking over, stating the

CONDITIONS OF CONTRACT (Contd.)

reasons accordingly. The Contractor shall then promptly complete any outstanding work and, subject to Clause 9, clear the site.

8.3 Defect Liability Period

Defect Liability Period shall be as stated in the Contract Data.

9. REMEDYING DEFECTS

9.1 Remedying Defects

The Employer may at any time prior to the expiry of the period stated in the Contract Data, notify the Contractor of any defects. The Contractor shall remedy at no cost to the Employer any defects due to the Contractor Design, Materials, System or workmanship not in accordance with the Contract.

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

9.2 Uncovering and Testing

The Employer may give instruction as to the uncovering and/or testing of any work. Unless as a result of an uncovering and/or testing it is established that the Contractor Design, Materials, System or workmanship are in accordance with the Contract, the Contractor shall be paid for such uncovering and/or testing as a Variation in accordance with Sub-Clause 10.2.

9.3 The Contractor at his own responsibility shall arrange all hoisting and fixing equipment necessary for the satisfactory completion of work and shall make any damage to the existing surface

10. VARIATIONS AND CLAIMS

10.1 Right to Vary

The Employer may instruct Variations.

10.2 Valuation of Variations

Variations shall be valued at a lump sum price mutually agreed between the Parties.

10.3 Valuation of Claims

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

10.4 Variation and Claim Procedure

The Contractor shall submit to the Employer an itemized make-up of the value of Variations and claims within twenty-one (21) days of the instruction or of the event giving rise to the claim. The Employer shall

CONDITIONS OF CONTRACT (Contd.)

check and if possible, agree the value. In the absence of agreement on the claim, the Employer shall determine the value.

11. CONTRACT PRICE AND PAYMENT TERMS

11.1 Contract Price

The Contract price shall be as provided in the Acceptance Letter.

11.2 Payment Terms and Statements.

Subject to the terms and conditions of the Contract, the Contractor shall be entitled to be paid the Contract Price at such intervals as given in the Contract Data.

11.3 Retention Money

The Engineer shall, within 15 days of receiving such statement, deliver to the Employer an Interim Payment Certificate stating the amount of payment to the Contractor which the Engineer considers due and payable in respect of such statement, subject:

(a) firstly, to the retention of the amount calculated by applying the Percentage of Retention to the amount to which the Contractor is entitled

(b) secondly, to the deduction of any sums which may have become due and payable by the Contractor to the Employer.

Provided that the Engineer shall not be bound to certify any payment under this Sub-Clause if the net amount thereof, after all retentions and deductions, would be less than the Minimum Amount of Interim Payment Certificates.

Notwithstanding the terms of this Clause or any other Clause of the Contract no amount will be certified by the Engineer for payment until the performance security, if required under the Contract, has been provided by the Contractor and approved by the Employer

12 DEFAULT

12.1 Default by Contractor

If the Contractor abandons the Works, refuses or fails to comply with a valid instruction of the Employer or fails to proceed expeditiously and without delay, or is, despite a written complaint, in breach of the Contract, the Employer may give notice referring to this Sub-Clause and stating the default. If the Contractor has not taken all practicable steps to remedy the default within seven (07) days after receipt of the Employer's notice, the Employer may by a second notice given within a further fourteen (14) days, terminate the Contract. The Contractor shall then immediately demobilize from the Site leaving behind any and all Contractor's Equipment which the Employer instructs, in the second notice, to be used for the completion of the Works at the risk and cost of the Contractor

12.2 Default by Employer

CONDITIONS OF CONTRACT (Contd.)

If the Employer fails to pay in accordance with the Contract, or is, despite a written complaint, in breach of the Contract, the Contractor may give notice referring to this Sub-Clause and stating the default. If the default is not remedied within twenty-eight (28) days after the Employer's receipt of this notice, the Contractor may suspend the execution of all or parts of the Works.

12.3 Insolvency

If a Party is declared insolvent under any applicable law, the other Party may by notice terminate the Contract which shall be effective fourteen (14) days after receipt of notice by the other party. The Contractor shall then immediately demobilize from the Site leaving behind, in the case of the Contractor's insolvency, any Contractor's Equipment which the Employer instructs in the notice is to be used for the completion of the Works.

12.4 Payment upon Termination After termination

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

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
- b) any sums to which the Employer is entitled,
- c) if the Employer has terminated under Sub-Clause 12.1 or 12.3, the Employer shall be entitled to a sum equivalent to twenty percent (20%) of the value of parts of the Works not executed at the date of the termination, and
- d) if the Contractor has terminated under Sub-Clause 12.2 or 12.3, the contractor shall be entitled to the cost of his demobilization together with a sum equivalent to ten percent (10%) of the value of parts of the Works executed at the date of termination. The net balance due shall be paid or repaid from fifteen to thirty **(15 to 30)** days of the notice of termination.

13. RISKS AND RESPONSIBILITIES

13.1 Contractor's Care of the Works

The Contractor shall take full responsibility for the care of the Works from the Commencement Date until the date of the Employer's issuance of Certificate of Completion under Sub-Clause 8.2. Responsibility shall then pass to the Employer. If any loss or damage happens to the Works during the above period, the Contractor shall rectify such loss or damage so that the Works conform with the Contract.

Unless the loss or damage happens as a result of any of the Employer's Risks, the Contractor shall indemnify the Employer, or his agents against all claims loss, damage and expense arising out of the Works.

13.2 Force Majeure

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

CONDITIONS OF CONTRACT (Contd.)

If the event continues for a period of ninety (90) days, either Party may then give notice of termination which shall take effect Thirty (30) days after the giving of the notice.

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

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4, the cost of his demobilization, and
- b) less any sums to which the Employer is entitled.
- c) The net balance due shall be paid or repaid within thirty-five (35) days of the notice of termination.

Force Majeure means any event or circumstance beyond the reasonable control of the affected Party which could not have been prevented by the exercise of due diligence and which materially prevents or delays performance of contractual obligations. Such events may include, without limitation, acts of God, flood, earthquake, fire, war, civil commotion, terrorism, governmental action, embargoes, changes in law, import restrictions, nationwide strikes not confined to the Party No 2 Contractor's workforce, or prolonged grid shutdowns.

If either Party is prevented from performing its obligations due to Force Majeure, it shall notify the other Party in writing within Thirty (30) days of becoming aware of such event. The Time for Completion shall be extended for the duration of the delay caused by Force Majeure, and the Party No 2 Contractor shall not be liable for liquidated damages for such period. If the Force Majeure event continues for more than ninety (90) consecutive days and substantially prevents performance of the Contract, either Party may terminate the Contract upon written notice, whereupon the consequences of termination shall be determined in accordance with the Conditions of Contract.

14. INSURANCE

The Party No 2 Contractor shall, at its own expense, procure and maintain for the duration of the Works adequate insurance coverage with reputable insurers licensed to operate in Pakistan. Such insurance shall include Party No 2 Contractor's All Risk Insurance covering loss or damage to the Works, Third Party Liability Insurance covering injury to persons and damage to property, Workmen Compensation Insurance as required under applicable laws, and Professional Indemnity Insurance covering design liability. The Party No 1 NUST(USPCAS-E) shall be named as co-insured where appropriate. Evidence of such insurance policies shall be furnished to the Party No 1 NUST(USPCAS-E) prior to commencement of the Works, and failure to maintain the required insurance shall constitute a material breach of the Contract.

At all times during the execution of the Works, the Contractor shall maintain All works insurance on the System for the replacement cost thereof, except for items (a) to (e) of the Employer's Risks.

As per aforementioned 6.1 The Employer's Risks, The Employer's Risks are:

CONDITIONS OF CONTRACT (Contd.)

a) politically motivated riot, commotion or disorder by persons other than the Contractor's personnel and other employees including the personnel and employees of Sub-Contractors, directly affecting the Site and/or the Works:

- b) use or occupation by the Employer of any part of the Works, except as may be specified in the Contract;
- c) late handing over of Site,
- d) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor's failure; and

e) physical obstructions or physical conditions other than climatic conditions, encountered on the Site during the performance of the Works, for which the Contractor immediately notified to the Employer and accepted by the Employer

14.b INDEMNITY

The Party No 2 Contractor shall indemnify, defend and hold harmless the Party No 1 NUST(USPCAS-E) , its officers, employees and representatives from and against all claims, demands, actions, damages, losses, liabilities, costs and expenses arising out of or in connection with the execution of the Works, including but not limited to claims for bodily injury, death, property damage, environmental harm, or infringement of intellectual property rights, to the extent that such claims arise from the acts, omissions, negligence or breach of the Party No 2 Contractor, its employees, agents or sub Party No 2 Contractors. This indemnity shall survive completion, termination or expiry of the Contract, provided that the Party No 2 Contractor shall not be liable to the extent that such damage or loss is caused by the gross negligence or willful misconduct of the Party No 1 NUST(USPCAS-E).

15. RESOLUTION OF DISPUTES

15.1 Employer's Decision

If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with the Works, the matter in dispute shall, in the first place, be referred in writing to the Employer. Such reference shall state that it is made pursuant to this Clause. No later than the Thirty (30) days after the day on which he received such reference, the Employer shall give notice of his decision to the Contractor.

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

15.2 Notice of Dissatisfaction

If the Contractor is dissatisfied with the decision of the Employer or if no decision is given within the time set out in Sub-Clause 15.1 here above, the Contractor may give notice of dissatisfaction referring to this

CONDITIONS OF CONTRACT (Contd.)

Sub-Clause within fourteen (14) days of receipt of the decision or the expiry of the time for the decision. If no notice of dissatisfaction is given within the specified time, the decision shall be final and binding on the Contractor. If notice of dissatisfaction is given within the specified time, the decision shall be binding on the Contractor who shall give effect to it without delay unless and until the decision of the Employer is revised by an arbitrator.

15.3 Arbitration

A dispute which has been the subject of a notice of dissatisfaction shall be finally settled as per provisions of Arbitration Act 1940 (Act No. X of 1940) and Rules made thereunder and any statutory modifications thereto. Any hearing shall be held at the place specified in the Contract Data and in the language referred to in Sub-Clause 1.5.

16 Integrity Pact and Anti-Corruption

The Party No 2 Contractor represents and warrants that it has not engaged in and shall not engage in any corrupt, fraudulent, collusive, coercive or obstructive practice in connection with the procurement or execution of this Contract. The Party No 2 Contractor shall comply strictly with all applicable anti-corruption and transparency laws of the Islamic Republic of Pakistan and with the Integrity Pact executed in connection with this procurement. Any breach of this undertaking shall constitute a fundamental breach of the Contract and shall entitle the Party No 1 NUST(USPCAS-E), without prejudice to any other rights or remedies, to terminate the Contract, forfeit the Performance Security, recover damages, and initiate debarment proceedings in accordance with applicable procurement rules.

16.b. ENTIRE AGREEMENT AND NON-MODIFICATION

This Agreement constitutes the entire understanding between the Parties and supersedes all prior discussions, negotiations, and communications. No amendment or modification shall be valid unless made in writing and signed by duly authorized representatives of both Parties. The Party No 2 Contractor expressly acknowledges that execution of this Agreement amounts to unconditional acceptance of all Tender terms and that no claim inconsistent with the Contract Documents shall be maintainable.

16.1 If the Contractor, or any of his Sub-Contractors, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Contractor as Appendix-D to his Bid, then the Employer shall be entitled to:

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

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CONDITIONS OF CONTRACT (Contd.)

On termination of the Contract under Sub-Para (b) of this Sub-Clause, the Contractor shall immediately demobilize from the Site leaving behind Contractor's Equipment which the Employer instructs, in the termination notice, to be used for the completion of the Works at the risk and cost of the Contractor. Payment upon such termination shall be made under Sub-Clause 12.4, in accordance with Sub-Para (c) thereof, after having deducted the amounts due to the Employer under Sub-Para (a) and (c) of this Sub-Clause.

17. Priority of Contract Documents:

The priority list of contractual documents shall be as follows:

- (a) Contract Agreement.
- (b) Letter of Acceptance,
- (c) Specifications
- (d) Contract Data,
- (e) Conditions of Contract,
- (f) Letters Technical Bid and Price Bid,

- (g) The priced Bill of Quantities, and
- (h) The Appendices to Bid.

18. Financial Assistance to Contractor

18.1 Financial assistance shall be made available to the Contractor by the Employer by adopting the following:

ADVANCE PAYMENT / Mobilization Advance:

Where provided in the Contract Data, the Party No 1 NUST(USPCAS-E) may grant an advance payment not exceeding the percentage specified therein. The Party No 2 Contractor shall, prior to receipt of such advance, furnish an unconditional and irrevocable Advance Payment Bank Guarantee in an equivalent amount in a form acceptable to the Party No 1 NUST(USPCAS-E). The advance shall be recovered by proportional deductions from interim payment certificates in accordance with the Contract Data. No advance payment shall be released unless and until the required guarantee has been duly submitted and accepted.

The advance payment will be deducted from the contractor in equal installments in each IPC.

- (a) An interest-free Mobilization Advance up to 15% of the Contract Price stated in the Letter of Acceptance shall be paid by the Employer to the Contractor upon submission by the Contractor of a Mobilization Advance Guarantee/Bond for the full amount of the Advance in the specified form from a Scheduled Bank in Pakistan
- (b) This Advance shall be recovered in equal installments from the subsequent interim payment certificates (IPCs).

CONTRACT DATA
Conditions of Contract
(Special Stipulations)

Sr.	Description	Clause Conditions of Contract	Explanation																																				
1	Employer's and address name	1.1.4	PMU, USPCAS-E, NUST H-12 Campus Islamabad.																																				
2	Commencement Date	1.1.7	Within 14 days from the date of receipt of Engineer's Notice to Commence which shall be issued within fourteen (14) days after signing of Contract Agreement																																				
3	Site	1.1.17	<p>Details of the Sites (Car Parking structure only) Will be as under.</p> <table border="1"> <thead> <tr> <th>Sr#</th> <th>NUST Site Location</th> <th>Est. Capacity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CEM TECH Car Parking</td> <td>270 kW</td> </tr> <tr> <td>2</td> <td>NCLS Car Parking 1+ 2</td> <td>592+197 kW</td> </tr> <tr> <td>3</td> <td>NBS Student Car Parking</td> <td>257 kW</td> </tr> <tr> <td>4</td> <td>CIPS Building Car Parking-1</td> <td>542 kW</td> </tr> <tr> <td>5</td> <td>NBS Faculty Car Parking</td> <td>147 kW</td> </tr> <tr> <td>6</td> <td>CIPS Building Car Parking - 2</td> <td>348 kW</td> </tr> <tr> <td>7</td> <td>NSHS Car Parking</td> <td>373 kW</td> </tr> <tr> <td>8</td> <td>SNS Car Parking</td> <td>406 kW</td> </tr> <tr> <td>9</td> <td>Sports Complex Car Parking</td> <td>300 kW</td> </tr> <tr> <td>10</td> <td>Central Library Car Parking</td> <td>68 kW</td> </tr> <tr> <td colspan="2" style="text-align: center;">Total Capacity in MWp</td> <td>3.50 MW</td> </tr> </tbody> </table>	Sr#	NUST Site Location	Est. Capacity	1	CEM TECH Car Parking	270 kW	2	NCLS Car Parking 1+ 2	592+197 kW	3	NBS Student Car Parking	257 kW	4	CIPS Building Car Parking-1	542 kW	5	NBS Faculty Car Parking	147 kW	6	CIPS Building Car Parking - 2	348 kW	7	NSHS Car Parking	373 kW	8	SNS Car Parking	406 kW	9	Sports Complex Car Parking	300 kW	10	Central Library Car Parking	68 kW	Total Capacity in MWp		3.50 MW
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4	The Engineer's name and address	1.1.20	Project Director (PD), PMU, USPCAS-E, NUST H-12 Campus Islamabad.																																				
5	Engineer's Representative	1.1.21	Deputy Project Director (DPD), PMU, USPCAS-E, NUST H-12 Campus Islamabad.																																				
6	Access to site	2.1	Within two (2) days of signing of Contract and submission of all mentioned documents.																																				
7	Amount of Performance Security	4.4	Previously Ten (10%) of Contract Price as per Clause 4.4 (a) Now 5% of Contract Price as per Clause 4.4 (a). Clause 4.4 (b) is not valid.																																				
8	Validity of Performance Security	4.4	Validity of Performance Security as per Clause 4.4 (b) shall be twenty-five (25) months from the issuance of Taking Over Certificate (TOC) and, if not encashed pursuant to the terms of the Contract, shall be returned within fourteen (14) days of its expiry																																				
9	Time for Completion	7.1	Two Hundred and Forty (240) days from the Commencement Date.																																				
10	Time for furnishing Program	7.2	Within seven (7) days from the date of receipt of Letter of Acceptance.																																				
11	Amount Liquidated Damages	7.4	The rate of the Liquidated Damages (LD) shall be 0.33% of the Contract Price stated in the Letter Acceptance for every day of delay in part of the work(s) remained unfurnished subject to a maximum of 10% of the contract price.																																				
12	Defects Liability Period	8.3	Two years calculated from the date of Taking Over Certificate issued by the Employer. Defect Liability Certificate shall be issued within 14 days after Defect Liability Period.																																				
13	Remedying Defect Period	9.1	Within fourteen (14) days after notice of defect.																																				
14	Payment Terms	11.2 18.1	1) The whole project to be installed, commissioned and made operative as per contractual obligations. The																																				

			<p>payment will be made as per following terms. Fifteen Percent (15%) of the contract value at interest free advance after signing of the Contract Agreement and upon submission of a Mobilization Advance Bank Guarantee of scheduled Bank in Pakistan acceptable to the Employer for the same amount. (No insurance guarantee will be accepted).</p> <ol style="list-style-type: none"> a) Ten percent (10%) of contract value (Imported Items) after submission of FAT third party validation report b) Ten percent (10%) of contract value (Imported Items) after submission of Bill of Original lading. c) Twenty Percent (20%) of the Contract Value upon delivery of equipment/ arrival at site. Receiving/Damage Report and Warranty Certificate duly verified by Engineer and Employer d) Thirty Percent (30%) of contract value after installation of All works i.e., civil and Mechanical installation and documentation duly certified by The Engineer. e) Twenty-Five (25%) of contract value (complete work) after testing and commissioning and Submission of all relevant documents and reports f) Two and a half percent (2.5%) of contract value after issuance of Taking over Certificate, g) Two and a half percent (2.5%) of contract value after successful completion of Defect liability period and satisfactory Performance review of system by the Technical Committee of NUST. <p>2) All losses incurred or adjustments made, to NUST circuit, by contractor's work Power responsibility of contractor and, adjustment made from bills.</p>
15	Retention Money	11.3	<p>Percentage of Retention Money 10% of the amount of each Interim Payment Certificate (IPC).</p> <p>Limit of Retention Money 5% of Contract Price stated in the Letter of Acceptance.</p>
16	Mobilization Advance* (Interest Free)	18.1	15% of Contract Price stated in the Letter of Acceptance.
17	Arbitrator	15.3	Rector NUST shall be the sole arbitrator and NUST Main Office will be the venue of Arbitration

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LETTER OF TECHNICAL BID

Date: _____
Bid Reference No: _____
(Name of Contract/Works)

To:
**Project Director,
PMU, USPCAS-E
NUST Campus H-12 Sector
Islamabad.**

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with instructions to Bidders (IB) 9,
- (b) We offer to execute and complete in conformity with the Bidding Documents the Works (as defined in the Bidding Documents);
- (c) Our Bid consisting of the Technical Bid and the Bid Price shall be valid for a period of ninety (90) days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (d) As security for due performance of the undertakings and obligations of our bid, we hereby submit a Bid Security, in the amount specified in Bidding Data, which is valid (at least) thirty (30) days beyond validity of Bid itself,
- (e) We confirm that our Bid is not in deviation of any technical and commercial terms as provided in the Bidding Documents;
- (f) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process, and
- (g) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors. This permission is extended for verification of any information provided in our Technical Bid which comprises all documents enclosed herewith in accordance with IB 11.1 of the Bidding Data.

Name: _____

In the Capacity of: _____

Signed: _____

Duly authorized to sign the Bid for and on behalf of: _____

Date: _____

Address: _____

LETTER OF PRICE BID

Date: _____

Bid Reference No: _____

(Name of Contract/Works)

To:

**Project Director,
PMU, USPCAS-E
NUST Campus H-12 Sector
Islamabad.**

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents. including Addenda issued in accordance with instructions to Bidders (IB) 9,
- (b) The total price of our Bid, including any discounts offered, is [Rs. _____],[Rupees (In words)_____only].
- (c) Our Bid shall be valid for a period of ninety (90) days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period,
- (d) If our Bid is accepted, we commit to obtain and post a Performance Security in accordance with the Bidding Documents,
- (e) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed and we do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other bidder for the works;
- (f) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive, and
- (g) If awarded the contract, the person named below shall act as Contractors Representative.

Name: _____

In the Capacity of: _____

Signed: _____

Duly authorized to sign the Bid for and on behalf of: _____

Date: _____

Address: _____

Appendices to Bid

PROPOSED CONSTRUCTION SCHEDULE

[Please note that the Works shall be completed within the time period stated in the Contract Data. The Bidder shall provide as Appendix-A to Bid, the Construction Schedule in the bar chart (CPM, PERT or any other to be specified herein) showing the sequence of work items and the period of time during which he proposes to complete each work item in such a manner that his proposed programme for completion of whole of the Works and parts of the Works shall not exceed the time period specified in the Contract Data. Such period shall commence and counted from the Commencement date as specified in the Contract Data.]

General Qualification Criteria

Please provide requisite documentary evidence to substantiate the past experience, personnel capabilities and financial strength of the Bidder for evaluation as per the Qualification Criteria given below:

1. General Experience & Litigation History

Sr#:	Description	Marks Assigned	Criteria for Marks Obtained
i)	Projects of similar nature and complexity Completed/ in-hand in last five years	24	<ul style="list-style-type: none"> The firm must have successfully installed a minimum of 1.5 MW solar parking shed at a single site. The firm must have provided at least 3 MW of solar parking shed consultancy, either nationally or internationally. The firm must have successfully executed a minimum of five (05) solar parking shed projects 9 Marks will be given for a project for 1.5 MW solar parking shed for single site or more 6 Marks will be given for a project for 1.0 MW solar parking shed for single site or more 3 Marks will be given for a project for 0.5 MW solar parking shed for single site or more (Max 3 x Project for Each Category) (Please provide completion certificate / Work order)
ii)	Projects related to E&M Works completed/ in-hand in last 5 year	10	<ul style="list-style-type: none"> 5 Marks will be given for a project of E&M works (200 Million PKR and above) 3 Marks will be given for a project of E&M works (100 Million PKR and above) (Max 2 x Project for Each Category) (Please provide completion certificate / Work order)
iii)	Enlistment record with Government Organizations & other agencies	3	<ul style="list-style-type: none"> 1 Mark will be given for each enlistment upto maximum of 3 x enlistments. (Please provide completion certificate / Work order)
iv)	No. of Establishments in Pakistan <ul style="list-style-type: none"> Warehouse Offices in cities 	3 2	<ul style="list-style-type: none"> 1 Mark will be given for each warehouse area of 1 x Kanal. 1 Mark will be given for each office in major cities of Pakistan. (Please provide completion certificate / Work order)
v)	Litigation History	3	<ul style="list-style-type: none"> In case the firm is involved in any litigation, no marks will be given and 3 points will be added in case affidavit of no litigation is attached
vi)	Blacklisting from any agency	3	In case the firm a black listed, no Marka will be given and 3 points will be added in case affidavit by the company thar it has not been black listed is attached
Total Marks Allocated			48

General Qualification Criteria (Contd.)

2. Personnel Capabilities & Equipment

Sr. No.	Description	Marks Assigned	Criteria for Marks Obtained
i)	B.Sc Engineers registered with Pakistan Engineering Council (PEC)	18	<ul style="list-style-type: none"> • 6 Marks for Specialized Solar Engineer (3 yr Experience) • 5 Marks for Electrical Engineer (3 yr Experience) • 5 Marks for Mechanical Engineer 13 yr Experience) • 4 Marks for Civil Engineer 15 yr Experience) (Please provide PEC Certificates/ Degrees and pay slips of last six months)
ii)	Associates Engineers (DAE)	9	3 Marks will be given for each Associates Engineers (DAE Electrical Mechanical Civil) (Max 3 x Associate Engineers) (Please provide pay slips of last six months and Proof of Diploma)
iii)	a) Crane (20T) b) Fork Lift	4 4	Proof of ownership rental agreement may be furnished
Total Marks Allocated			35

3. Financial Soundness

Sr. No.	Description	Marks Assigned	Criteria for Marks Obtained
i)	Working Capital	9	<ul style="list-style-type: none"> • 9 Marks will be given if the available average turnover for last three years is equal to Rs. 100 million. • 7 Marks will be given if the available average turnover for last three years is equal to Rs. 75 million. • 5 Marks will be given if the available average turnover for last three years is equal to 50 million. (Fresh Bank Statement of last 1 x year)
ii)	Bank Credit Line	8	<ul style="list-style-type: none"> • 8 Marks are given if the available bank credit line is Rs 100 million or more • 6 Marks are given if the available bank credit line is Rs. 75 million or more • 4 Marks are given if the available bank credit line is Rs. 50 million or more
Total Marks Allocated			17

Note: Passing Criteria is 60% (Overall) and Minimum 50% in each category.

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

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

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

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

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

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

Name of Employer: _____ Name of Contractor: _____

Signature: _____ Signature: _____
[Seal] [Seal]

BILL OF QUANTITIES

A. Preamble

1. The Bill of Quantities shall be submitted by the Contractor and read in conjunction with the Conditions of Contract, Specifications given in the Bidding Documents.
2. The rates and prices entered in the priced Bill of Quantities shall, except in so far as it is otherwise provided under the Contract include all costs of Contractor's plant, labour, supervision, materials, execution, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract. Furthermore, all duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date of deadline for submission of Bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

3. A rate or price shall be prepared item wise in the Bill of Quantities, with proper quantities. The cost of items against which the Contractor will have failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.
4. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill of Quantities, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of the Works

USPCASE/PMU/01/2026
Appendix-F to Bid

DETAILED & PRICED BILL OF QUANTITIES
(To be attached by contractor)

Conformity to Given Technical Specifications in Design

S.No.	Product	Specifications Required	Provided Specifications Compliance (Yes/No)
1	PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial, Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent.	
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ R485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	
4	Gen-Set Synchronization	Supply & installation of Synchronization system with respective Diesel Generator for proper operation of the system complete in all aspects	
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5', complete in all aspects Column to column desistance 18 ft. (150km/hr+ windspeed withstandable)	
6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	
7	LT AC Cables	Supply & laying of LT cables respective core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)	
8	LV Panel and Combiner Box	Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage. Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG	
9	UPVC Pipe, and MC4 Connectors	Supply and Laying UPVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible UPVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)	

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian) 16 SWG	
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)	
12	Earthing Pit/Bore	Execution of complete Earth Pit with CU plate tin coated 10 ft (10'x4'x4mm) dia 25 mm, 70 mm ² bared CU conductor, bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Characteristic: Material: Strainless steel AISI-316L With Standard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent	
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications pyranometers 2 Nos Module temp sensor-1 No Air temp sensor-1 No. Anemometer wind speed sensor-1 No. Data Logger-1 No. Power Supply-1 No. Enclosure and mast-1 No. The above job should be completed in all aspects	
15	SCADA System	Supply and installation of complete SCADA Control scope including but not limited to Solar Shed Control Cabinet, SCADA system for all sites, Ethernet Patch Cords, Fiber Optic LC/SC Duplex Multimode Pig tails, Ethernet cable, Control Cable 1.5mm sq 16 core CU Flexible, Fiber Optic cable multimode mode (4/6 Cores) , LCD size 85" etc. including all related items (complete in all aspects i.e. Must ensure observability and controllability along with protection and control.)	

Instruction: You are requested to sign and stamp this sheet after ensuring compliance.

Note: The Employer reserves the right to reject any Bids based on non-compliance with required specifications.

**FORM OF BID SECURITY
(Bank Guarantee)**

Security Executed on _____ (Date)

Name of Surety (Bank) with Address:
(Scheduled Bank in Pakistan)

Name of Principal (Bidder) with Address: _____
Security Amount in Rupees. _____ (Rs. _____)

Bid Reference No. _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bid and at the request of the said Principal (Bidder) we, the Surety above named, are held and firmly bound unto _____ (hereinafter called the 'Alternative Energy Development Board) in the sum stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such, that whereas the Bidder has submitted the accompanying Bid dated _____ for Bid No. _____ for _____ (Particulars of Bid) to the said Employer, and

WHEREAS, the Employer has required as a condition for considering said Bid that the Bidder furnishes a Bid Security in the above said sum from a Scheduled Bank in Pakistan, to the EMPLOYER, conditioned as under:

- (1) that the Bid Security shall remain in force up to and including the date 30 days after the deadline for validity of bids as stated in the Instructions to Bidders or as it may be extended by the EMPLOYER, notice of which extension(s) to the Surety is hereby waived,
- (2) that the Bid Security of unsuccessful Bidders will be returned by the EMPLOYER after expiry of its validity or upon signing of the Contract Agreement, and
- (3) that in the event of failure of the successful Bidder to execute the proposed Contract Agreement for such work and furnish the required Performance Security, the entire said sum be paid immediately to the said EMPLOYER pursuant to Clause 15.6 of the Instruction to Bidders for the successful Bidder's failure to perform.

NOW THEREFORE, if the successful Bidder shall, within the period specified therefor, on the prescribed form presented to him for signature enter into a Contract Agreement with the said Employer in accordance with his Bid as accepted and furnish within seven (07) working days of issuance of Letter of Acceptance, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfilment of the said.

Contract Agreement or in the event of non-withdrawal of the said Bid within the time specified for its validity then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

USPCASE/PMU/01/2026

**FORM OF BID SECURITY
(Bank Guarantee)
(Contd.)**

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

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Bidder) has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Surety shall pay without objection the said sum upon demand from the Employer forthwith and without any reference to the Principal (Bidder) or any other person.

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

SURETY (Bank)

WITNESS

Name: _____

1. _____

Signature: _____

Corporate Secretary (Seal)

Title: _____

Corporate Guarantor (Seal)

WITNESS

2. _____

Name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

**FORM OF PERFORMANCE SECURITY
(Bank Guarantee)**

Guarantee No: _____

Executed on: _____

Expiry date: _____

[Letter by the Guarantor to the Employer]

Name of Guarantor (Bank) with address: _____
(Scheduled Bank in Pakistan)

Name of Principal (Contractor) with address: _____

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

Letter of Acceptance No. _____ Dated: _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the _____

_____ (hereinafter called the Employer) in the penal sum of the amount stated above for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors. jointly and severally, firmly by these presents.

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

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void, otherwise to remain in full force and virtue til all requirements of Clause 8.3.

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

USPCASE/PMU/01/2026

We, _____ (the Guarantor), waiving all objections and defences under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above against the Employer's written declaration that the Principal has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

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

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

WITNESS

1. _____

(Guarantor Bank)

Name: _____

Corporate Secretary (Seal)

Signature: _____

WITNESS

Title: _____

2. _____

Corporate Guarantor (Seal)

Name, Title and Address

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Contract Agreement") made on the _____
Day of _____ (Month) _____ 20_____ between _____

_____ (hereafter called other part day of the "Employer")
Of the one part and the _____ (Hereafter called the "Contractor")
of the other part.

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

NOW this Agreement witnessed as follows:

1. In this agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents after incorporating addenda, if any, except those parts relating to Instructions to Bidders shall be deemed to form and be read and construed as part of this Contract Agreement, viz:
 - a. Letter of Acceptance,
 - b. Specifications
 - c. Contract Date,
 - d. Conditions of Contract,
 - e. Letters Technical Bid and Price Bit,
 - f. The priced Bill of Quantities, and
 - g. The Appendices to Bid
3. In the event of any discrepancy or inconsistency within the Contract Documents, then the documents shall prevail in the under listed above.
4. As consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy defects therein conformity and in all respects with the provisions of this Contract Agreement.
5. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works at per provisions of this Contract Agreement, the Contract Price or such other sum as may become payable under the provisions of this Contract Agreement at the times and in the manner prescribed therein.

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

Signature of the contractor:

Signature of the Employer:

(Seal)
In the presence of:
WITNESS

(Seal)
In the presence of:
WITNESS

(Name, Title and Address)

(Name, Title and Address)

100 Rs Stamp Paper



CONTRACT AGREEMENT

This Contract Agreement (“Agreement”) is made on this ___ day of _____ 2026 at Islamabad.

Between

The Project Management Unit (PMU), USPCAS-E, National University of Sciences and Technology (NUST), Sector H-12, Islamabad, a public sector university established under the laws of the Islamic Republic of Pakistan, acting through its duly authorized representative _____ (hereinafter referred to as the “NUST(USPCAS-E) PARTY 1”, which expression shall, where the context so permits, include its successors and permitted assigns);

And

M/s _____, a company incorporated under the laws of the Islamic Republic of Pakistan, having its registered office at _____ acting through its authorized representative _____ (hereinafter referred to as the “Party No 2 Contractor”, which expression shall, where the context so permits, include its successors and permitted assigns).

The Party No 1 NUST(USPCAS-E) and the Party No 2 Contractor are collectively referred to as the “Parties”.

NOW this Agreement witnesses as follows:

1. In the Agreement words and expressions shall have the same meaning as respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed, as part of the Agreement viz:
 1. The Contract Agreement;
 2. The Letter of Acceptance;
 3. The Completed Form of Bid;
 4. The Contract Data;
 5. The Conditions of Contract;
 6. The Completed Schedules to Bid including Schedule of Prices;
 7. The Drawings with Specifications;

100 Rs Stamp Paper

3. The Insurance Co and Security Bond detailed dated _____ for amount Rs _____ enclosed.
4. In consideration of the payments to be made by the Employer to the Contractor as hereafter mentioned in the **Letter of Acceptance No** _____ **dated** _____, the Contractor hereby covenants with the Employer to execute and complete the Works in conformity and in all respects with the provisions of the Contract.
5. The Employer here by covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, the Contract Price of such other sum as may become payable under the provisions of the Contract at the fine and in the manner prescribed by the Contract.

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

**FOR AND ON BEHALF OF NATIONAL
UNIVERSITY OF SCIENCES &
TECHNOLOGY (NUST)**

FOR AND ON BEHALF OF
Name of the contractor M/S

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Witness-1:

Witness-2:

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Address: _____

Address: _____

100 Rs Stamp Paper

Bond No : _____
Issue Date : _____
Valid Upto : _____
Amount : Rs. _____

PERFORMANCE SECURITY BOND

Name of Surety:	
Name of Principal (Contractor):	
Penal Sum of Contract:	
Letter of Acceptance No:	

Know all men by these presents, in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named Firm, are held and firmly bound unto the **PMU, USPCAS-E National University of Sciences and Technology, Islamabad** (hereinafter called the Employer) in the penal sum of amount stated above for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the principal (Contractor) has accepted the Employer's above said Letter of Acceptance for **The Design, Supply, Installation, Testing and Commissioning of 3.50 MW Grid-tied Solar System at National University of Sciences and Technology, Sector H-12, Islamabad**, for total contract value of Rs _____.

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original term of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modification to the Guarantor being hereby waived. then, this obligation to be void, otherwise to remain in full force and virtue till all requirements of Clause 49, defect liability of Conditions of Contract is fulfilled.

100 Rs Stamp Paper

Page...02

Bond

No: _____

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

We, _____ (the Guarantor), waiving all objections and defenses under the Contract, do hereby revocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's written declaration that the Principal has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

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

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

This Guarantee/Bond is subject to reconfirmation for verification and status of premium payment from the _____ and whereas in the event of demand arises against this bond, the bond is subject to realization of security place to the company by the contractor Further the letter of confirmation must be attached with the notice for further processing by the company.

Disclaimer: This bond/guarantee has been issued in accordance with SECP S.R.O 696(1)/2018 and shall not be construed as bank guarantees issued by commercial bank and such guarantees bonds shall be claimable in accordance with the terms and conditions provided in the contract of guarantee.

For and on behalf of _____.

Witnesses:

1. Name/Title:

2. Name/Title:



NUST

IMMEDIATE/BY FAX/TCS
PMU USPCAS-E, NUST
National University of Sciences and Technology
Sector H-12, Islamabad Tel: 051-9085-5101
CA No.

Subject: Letter of Acceptance for THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 3.50 MW GRID-TIED SOLAR SYSTEM AT National University of Sciences and Technology, SECTOR H-12, ISLAMABAD.

Dear Sir,

2. Pursuant to the President Islamic Republic of Pakistan, undersigned is pleased to inform that your quoted cost of **Rs.** _____ has been accepted for Establishment of 3.05 MW Grid Tied Solar Power at NUST Campus Sector H-12, Islamabad.
3. The aforementioned amount is the "Contract Price" payable in consideration of the execution, completion and remedying defects therein.
4. **CA No.** _____ has been allotted for the subject project, which will invariably be quoted in all future correspondence.
5. The Contract shall be governed by terms and conditions contained in the Tender and Contract Documents of the subject work.
6. You are required to furnish Performance Security in the form of Bank Draft or Bank Guarantee or an insurance company acceptable to the Employer equal to an amount of 10% (Ten Percent) of Contract Price in accordance with the Conditions of Contract at earliest after receipt of this Letter of Acceptance. Non-fulfillment of Performance Security shall result in annulment of this award and forfeiture of the Tender Security.
7. **Engineer/DD/DPD** _____, PMU, USPCAS-E, NUST Campus, Sector H-12, Islamabad is deputed as Controlling Officer/Engineer's Representative for the subject project Please contact Controlling Officer/Engineer's Representative for possession of the site and commencement/execution of the work.
8. You are also required to mobilize at Site within Fourteen (14) days of issuance of Notice to commence works by the Controlling Officer/Engineer's Representative. The maintenance of the possession of the Site will be your responsibility after its possession given by the Employer/Controlling Officer.
9. Please sign the Contract Agreement with the Employer (Works Directorate NUST) on Judicial Paper as per sample form of agreement provided in the Tender documents within Fourteen (14) days after receipt of this letter.
10. The entire work shall be completed in two hundred and forty (240) days from the date of issuance of Notice to commence the work (i.e. Work Order). The Extension will be guaranteed by the competent authority.
11. Please countersign, affixed the stamp and return the original letter to this office which would be rendered as token of your acceptance of the subject contract/acknowledgement.

Signature/Stamp:
Director Project: Dr. Adeel Waqas.

Accepted

For and Behalf of
M/S: _____

Signature: _____
Name: _____
Title of Signatory: _____

Date and Seal: _____

NOO:
Copy To:
Pro-Rector P&R;
PMU (USPCAS-E).

Note: Please place the Notice (Work Order Engineer Notice) to the contractor commence the Works and hand over the site accordingly.

The Design, Supply, Installation, Testing and Commissioning of 3.50 MW Grid-tied Solar System at National University of Sciences and Technology, Sector H-12, Islamabad.

FINACIAL BID OPENING STATEMENT

Opening Date:

Time 11:30 hours

Ser #:	Name of Firm/Contractor	Representative of Contractor		At Par Cost (Rs)	Bid Security (Rs)	Quoted Cost (Rs)	Remarks
		Name	Initial				

Certified that ___x bids have been received and opened.

Certified that _____ has quoted the lowest bid.

Certified that no departure has been committed from prevailing rules for tendering.

DPD (Dr. Syed Ali Abbas Kazmi)

DD Admin (Lt.Col. (R) Malikuddin)

Project Engineer (Raqib Ullah)

COUNTERSIGNED

Project Director (Dr. Adeel Waqas)

CONTRACT AGREEMENT

FOR THE DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 3.50 MW GRID-TIED SOLAR SYSTEM AT NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY, SECTOR H-12, ISLAMABAD

This Contract Agreement (“Agreement”) is made on this ___ day of _____ 2026 at Islamabad.

Between

National University of Sciences and Technology (NUST), Project Management Unit (PMU), USPCAS-E, Sector H-12, Islamabad, a public sector university established under the laws of the Islamic Republic of Pakistan, acting through its duly authorized representative _____ (hereinafter referred to as the “NUST(USPCAS-E) PARTY 1”, which expression shall, where the context so permits, include its successors and permitted assigns);

And

M/s _____, a company incorporated under the laws of the Islamic Republic of Pakistan, having its registered office at _____ acting through its authorized representative _____ (hereinafter referred to as the “Party No 2 Contractor”, which expression shall, where the context so permits, include its successors and permitted assigns).

The Party No 1 NUST(USPCAS-E) and the Party No 2 Contractor are collectively referred to as the “Parties”.

RECITALS

Whereas the Party No 1 NUST(USPCAS-E) invited bids under Tender No. USPCASE/PMU/01/2026 for the design, supply, installation, testing and commissioning of a 3.50 MWp grid-tied solar system at NUST Campus, Sector H-12, Islamabad; and whereas the Party No 2 Contractor submitted its Technical and Financial Bids in strict conformity with the Bidding Documents; and whereas after evaluation in accordance with the prescribed procurement procedure, the Party No 1 NUST(USPCAS-E) issued its Letter of Acceptance No. _____ dated _____ accepting the Party No 2 Contractor’s bid in the total sum of Rs. _____ (Pak Rupees _____ only) as the Contract Price; and whereas the Party No 2 Contractor has agreed to execute and complete the Works strictly in accordance with the Tender Documents and without deviation or reservation;

Now, therefore, in consideration of the mutual covenants and obligations herein contained, the Parties hereby agree as follows:

1. Definitions and Interpretation

In this Agreement, unless the context otherwise requires:

“Agreement” means this Contract Agreement together with all documents forming part of the Contract.

“Commencement Date” means the date stated in the Engineer’s Notice to Commence.

“Conditions of Contract” means the general and particular conditions forming part of the Tender Documents.

“Contract Data” means the document so titled containing project-specific data.

“Contract Price” means the lump-sum amount stated in this Agreement.

“Defect Liability Period” means the period of two (2) years from the date of issuance of the Taking Over Certificate.

“Engineer” means the person appointed by the Party No 1 NUST(USPCAS-E) to administer and supervise the Contract.

“Force Majeure” has the meaning assigned in the Force Majeure Clause herein.

“NMGG” means the Net Minimum Guaranteed Generation as offered in the Party No 2 Contractor’s Bid.

“Taking Over Certificate” means the certificate issued by the Party No 1 NUST(USPCAS-E) /Engineer confirming completion of the Works.

“Works” means the design, supply, installation, testing and commissioning of the 3.50 MWp solar system.

Headings shall not affect interpretation, both in contract agreement and in the tender, alike. Words importing singular include plural and vice versa.

FORMATION AND NATURE OF CONTRACT

This Agreement constitutes a binding, enforceable contract between the Parties. The Party No 2 Contractor acknowledges that the Contract arises from acceptance of its bid and that no further negotiation, clarification, or modification of scope, price, specifications, or obligations remains pending. The Contract is a fixed-price, lump sum, design-and-build contract under which the Party No 2 Contractor assumes full responsibility for the execution and completion of the Works in accordance with the Contract Documents.

The Party No 2 Contractor confirms that it has carefully examined the Site, the Specifications, the Conditions of Contract, the Contract Data, and all other Tender Documents, and that it has satisfied itself as to all conditions, risks, contingencies, and obligations that may affect the execution of the Works. The Party No 2 Contractor further confirms that the Contract Price covers all such matters and that no claim shall arise on the grounds of misunderstanding, misinterpretation, or lack of information.

CONTRACT DOCUMENTS AND PRECEDENCE

This Agreement shall be read together with and includes the following documents, which form an integral and inseparable part hereof: the Contract Agreement, the Letter of Acceptance, the Contract Data, the Conditions of Contract, the Specifications, the Priced Bill of Quantities, the Party No 2 Contractor's Technical and Financial Bids, the Appendices to Bid, and the Integrity Pact executed by the Party No 2 Contractor.

In the event of any ambiguity or inconsistency between the documents, the order of precedence shall be as stated in the Tender Documents, and such order shall be strictly applied. The Party No 2 Contractor confirms that it relies solely on the documents expressly forming part of this Contract and on no external representation or assurance.

SCOPE OF WORK

Under this Agreement, the Party No 2 Contractor shall carry out complete engineering, design, procurement, supply, installation, testing, commissioning, and handing over of a 3.50 MWp grid-tied solar system at the designated locations within the NUST Campus, Sector H-12, Islamabad. The Works shall include all civil, structural, electrical and mechanical components necessary for a fully operational system, including mounting structures, photovoltaic modules, inverters, protection systems, cabling, net metering arrangements, testing equipment, and associated infrastructure.

The Party No 2 Contractor shall prepare and submit detailed Party No 2 Contractor Design in conformity with the Specifications and shall remain fully responsible for the adequacy, safety, performance, and fitness for purpose of such design notwithstanding any review or approval by the Party No 1 NUST(USPCAS-E).

The Party No 2 Contractor shall ensure achievement of the Net Minimum Guaranteed Generation (NMGG) as offered in its bid and any shortfall attributable to the Party No 2 Contractor shall be recoverable from the Party No 2 Contractor's security or final payments in accordance with the Contract.

CONTRACT PRICE

The total Contract Price payable by the Party No 1 NUST(USPCAS-E) to the Party No 2 Contractor for the complete and proper execution of the Works is Rs. _____ (Pak Rupees _____ only). This amount is fixed and firm and includes all taxes, duties, levies, import charges, transportation costs, insurance, labor, materials, supervision, overheads, profit, compliance costs, and all other expenses necessary for completion of the Works.

No escalation or additional payment shall be admissible except where expressly permitted under the Variation provisions of the Contract.

TIME FOR COMPLETION

The Party No 2 Contractor shall commence the Works within fourteen days of receipt of the Engineer's Notice to Commence and shall complete the Works within two hundred and forty (240) days from the Commencement Date. Time is of the essence of this Contract. In the event of delay beyond the Time for Completion, the Party No 2 Contractor shall be liable to pay liquidated damages at the rate specified in

the Contract Data, subject to the stated maximum, and such damages may be deducted from any sums due to the Party No 2 Contractor.

PERFORMANCE SECURITY

The Party No 2 Contractor shall furnish Performance Security (10% of total Contract Value) from any Scheduled Bank of Pakistan in the form and amount specified in the Contract Data within the stipulated period following issuance of the Letter of Acceptance. Such security shall remain valid for the duration prescribed in the Contract and shall secure the faithful performance of all obligations under this Agreement. Failure to furnish or maintain the required security shall constitute a material breach entitling the Party No 1 NUST(USPCAS-E) to take appropriate contractual remedies.

PAYMENT TERMS

Payments shall be made strictly in accordance with the staged payment schedule contained in the Contract Data. No payment shall become due except upon certification in accordance with the Conditions of Contract. Retention money shall be deducted from interim payments up to the prescribed limit and shall be released only in accordance with the Contract provisions:-

A	Payment Terms	11.2 18.1	<p>1) The whole project to be installed, commissioned and made operative as per contractual obligations. The payment will be made as per following terms. Fifteen Percent (15%) of the contract value at interest free advance after signing of the Contract Agreement and upon submission of a Mobilization Advance Bank Guarantee of scheduled Bank in Pakistan acceptable to the Employer for the same amount. (No insurance guarantee will be accepted).</p> <p>a) Ten percent (10%) of contract value (Imported Items) after submission of FAT third party validation report</p> <p>b) Ten percent (10%) of contract value (Imported Items) after submission of Bill of Original lading.</p> <p>c) Twenty Percent (20%) of the Contract Value upon delivery of equipment/ arrival at site. Receiving/Damage Report and Warranty Certificate duly verified by Engineer and Employer</p> <p>d) Thirty Percent (30%) of contract value after installation of All works i.e., civil and Mechanical installation and documentation duly certified by The Engineer.</p> <p>e) Twenty-Five (25%) of contract value (complete work) after testing and commissioning and Submission of all relevant documents and reports duly verified by the Engineer.</p> <p>f) Two and a half percent (2.5%) of contract value after issuance of Taking over Certificate,</p> <p>g) Two and a half percent (2.5%) of contract value after successful completion of Defect liability period and satisfactory Performance review of system by the Technical Committee of NUST.</p> <p>2) All losses incurred or adjustments required in the NUST electrical system due to the Contractor's activities shall be the responsibility of the Contractor and the cost of such adjustments may be deducted from the Contractor's bills.</p>
b.	Retention Money	11.3	<p>Percentage of Retention Money 10% of the amount of Interim Payment Certificate. Limit of Retention Money 5% of Contract Price stated in the Letter of Acceptance.</p>
c.	Mobilization Advance* (Interest Free)	18.1	15% of Contract Price stated in the Letter of Acceptance.

WARRANTY AND DEFECT LIABILITY

The Party No 2 Contractor warrants that all materials, equipment, and workmanship shall be new, free from defects, and in strict conformity with the Contract. The Defect Liability Period shall be two years from issuance of the Taking Over Certificate. The Party No 2 Contractor shall promptly remedy, at its own cost, any defect notified during this period. Manufacturer warranties for photovoltaic modules, inverters, and other components shall be provided as specified in the Tender Documents and shall not derogate from the Party No 2 Contractor's overall responsibility.

Warranty Period

- ❖ 12 Year Warranty for PV Panels.
- ❖ 10 Year Warranty for Inverter
- ❖ 05 Year Warranty for Labor, material and installation.
- ❖ Minimum Two-Year O&M

VARIATIONS

No alteration, addition, omission, or modification of the Works shall be valid unless instructed in writing by the Party No 1 NUST(USPCAS-E) in accordance with the Variation provisions of the Contract. Oral instructions or informal communications shall have no contractual effect.

TERMINATION

The Party No 1 NUST(USPCAS-E) may terminate this Contract, in whole or in part, by giving written notice of 2 months to the Party No 2 Contractor in cases of default, abandonment, insolvency, or breach of the Integrity Pact. The Party No 2 Contractor shall have a period of **15 to 30 days** from receipt of such notice to remedy the default or breach, as applicable. Upon expiry of the notice period without satisfactory remedy, termination shall take effect automatically. Consequences of termination, including suspension of payments, recovery of costs, forfeiture of Performance Security, and engagement of an alternative Party No 2 Contractor for completion of the Works, shall be governed strictly by the provisions of this Contract. The Party No 2 Contractor shall remain liable for all obligations accrued prior to termination, and financial adjustments shall be settled in accordance with the Contract.

Both the parties may terminate the Contract for convenience by giving thirty (30) days written notice.

DISPUTE RESOLUTION

Any dispute arising out of or in connection with this Contract shall first be attempted to be resolved amicably through mutual consultation. If unresolved within **30 days**, the dispute shall be referred to **arbitration** under the Arbitration Act, 1940. Rector NUST shall be the sole arbitrator. The arbitration proceedings shall be conducted in **Islamabad** in English and the award shall be final and binding. The courts of competent jurisdiction at Islamabad shall have exclusive jurisdiction over all matters arising out of or in connection with this Contract.. This Contract shall be governed by the laws of the Islamic Republic of Pakistan.

APPOINTMENT AND AUTHORITY OF ENGINEER

The Party No 1 NUST(USPCAS-E) shall appoint an Engineer to administer the Contract and supervise execution of the Works. The Engineer shall have authority to issue the Notice to Commence, review and approve design submissions, inspect the Works, certify interim and final payments, determine applications for extension of time, assess Variations in accordance with the Contract, and issue the Taking Over Certificate. The Engineer shall exercise such authority fairly and in accordance with the Contract. Provided, however, that the Engineer shall not amend, vary, or waive any provision of this Agreement without the prior written approval of the Party No 1 NUST(USPCAS-E). Any instruction issued by the Engineer shall be in writing and within the scope of authority granted under this Contract.

FORCE MAJEURE

Force Majeure means any event or circumstance beyond the reasonable control of the affected Party which could not have been prevented by the exercise of due diligence and which materially prevents or delays performance of contractual obligations. Such events may include, without limitation, acts of God, flood, earthquake, fire, war, civil commotion, terrorism, governmental action, embargoes, changes in law, import restrictions, nationwide strikes not confined to the Party No 2 Contractor's workforce, or prolonged grid shutdowns.

If either Party is prevented from performing its obligations due to Force Majeure, it shall notify the other Party in writing within Thirty (30) days of becoming aware of such event. The Time for Completion shall be extended for the duration of the delay caused by Force Majeure, and the Party No 2 Contractor shall not be liable for liquidated damages for such period. If the Force Majeure event continues for more than ninety (90) consecutive days and substantially prevents performance of the Contract, either Party may terminate the Contract upon written notice, whereupon the consequences of termination shall be determined in accordance with the Conditions of Contract.

INDEMNITY

The Party No 2 Contractor shall indemnify, defend and hold harmless the Party No 1 NUST(USPCAS-E) , its officers, employees and representatives from and against all claims, demands, actions, damages, losses, liabilities, costs and expenses arising out of or in connection with the execution of the Works, including but not limited to claims for bodily injury, death, property damage, environmental harm, or infringement of intellectual property rights, to the extent that such claims arise from the acts, omissions, negligence or breach of the Party No 2 Contractor, its employees, agents or Sub-Contractors. This indemnity shall survive completion, termination or expiry of the Contract, provided that the Party No 2 Contractor shall not be liable to the extent that such damage or loss is caused by the gross negligence or willful misconduct of the Party No 1 NUST(USPCAS-E) .

INSURANCE

The Party No 2 Contractor shall, at its own expense, procure and maintain for the duration of the Works adequate insurance coverage with reputable insurers licensed to operate in Pakistan. Such insurance shall include Party No 2 Contractor's All Risk Insurance covering loss or damage to the Works, Third Party Liability Insurance covering injury to persons and damage to property, Workmen Compensation Insurance as required under applicable laws, and Professional Indemnity Insurance covering design liability. The Party No 1 NUST(USPCAS-E) shall be named as co-insured where appropriate. Evidence of such

insurance policies shall be furnished to the Party No 1 NUST(USPCAS-E) prior to commencement of the Works, and failure to maintain the required insurance shall constitute a material breach of the Contract.

ADVANCE PAYMENT

Where provided in the Contract Data, the Party No 1 NUST(USPCAS-E) may grant an advance payment not exceeding the percentage specified therein. The Party No 2 Contractor shall, prior to receipt of such advance, furnish an unconditional and irrevocable Advance Payment Bank Guarantee in an equivalent amount in a form acceptable to the Party No 1 NUST(USPCAS-E) . The advance shall be recovered by proportional deductions from interim payment certificates in accordance with the Contract Data. No advance payment shall be released unless and until the required guarantee has been duly submitted and accepted.

- (c) An interest-free Mobilization Advance up to 15% of the Contract Price stated in the Letter of Acceptance shall be paid by the Employer to the Contractor upon submission by the Contractor of a Mobilization Advance Guarantee/Bond for the full amount of the Advance in the specified form from a Scheduled Bank in Pakistan
- (d) This Advance shall be recovered in equal installments from the subsequent interim payment certificates (IPCs).

TESTING AND PERFORMANCE VERIFICATION

Upon completion of installation of the Works, the Party No 2 Contractor shall conduct all necessary pre-commissioning tests, grid synchronization tests and performance tests in accordance with the Specifications and internationally recognized standards applicable to solar photovoltaic systems. The performance tests shall verify compliance with the Net Minimum Guaranteed Generation (NMGG) such as annual average of minimum 4.0 kWh (and above) per KW per day and other technical parameters specified in the Contract.

If the system fails to achieve the guaranteed performance levels, the Party No 2 Contractor shall, at its own cost and without delay, rectify the deficiencies and conduct retesting within 30 days. The Party No 2 Contractor shall add additional system capacity to compensate for the deficiency without any financial liability on NUST (USPCAS-E). Taking Over of the Works shall not occur unless and until successful completion of the prescribed performance tests. In the event of persistent failure attributable to the Party No 2 Contractor, the Party No 1 NUST(USPCAS-E) shall be entitled to recover compensation or adjust payments in accordance with the Contract, including recourse to the Performance Security as afore mentioned in the Warranty and defect Liability clause.

ASSIGNMENT AND SUBCONTRACTING

The Party No 2 Contractor shall not assign, transfer, or novate this Contract or any part thereof without the prior written consent of the Party No 1 NUST(USPCAS-E) . The Party No 2 Contractor may subcontract portions of the Works for specialized activities, provided that the Party No 2 Contractor shall remain fully responsible and liable for all acts, omissions and performance of its sub Contractors as if they were its own. Details of major sub Party No 2 Contractors and suppliers of key equipment, including photovoltaic modules and inverters, shall be disclosed to and approved by the Party No 1 NUST(USPCAS-E) . Any unauthorized assignment or transfer shall constitute a material breach entitling the Party No 1 NUST(USPCAS-E) to terminate the Contract.

INTEGRITY AND ANTI-CORRUPTION

The Party No 2 Contractor represents and warrants that it has not engaged in and shall not engage in any corrupt, fraudulent, collusive, coercive or obstructive practice in connection with the procurement or execution of this Contract. The Party No 2 Contractor shall comply strictly with all applicable anti-corruption and transparency laws of the Islamic Republic of Pakistan and with the Integrity Pact executed in connection with this procurement. Any breach of this undertaking shall constitute a fundamental breach of the Contract and shall entitle the Party No 1 NUST(USPCAS-E) , without prejudice to any other rights or remedies, to terminate the Contract, forfeit the Performance Security, recover damages, and initiate debarment proceedings in accordance with applicable procurement rules.

ENTIRE AGREEMENT AND NON-MODIFICATION

This Agreement constitutes the entire understanding between the Parties and supersedes all prior discussions, negotiations, and communications. No amendment or modification shall be valid unless made in writing and signed by duly authorized representatives of both Parties. The Party No 2 Contractor expressly acknowledges that execution of this Agreement amounts to unconditional acceptance of all Tender terms and that no claim inconsistent with the Contract Documents shall be maintainable.

EXECUTION

In witness whereof, the Parties have executed this Agreement on the date first above written.

For and on behalf of
Project Management Unit (PMU), USPCAS-E
National University of Sciences and Technology (NUST)
Party No 1 NUST(USPCAS-E)

Name: _____

Title: _____

Signature: _____

Seal:

For and on behalf of Party No 2
M/s _____

Name:

Title:

Signature:

Seal:

Witness No 1

Witness No 2

DETAILED & PRICED BILL OF QUANTITIES
(To be attached by contractor)

SUMMARY
SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD

Sr. No	Description (3500 kW)	Amount (Rs)	
A	592 KW Parking shed-1 NCLS	Rs.	
B	197 KW Parking shed-2 NCLS	Rs.	
C	348 KW Parking shed-2 CIPS	Rs.	
D	270 KW Parking shed CEMTECH	Rs.	
E	300 KW Parking shed Sports Complex	Rs.	
F	406 KW Parking shed SNS	Rs.	
G	68 KW Parking shed Central Library	Rs.	
H	542 KW Parking shed-1 CIPS	Rs.	
I	373 KW Parking shed NSHS	Rs.	
J	257 KW Parking shed NBS-Student	Rs.	
K	147 KW Parking shed NBS-Faculty	Rs.	
	Total Amount (Rs)	Rs.	

SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD

Bill of Quantities

592KW Parking shed-1 NCLS

A

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	592,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei or equivalent, including all accessories with protection shed	1			
a)		115KW	2.00	Nos		
b)		150KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45/RS485 complete in all respects preferably Huawei or equivalent compatible	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects (150km/hr+ windspeed withstandable)	592,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	10,000.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV Panel)	30.00	Mtr		
b)		120mm ² CU 3.5 Core (150 KW inverter to LV panel)	30.00	Mtr		
c)		240mm ² CU 1 Core (LV Panel to Transformer) 2xNo Runs	500.00	Mtr		
d)		120mm ² CU 1 Core (LV Panel to Transformer for N)	50.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 1000A</p> <p>Incoming: 2xTP, 250A, 40KA MCCB 2xTP, 320A, 40KA MCCB</p> <p>Outgoing: 1xTP, 1250A MCCB</p> <p>65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki</p> <p>Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	UPVC Pipe, and MC4 Connectors	<p>Supply and Laying UPVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian) 16 SWG	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equillent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		16mm ² , CU, 1C Green color PVC 1KV				
c)		50mm ² , CU, 1C Green color PVC 1KV				
d)		70mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80	1.00	Job		

		Meter SIGMA or Equivalent				
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6" pipe and manholes complete in all aspects	15.00	Mtr		
15	Shifting and installation of Transformer	Disconnecting and/ Shifting of 400KVA transformer from site to store maximum distance of 2km away at site and then 1000KVA transformer from store to at site placing and installation.	1.00	Job		
16	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
A.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

197KW Parking shed-2 NCLS

B

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	197,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		50 KW	1.00	Nos		
b)		115 KW	1.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects (150km/hr+ windspeed with standable)	197,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU. XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	3,900.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		25mm ² CU 3.5 Core (50 KW inverter to LV Panel)	15.00	Mtr		
b)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	15.00	Mtr		
c)		150mm ² CU 3.5 Core (LV Panel to Transformer)	60.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 400A Incoming:1xTP, 250A, 30KA MCCB1xTP, 100A, 30KA MCCB Outgoing: 1xTP, 400A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		10mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2	1.00	Job		

		Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6” pipe and manholes complete in all aspects	15.00	Mtr		
15	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
B.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

348KW Parking shed-2 CIPS

C

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	348,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		150KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 350 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects (150km/hr+ windspeed withstandable)	348,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	7,900.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		120mm ² CU 3.5 Core (150 KW inverter to LV Panel)	30.00	Mtr		
b)		240mm ² CU 1-Core (LV panel to transformer single run)	60.00	Mtr		
c)		120mm ² CU 1-Core for neutral (LV Panel to Transformer)	20.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 630A Incoming:2xTP, 320A, 30KA MCCBOutgoing: 1xTP, 630A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		70mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80	1.00	Job		

		Meter SIGMA or Equivalent				
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6” pipe and manholes complete in all aspects	1.00	Job		
15	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
C.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

270KW Parking shed CEMTECH

D

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	270,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 200 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects (150km/hr+ windspeed withstandable)	270,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	4,500.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	30.00	Mtr		
b)		240mm ² CU 3.5 Core (LV Panel to Transformer)	45.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 500A Incoming:2xTP, 250A, 30KA MCCBOutgoing: 1xTP, 500A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2	1.00	Job		

		Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications				
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
D.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

300KW Parking shed Sports Complex

E

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	300,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115 KW	1.00	No		
b)		150 KW	1.00	No		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 350 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD), complete in all aspects (150km/hr+ windspeed withstandable)	300,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	4,500.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	15.00	Mtr		
b)		120mm ² CU 3.5 Core (150KW inverter to LV Panel)	15.00	Mtr		
c)		120mm ² CU 1-Core (LV Panel to Transformer, 2runs)	120.00	Mtr		
d)		70 mm ² CU 1-Core (LV Panel to Transformer, for N)	20.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 630A</p> <p>Incoming: 1xTP, 250A, 30KA MCCB 1xTP, 320A, 30KA MCCB</p> <p>Outgoing: 1xTP, 630A MCCB 65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki</p> <p>Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2	1.00	Job		

		Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications				
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
E.Total Amount (Rs.)						

1.00

Job

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

406KW Parking shed SNS

F

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	406,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115 KW	3.00	No		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 400 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects (150km/hr+ windspeed withstandable)	406,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	6,500.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV Panel)	45.00	Mtr		
b)		150mm ² CU 1-Core (LV Panel to Transformer) 2xNo Runs	420.00	Mtr		
c)		70mm ² CU 1-Core (LV Panel to Transformer for N)	70.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 800A Incoming:3xTP, 250A, 30KA MCCBOutgoing: 1xTP, 800A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2	1.00	Job		

		Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	Thrust Boring	Execution of road thrust boring for laying/ crossing of power cables from LT panels to transformer including class E type UPVC pipe 2xNos dia 6” pipe and manholes complete in all aspects	25.00	Mtr		
15	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications				
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
F.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

68KW Parking shed Central Library

G

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	68,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		30 KW	2.00	No		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects (150km/hr+ windspeed withstandable)	68,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	1,000.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		16mm ² CU 3.5 Core (30 KW inverter to LV panel)	30.00	Mtr		
b)		70mm ² CU 3.5 Core (LV Panel to Transformer)	120.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 100A Incoming:3xTP, 63A, 20KA MCCBOutgoing: 1xTP, 125A MCCB30 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		10mm ² , CU, 1C Green color PVC 1KV				
d)		16mm ² , CU, 1C Green color PVC 1KV				
e)		35mm ² , CU, 1C Green color PVC 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80	1.00	Job		

		Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications				
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
G.Total Amount (Rs.)						

1.00

Job

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

542KW Parking shed-1 CIPS

H

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	542,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ RS485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		150KW	3.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Synchronization	Supply & installation of Synchronization system with 250/500 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD), complete in all aspects (150km/hr+ windspeed withstandable)	542,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	10,100.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		120mm ² CU 3.5 Core (150 KW inverter to LV panel)	45.00	Mtr		
b)		240mm ² CU 1-Core (LV Panel to Transformer) 2xNo Runs	180.00	Mtr		
c)		120mm ² CU 1-Core (LV Panel to Transformer for N)	30.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 1000A Incoming:3xTP, 320A, 30KA MCCBOutgoing: 1xTP, 1000A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		10mm ² , CU, 1C Green color PVC 1KV				
d)		16mm ² , CU, 1C Green color PVC 1KV				
e)		35mm ² , CU, 1C Green color PVC 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4''x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80	1.00	Job		

		Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications				
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
H.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

373KW Parking shed NSHS

I

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	373,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ R485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		150KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 350 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects (150km/hr+ windspeed withstandable)	373,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	7,900.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		120mm ² CU 3.5 Core (150 KW inverter to LV Panel)	30.00	Mtr		
b)		120mm ² CU 1-Core (LV panel to transformer single run)	450.00	Mtr		
c)		70mm ² CU 1-Core for neutral (LV Panel to Transformer)	75.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 630A Incoming:2xTP, 320A, 30KA MCCBOutgoing: 1xTP, 630A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equillent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		10mm ² , CU, 1C Green color PVC 1KV				
d)		16mm ² , CU, 1C Green color PVC 1KV				
e)		35mm ² , CU, 1C Green color PVC 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2 Protection Radius min meter : 80	1.00	Job		

		Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1.00	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
I.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

257KW Parking shed NBS-Student

J

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	257,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ R485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
a)		115 KW	2.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 400/250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD) , complete in all aspects Column to column dististance 18 ft. (150km/hr+ windspeed withstandable)	257,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	5,600.00	Mtr		
7	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
a)		95mm ² CU 3.5 Core (115 KW inverter to LV panel)	30.00	Mtr		
b)		240mm ² CU 1-Core (LV Panel to Transformer)	240.00	Mtr		
c)		120 mm ² CU 1-Core (LV Panel to Transformer)	80.00	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 500A Incoming:2xTP, 250A, 30KA MCCBOutgoing: 1xTP, 500A MCCB65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/TerasakiCombiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABBIncluding Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1.00	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)</p>	1.00	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1.00	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 1KV				
b)		6mm ² , CU, 1C Green color PVC 1KV				
c)		16mm ² , CU, 1C Green color PVC 1KV				
d)		50mm ² , CU, 1C Green color PVC 1KV				
e)		70mm ² , CU, 1C Green color PVC 1KV				
f)		70mm ² , CU, 1C Bared conductor 1KV	1.00	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft dia 25mm, (10'x4'x4mm) 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4.00	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C Metric : Thread M-16 x2	1.00	Job		

		Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications				
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
			The above job should be completed in all aspects	1.00	Job	
J.Total Amount (Rs.)						

**SUPPLY AND INSTALLATION OF 3.50 MW SOLAR SYSTEM
AT NUST CAMPUS SECTOR H-12 ISLAMABAD**

Bill of Quantities

147KW Parking shed NBS-Faculty

K

Sr No	ITEM NAME	DESCRIPTION	Qty	UNIT	RATE (Rs)	AMOUNT (Rs)
1	Solar PV Panels	Supply and Fixing of Solar PV panels Mono crystalline/ Mono-PERC Half cut, Efficiency Greater than 22.5%, A.Grade. N.type Mono Facial , Tier-1 preferably LONGI HI-MO X10 645W or Bi Facial equivalent	147,000.00	Watt		
2	Inverter	Supply & installation of Multi MPPT Pure Sine wave, 3-phase, 400v interface Rj-45/ R485/ WIFI/ GPRS/ USB, ON Grid String Inverter, Efficiency 98% or above, Protecting Rating: IP67 or above, Preferably Huawei, including all accessories with protection shed	1			
(a)		150KW	1.00	Nos		
3	Inverter Manager	Supply & fixing of inverter Manager Logger 3000A, WIFI & Ethernet Rj-45 complete in all respect preferably Huawei	1.00	Job		
4	Gen-Set Synchronization	Supply & installation of Synchronization system with 400/250 KVA Diesel Generator for proper operation of the system complete in all aspects	1.00	Job		
5	Mounting Structure P-3	Supply installation of Hot dip Galvanized non corrosive metallic frame structure P-3 Type with civil RCC Pad, cross column thick 4mm, size 8'x4", Rafter thick 4mm, size 8'x4", C channel 6"x3"x1.5"x12 Gauge, SS Nut Bolt, Clamps, RCC civil pads 7'x2.5'x3' (LxWxD), complete in all aspects Column to column distance 18 ft. (150km/hr+ windspeed withstandable)	147,000.00	Watt		

6	DC Cable	Supply & laying of Flexible Cable Single core 6mm ² CU.XLPO/ XLPO, Rated 1500VDC preferably Red for positive and Black for negative cable including all civil works, excavation filling etc. complete all aspects (Fast cable, Newage cable, Pakistan cable or equivalent)	3500	Mtr		
7a	LT AC Cables	Supply & laying of LT cables 3.5 core PVC/PVC Copper Conductor rated 1000V un-armoured, including copper thimble, excavation, (2'-6"x2') Cable trench and filling of trench if required. Complete in all aspects. (Fast Cable Newage Cable, Pakistan Cable or equivalent)				
b)		120mm ² CU 3.5-Core (150KW inverter to LV Panel)	30	Mtr		
c)		120mm ² CU 1-Core (LV Panel to Transformer)	90	Mtr		
d)		70mm ² CU 1-Core (LV Panel to Transformer for N)	30	Mtr		

8	LV Panel and Combiner Box	<p>Supply and fixing of LV panel including all protective devices AC circuit Breaker SPDs incoming/ outgoing AC circuit Breakouts indication lights, copper Bus bars, R,Y,B,N&E as per Site requirements outdoor type floor mounted, operational Voltage, 415V, Bus bars should bear minimum 250A</p> <p>Incoming 1xTP, 320A, 40KA MCCB</p> <p>Outgoing: 1xTP, 320A MCCB 65 KA 400V, Motorized with accessories UVT coil, Shut opening closing, OC Relay. Digital Energy analyzer 0.5 accuracy class and RS 485 enabled. Phase indication and ON/ OFF trip lights, Auto manual selector switch 300mm Cable Chamber, Push Button ON/OFF 1xAC SPD Type-II 40 KA with protection shed, complete in all aspects. Breaker Schneider/ABB/Terasaki Combiner Box of suitable size Gauge outdoor type with double pole 30Amp DC,1000V suitable for incoming/ outgoing Cable complete in all respects. MCB, Schneider, Terasaki, ABB Including Shed (Power Tech, Techmen, South Asian) IP67. 14 SWG</p>	1	Job		
9	PVC Pipe, and MC4 Connectors	<p>Supply and Laying PVC Pipe of different sizes for communication cables, DC cables, AC power cables, flexible PVC pipes for covering wire from module to cable trays include bend, elbow, socked, ties, road cutting, concrete cutting/pouring, are included, where required etc. and MC4 connectors, complete in all aspects(Adamjee pipe, Beta pipe, Plasco pipe or equivalent and best quality of MC4)</p>	1	Job		

10	Cable Trays	Supply and Fixing of GI Cable perforated cable trays, plain GI cable trays of different sizes for DC cables (negative, positive), AC Power cable, 100mm x 50mm, 100mm x 100mm or other sizes including GI Nut Bolts etc. complete in all aspects (Power Tech, Techmen, South Asian)	1	Job		
11	Earthing Cables and conductors	Supply and lying of Earthing Cables copper/ PVC of difference sizes for Earthing including copper Thimble etc. (Pakistan cables, Newage cables, Fast cables or equivalent)				
a)		4mm ² , Copper 1C Green color PVC 0.75KV				
b)		4mm ² , Copper 1C Green color PVC 1KV				
c)		6mm ² , CU, 1C Green color PVC 1KV				
d)		10mm ² , CU, 1C Green color PVC 1KV				
e)		16mm ² , CU, 1C Green color PVC 1KV				
f)		35mm ² , CU, 1C Green color PVC 1KV	1	Job		
12	Earthing Pit/ Bore	Execution of complete Earth Pit with CU rod tin coated length 10 ft (10'x4'x4mm) dia 25mm, 70mm ² bared CU conductor, Bore depth upto 100 ft, ground/chemical Powder for low resistance, result less than 5 Ohms, testing point copper bar, insulators copper thimbles, with manhole and cover complete in all aspects	4	Nos		
13	Lightning System	Industrial Lightning Arrestor System ESE Lightening Arrestors Technical Charateristic : Material: Strainless steel AISI-316L WithStandard current : 200KA-wave 10/350 micro-seconds Operation temperature : -40°C ± 130°C	1	Job		

		Metric : Thread M-16 x2 Protection Radius min meter : 80 Meter SIGMA or Equivalent				
14	EMS (Medium End) MET.M	Supply & fixing of EMS with the following specifications	1	Job		
a)		pyranometers 2 Nos				
b)		Module temp sensor-1 No				
c)		Air temp sensor-1 No.				
d)		Anemometer wind speed sensor-1 No.				
e)		Data Logger-1 No.				
f)		Power Supply-1 No.				
g)		Enclosure and mast-1 No.				
		The above job should be completed in all aspects				
15	SCADA System	Supply and installation of complete SCADA Control scope including but not limited to Solar Shed Control Cabinet, SCADA system for all sites, Ethernet Patch Cords, Fiber Optic LC/SC Duplex Multimode Pig tails, Ethernet cable, Control Cable 1.5mm sq 16 core CU Flexible, Fiber Optic cable multimode mode (4/6 Cores) , LCD size 85" etc including all related items (complete in all aspects i.e. Must ensure observability and controlability along with protection and control.)	1	Job		
K.Total Amount (Rs.)						