

# ASANSOL DURGAPUR DEVELOPMENT AUTHORITY

(A Statutory body of the Government of West Bengal)

**Durgapur Office :**

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**Asansol Office**

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Ref. No. ADDDA/DGP / ED/G-57 (P1-XXIII) / 15-16/475

Date : 09/10/2015

**Notice Inviting Tender (N.I.T. – Online) No.: ADDA/DGP/ED/N-57/15-16  
(Two-Cover Online Bid System)**

Executive Engineer, ADDA, Durgapur invites **Sealed Item Rate Tender** for the works noted below under TWO COVER BID SYSTEM (online) in Authority's contract form from reputed and resourceful contractors who have executed similar type of works (i) worth 40% of the estimated amount put to tender in a single contract or (ii) 2 (two) similar nature of completed work, each of the minimum value of 30% of the estimated amount put to tender or (iii) one single running work of similar nature which has been completed to the extent of 80% or more and value of which is not less than the desired value as mentioned (i) above during 5 (five) years prior to the date of issue of the tender notice in any Govt./Semi Govt./Undertakings/Autonomous Body/Statutory Body (except joint venture firm / consortium). In case of running works, only those tenderers who will submit the certificate of satisfactory running work from the concerned Exe. Engg. or equivalent competent authority will be eligible for tender. In the required certificate it should be clearly stated that the work is in progress satisfactorily and also that no penal action has been initiated against the executing agency, i.e. the tenderer. Detail information can be had from ADDA, Durgapur Office during office hours. For this N.I.T. visit our website [www.addaonline.in](http://www.addaonline.in) or <http://wb-tenders.gov.in>. For any help on e-tendering contact System Manager, ADDA (Ph. No. 9932802967)

Sl.	Name of work	Initial Earnest Money (in Rs.)	Price of Technical, Financial Bid documents and other annexure	Time allowed for the work	Defect liability period
1.	Design, supply, installation, testing and commissioning of on-grid solar PV power plant of Array capacity 60 KWp at roof top of First Administrative building, Durgapur of Asansol Durgapur Development Authority, West Bengal.	1,00,000.00	Rs.2,500.00 ( applicable for successful tenderer at the time of formal agreement)	4 months	5 years

Technical bid shall contain: Self attested copy of (1) Credentials (Completion certificate) possessed by the firm, Estimated amount, date of completion of the project, final work done amount of the project must be indicated in credential certificate. (2) Trade Licence (3) VAT registration certificate. (4) PT Registration certificate, (5) PAN Card, (6) Bank Solvency Certificate (25% of Estimated amount and not more than one year old) (7) Earnest money, in the form of DD/Pay Order in favour of Asansol Durgapur Development Authority payable at Durgapur, (8) E.P.F. Registration Certificate, (9) ESI Registration Certificate. Bank Solvency certificate should clearly mention the amount of solvency. Bank transaction statement / balance of account on a particular date or over any financial quarter will not be accepted as bank solvency. **Original DD / Pay Order must be submitted at the time of opening of technical bid.**

Financial bid should contain the price bid quoted in Financial Bid document. The rate quoted should include all sorts of taxes, duties, Cess as applicable. Technical bid will be opened first and if specific documents are found acceptable as per terms and conditions laid down above, the second part that is financial bid will be opened on the same day or at a later date subject to clarification of any points related to technical bid. As per Govt. of West Bengal order No. HF/BHP/KFW/156/2007/311 dated 17.08.2007 Cess @ 1% of cost of construction will be deducted at source from the bill of the contractor engaged in the work. In case of Registered Labour/Engineers Co-operative society, they should produce a photocopy of resolution of meeting of Board of Director empowering members to be Authorized Signatories of respective Co-Operative Society along with their application with the original resolution for verification. No conditional tenders will be accepted and the Executive Engineer, ADDA reserves the right to reject it without showing any reason. The Executive Engineer, ADDA reserve the right to cancel the e-NIT due to unavoidable circumstances and no claim in this respect will be entertained. Prospective tenderes should visit the site of work and get themselves fully acquainted with site conditions and accordingly quote their rates.

**The schedule of dates: -**

SL. NO.	PARTICULARS	DATE & TIME
1.	Date of Publishing of N.I.T. Documents (Online)	13.10.2015 at 5.00 p.m.
2.	Documents download start date (Online)	13.10.2015 From 5 p.m.
3.	Documents download end date (Online)	28.10.2015 up to 5.00 p.m..
4.	Bid proposal submission start date (Online)	28.10.2015 From 5.00 p.m..
5.	Pre Bid meeting and Proposed Site Visit	09.11.2015 at 12:00 Noon at ADDA , 1 <sup>st</sup> Administrative Building, City Centre, Durgapur-16
6.	Bid proposal Submission end date (Online)	23.11.2015 up to 5.00 p.m..
7.	Last Date of submission of Hard Copy At the Tender Box of ADDA , 1 <sup>st</sup> Administrative Building, City Centre, Durgapur-16	24.11.2015 up to 11:00 a.m.
8.	Bid opening date for Technical Bid Opening (Online)	24.11.2015 at 11.30 a.m..
9.	Date of Opening of financial bid	To be Notified Later

The Authority reserves the right either to accept or to reject any or all tender without assigning any reasons thereto.

**NOTE:** 1. In case of any Unscheduled Holiday on the aforesaid dates, the next working date will be treated as scheduled prescribed date for the same purpose.

2. Bidders will have to download the template for Price Bid (Excel sheet) and fill up the proforma for quoting rates and then upload in appropriate place.

3. Bidders will also have to upload scanned copies of the following within scheduled date:

(i) Credential Certificate, (ii) Trade licence (iii) VAT Registration Certificates, (iv) P. Tax Registration Certificate, (v) Bank Solvency Certificate (25% of Estimated Cost), (vi) PAN Card, (vii) DD/Pay Order for Earnest Money, (viii) E.P.F. Registration Certificate, (ix) ESI Registration Certificate.. Only scanned copies of above documents should be uploaded.

4. If any discrepancy arises between two similar clauses on different notifications, the clause as stated in later notification will supersede former one in following sequences:-  
(i) Prescribed ADDA tender form (ii) NIT (iii) Technical Bid (iv) Financial Bid.

5. Any Corrigendum and addendum will be published through ADDA website: [www.addaonline.in](http://www.addaonline.in)

6. Where there is a discrepancy between the rate in figures and words the rate in words will govern.

7. Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern.

8. Any change of BOQ will not be accepted under any circumstances.

Sd/-

Executive Engineer,  
Asansol Durgapur Development Authority.

## Detail Tender Notice

**1. Information about the work:**

1.	Name of Work	Design, supply, installation, testing and commissioning of on-grid solar PV power plant of Array capacity 60 KWp at roof top of First Administrative building, Durgapur of Asansol Durgapur Development Authority, West Bengal.
2.	Eligibility of the Bidder	The Eligibility Criteria is stated below in <b>Clause 2 below</b> .
3.	Estimated cost for 60 kWp power plant	Item Rate
4.	Cost of Tender Document	Rs.2,500 .00 (applicable for successful tenderer at the time of formal agreement)
5.	Earnest Money to be Deposited	Rs.1,00,000.00 (Rupees one lakh.)
6.	Time Period of Completion of Work :	120 (One Twenty) days from the date of handing over of site
7.	Name of the Concerned Office	<b>Asansol Durgapur Development Authority.</b> (A Statutory Body of Government of West Bengal) 1st Administrative Building, City Centre, Durgapur-16

**2. Eligibility criteria for participation in the Biding:**

Sl. No.	Eligibility Criteria	Supporting Documents Required
1	The Bidder should be a Company registered under the Indian Companies Act, 1956 / Partnership Firm and having the clearance of all statutory obligation	i) Registration Certificate under Company Act / Registered Deed for partnership Firm /Trade License (14-15 or 15-16) ii) VAT Registration Certificate, iii) Service Tax Registration Certificate, iv) PAN v) IT return for the Assessment year 14-15 vi) PF Registration Certificate /Proof of PF Registration vii) ESI Registration Certificate

Sl. No.	Eligibility Criteria	Supporting Documents Required
2.	<b>Credential</b>	(i) worth 40% of the estimated amount put to tender in a single contract or (ii) 2 (two) similar nature of completed work, each of the minimum value of 30% of the estimated amount put to tender or (iii) one single running work of similar nature which has been completed to the extent of 80% or more and value of which is not less than the desired value as mentioned (i) above during 5 (five) years prior to the date of issue of the tender notice in any Govt./Semi Govt./Undertakings/Autonomous Body/Statutory Body (except joint venture firm / consortium). In case of running works, only those tenderers who will submit the certificate of satisfactory running work from the concerned Exe. Engg. or equivalent competent authority will be eligible for tender.
2(a)	<b>Credential -1 :</b> <b>Technical :</b> The Bidder, as primary agency, must have the credential of satisfactory execution of contract(s) to design supply, installation and commissioning of a) One (01) number of similar type of Grid connected PV power Plant of PV Array Capacity 50 kWp or b) More than one numbers of similar type of Grid connected PV power Plant each of minimum capacity 25 kWp and total aggregated capacity of the PV Power plant is 50 kWp The installations must be anywhere in India during the period from 2010 onwards.	a) Copy of the Purchase order(s)/ Copy of the Agreement(s) with the purchaser b) Copy of the Completion Certificate(s)/ Commissioning certificate (s) from purchaser / ordering authority.
2(b)	<b>Credential -2 :</b> Bidder must be enlisted under Rooftop programme of MNRE Government of India	<b>Credential -2 :</b> Copy of the related page downloaded from MNRE Website/ Enlistment letter of MNRE Government of India
2©	<b>Credential-3 :</b> <b>Financial :</b>	Bank Solvency Certificate. (25% of Quoted Value)
4.	If the Bidder have their registered office outside West Bengal. The Bidder must have his own service centre/offices at anywhere in West Bengal	Copy of the Tread License for the year 14-15 or 15-16 in the name of the Bidder

### 3. Important date and time schedule

SL. NO.	PARTICULARS	DATE & TIME
1.	Date of Publishing of N.I.T. Documents (Online)	13.10.2015 at 5.00 p.m.
2.	Documents download start date (Online)	13.10.2015 From 5 p.m.
3.	Documents download end date (Online)	28.10.2015 up to 5.00 p.m..
4.	Bid proposal submission start date (Online)	28.10.2015 From 5.00 p.m..
5.	Pre Bid meeting and Proposed Site Visit	16.11.2015 at 12:00 Noon at ADDA , 1 <sup>st</sup> Administrative Building, City Centre, Durgapur-16
6.	Bid proposal Submission end date (Online)	23.11.2015 up to 5.00 p.m..
7.	Last Date of submission of Hard Copy At the Tender Box of ADDA , 1 <sup>st</sup> Administrative Building, City Centre, Durgapur-16	24.11.2015 up to 11:00 a.m.
8.	Bid opening date for Technical Bid Opening (Online)	24.11.20015 at 11.30 a.m..
9.	Date of Opening of financial bid	To be Notified Later

4. For e-Filing, the intending Bidders may download the Tender Document from the website <https://wbtenders.gov.in> directly with the help of Digital Signature Certificate. Earnest money will have to be remitted through **Demand Draft in favour of ADDA payable at Durgapur** and needs to be submitted to ADDA as per schedule and the same to be documented through e-Filing. **ADDA will not, however, be held responsible for late delivery or loss of the DD so mailed through post or courier.**
5. Both Technical Bid and Financial Bid should be properly indexed and submitted concurrently and electronically duly digitally signed in the website <https://wbtenders.gov.in>.
6. Tender Document may be downloaded from website. The Technical Bid and Financial Bid are to be submitted within the Time Schedule stated in this NIT.
7. The **Financial Bid** of the prospective qualified Bidder will be considered only if the **Technical Bid** of the Bidder(s) is found qualified by ADDA. The decision of the authority will be final and binding on all concerned and no challenge against such decision will be entertained. **The name of qualified Bidders will be displayed in the website before opening of the Financial Bid.**
8. The Bidder will be deemed to have carefully examined the Tender Document also to have been satisfied himself as to the nature and character of the system to be supplied and installed against the contract, and all relevant matters & details. Clarification if any will be considered only if pointed out by the firm in the Pre Bid meeting.
9. This Bid is a **No Deviation Bid**. Request for any deviation may be considered only if pointed out by any prospective Bidder(s) in the Pre Bid meeting. No deviation will only be considered with the bid.
10. The intending tenders should clearly understand that whatever may be the outcome of the present invitation of Bids, no cost of bidding will be reimbursable by ADDA. **ADDA, however,** reserves the right to reject any or all the bid(s) without assigning any reason whatsoever at any time prior to the award of Contract and is not liable for any cost that might have been incurred by any Bidder at the stage of bidding process. ADDA also will not be bound to accept either the lowest tender or any of the tenders.
11. Blacklisted bidders and / or bidders with debarring actions as on date due to any reason whatsoever, by any Government or Government Agencies will not be allowed to bid. In the event of any such information pertaining to the aforesaid matter found at any point of time either during the course of the contract or at the Bidding stage, the bid/contract will be liable for truncation / cancellation / termination without any notice at the sole discretion of ADDA.

12. The Earnest Money of the entire unsuccessful Bidders deposited along with the bids will be refunded by ADDA on receipt of application from Bidders immediately after finalization of the tender and placement of order.
13. If the offer is submitted without or inadequate Earnest Money, the bid will not be opened.
14. The intending Bidders are required to submit their offers online and offline also.
15. The eligibility of bidder has already been stipulated. The bidders will have to meet the minimum criteria as per NleT. The eligibility will be ascertained on the basis of the document(s) submitted in support of minimum eligibility criteria.
16. Submission of false document is strictly prohibited and if found action may be taken by referring to the appropriate authority for prosecution as per relevant IT Act with forfeiture of earnest money forthwith. If any document submitted by a bidder is either manufactured or false or fabricated, in such cases, the eligibility of the bidder will be rejected at any stage without any prejudice to take any penal action against him/them as may be deemed fit by ADDA.
17. ADDA reserves the right to cancel the NleT due to unavoidable circumstances and no claim in this respect will be entertained.
18. Before issuance of the **WORK ORDER**, ADDA will verify the credential(s) and/or other document(s) of the lowest bidder. After verification, if it is found that the document(s) submitted by the lowest bidder is/are not in order the bid will be cancelled and no work order will be issued in favour of the said bidder and the EMD will be forfeited.
19. If the dates of opening of Technical Bid and Financial Bid fall on holidays or on days of strike or natural calamity, the dates get deferred to next working days.
20. All Bidders are requested to be present online during opening of Bids positively. In no case his/her absence will stand against holding the same.
21. Issuance of work order as well as payment will depend on availability of fund and no claim whatsoever will be entertained for delay of Issuance of work order as well as payment, if any. However all efforts will be extended by ADDA to adhere to these commitments. Intending Bidders may consider these criteria while quoting their rates.
22. If any Bidder withdraws his offer after opening of bid without giving any satisfactory explanation for such withdrawals, the EMD submitted by the bidder will be forfeited and the bidder will be debarred from taking parts in the next three subsequent tenders of ADDA.
23. Any corrigendum, notification concern to this NleT will be published in the e-tender portal <https://wbtenders.gov.in>. The bidders are therefore advised to follow the websites for such notifications corrigendum etc.
24. **Other Information**
  - a) No consortium is allowed as bidder
  - b) Though adequate care has been taken for preparation of this document, the bidder will satisfy himself that the document is complete in all respects.
  - c) ADDA reserves the right to modify, amend or supplement this Tender Document.

## 25. Instruction to bidders

**a) Registration of Bidders**

Any Bidders willing to take part in the process of e-Tendering will have to be enrolled & registered with the Government e-Procurement system; through logging on to <https://wbtenders.gov.in> the contractor is to click on the link for e-Tendering site as given on the web portal.

**b) Digital Signature certificate (DSC)**

Each contractor is required to obtain Digital Signature Certificate (DSC) for submission of Bids, from the approved service provider of the National Information's Centre (NIC) on payment of requisite amount details are available at the Web Site of Guideline to Bidders DSC is given as a USB e-Token.

The contractor can search & download NleT and Tender Documents electronically from computer once he logs on to the website using the Digital Signature Certificate. This is the only mode of collection of Tender Documents.

**c) General process of submission**

Bids are to be submitted online through the website <https://wbtenders.gov.in> All the documents uploaded by the ADDA form an integral part of the Tender Document. Bidders are required to upload all the Tender Document along with the other documents, as asked for, through the above website within the stipulated date and time as given in the NleT.

Bidders are to be submitted in two folders - one is Technical Proposal and the other is Financial Proposal. The bidders will carefully go through the documents and prepare the required documents and upload the scanned documents in **Portable Document Format (PDF)** to the portal in the designated locations of Technical Bid.

The bidder needs to download the documents, fill up the particulars in the designated Cell and upload the same in the designated location of Technical Bid. He needs to download the BOQ, fill up the rates of items in the BOQ in the designated Cell and upload the same in the designated location of Financial Bid.

**A-1 Statutory Cover Containing**

- i) Demand Draft towards earnest money (EMD) as prescribed in the NleT against the work in favour of the ADDA. EMD draft should be uploaded in separate EMD fees folder under Technical Cover.
- ii) Bid Form on the letterhead of the bidder firm as per Performa- (1) as given in the Tender Document.

**A-2. Non statutory Cover Containing**

Sl. No.	Category Name	Sub-Category Description	Detail(s)
A	Certificate(s)	Certificate(s)	1. VAT registration Certificate
			2. Service Tax Registration Certificate
			3. PAN
			4. IT return for the Assessment year 14-15
			5. PF Registration Certificate/proof of PF Registration & ESI Registration Certificate

			6. Copy of the Tread license for the year 14-15 and 15-16 in the name of the Bidder as the proof of operational unit in West Bengal.
			7. Copy of the related page downloaded from MNRE Website / copy of the Enlistment letter of MNRE Government of India regarding enlistment under rooftop programme of MNRE GoI
B	Company Detail(s)	Company Details	9. Registration Certificate under Company Act ( Company Incorporation Certificate) Or Registered Deed of partnership Firm .
C	Credential	Credential -1	<b>10. Credential -1</b> a) Copy of the Purchase order(s)/ Copy of the Agreement(s) with the purchaser b) Copy of the Completion Certificate(s) or Commissioning certificate(s) from purchaser / ordering authority.
		Credential -2	<b>11. Credential -2</b> Copy of the related page downloaded from MNRE Website / copy of the Enlistment letter of MNRE Government of India regarding enlistment under rooftop programme of MNRE GoI
		Credetial-3	Bank Solvency Certificate. (25% of Quoted Value)

Note: - 1. Failure to submission of any of the above mentioned document(s) (as stated in A1 & A2) will render the Bid liable to be summarily rejected for both statutory & non statutory cover.

#### B. Financial proposal

- i. The financial proposal will contain Bill of Quantity in one cover (folder). He needs to download the BOQ, fill up the rates of items in the BOQ in the designated Cell and upload the same in the designated location of Financial Bid. The Bidders will offer the rate in the space marked for quoting rate in the BOQ.
- ii. The documents uploaded will be virus scanned and digitally signed using the Digital Signature Certificate (DSC).

#### d) Opening and evaluation of Bid:

##### Opening of Technical Proposal

- i. Technical proposals will be opened by the ADDA or his authorized representative electronically from the website stated above, using their Digital Signature Certificate.
- ii. Technical proposals for those Bids who's original DD towards EMD have been received will only be opened. Proposals corresponding to which original DD towards EMD has not been received, will not be opened and will stand rejected.
- iii. Intending Bidders may remain present if they so desire.

- iv. Cover (Folder) for Statutory Documents will be opened first and if found in order, Cover (Folder) for Non-statutory Documents will be opened. If there is any deficiency in the Statutory Documents, the Bid (offer) will summarily be rejected.
- v. Decrypted (transformed into readable formats) documents of the Statutory and Non-statutory Covers will be downloaded for the purpose of evaluation.

#### Technical Evaluation of Bid

- i. While evaluation, ADDA or his authorized representative may summon of the Bidders and seek clarification / information or additional documents or original hard copy of any of the documents already submitted and if these cannot be produced within the stipulated timeframe, their proposals will be liable for rejection.
- ii. After evaluation of the Technical Bids, summary list of Bidders, whose offer will be found eligible, will be uploaded in the web portals. Date of opening of financial bid will be intimated to the techno-commercially qualified Bidders.

#### Opening and evaluation of Financial Bid

- i) Financial proposals of the Bidders, declared Techno- Commercially eligible, will be opened electronically by ADDA from the web portal stated above, on the prescribed date.
- ii) The encrypted copies will be decrypted and the rates will be read out to the Bidders remaining present at that time.
- iii) After opening of the financial proposal the preliminary summary result containing inter- alia, name of Bidder and the rates quoted by them will be uploaded.
- iv) The Bidder whose offer has been accepted may be asked to produce the original hard copies of the documents as uploaded on demand of ADDA within a specified time frame for verification.
- vi) The Bidder whose offer has been accepted will be notified by ADDA through Letter of Acceptance and will be made available in the website <https://wbtenders.gov.in>



Executive Engineer,  
Asansol Durgapur Development Authority  
City Centre, Durgapur-16

*Handwritten signature and date*  
9/10/15

## Special Terms and Condition

### 1.0 Title of the Work

Design, supply, installation, testing and commissioning of grid connected solar PV power plant of Array capacity 60 KWp at roof top of First Administrative building, Durgapur of Asansol Durgapur Development Authority, West Bengal on Turnkey Basis

### 2.0 Location of Installations

Rooftop of First Administrative building, Durgapur

### 3.0 Scope of Work

The work is to be executed on Turkey Basis. The Purchaser will not supply any material. The scope of work will include but not limited to the followings:

- (a) Design of the system
- (b) Obtaining technical approval from the Purchaser
- (c) Timely procurement and transportation to site in properly packed condition of all equipment, materials and miscellaneous item required to complete the project
- (d) Receiving, unloading and transportation at site
- (e) Safe storage
- (f) Final check-up of equipment and commissioning and putting the system into successful functional operation.
- (g) Installation, synchronisation DPL Power testing and commissioning of power plant
- (h) Preparing commissioning certificate
- (i) Training and Handing over of power plant
- (j) Providing of routine and break down maintenance of PV Power Plants
- (k) Fulfilment of warrantee obligation as may arise

In addition to facilitate the installation work following work may have to take up be the contractor as per site condition. The activities, however, deemed to be included in the scoped of work.

- i. Removing of rubbishes and staking the serviceable materials at suitable within a lead of around 75m and lift around of 15 m from the installation site place as directed.
- ii. Cleaning of site identified for installation of different components of the power plants as may be required

The equipment and materials for grid connected Solar PV Power Plants of Array capacity 60 KWp will include but not limited to the following:

- a) PV Modules (Crystalline Silicon preferably poly crystalline)
- b) PV Module Mounting Structure
- c) PV Array Junction Box
- d) Grid -Tied String Inverter
- e) Web based on line data logger and Remote Monitoring Unit
- f) Inverter LT Panel
- g) Grid interfacing LT Panel
- h) Export Import Energy Meter
- i) Cable and Wires
- j) Earthing system arrangement.
- k) Fire Extinguisher
- l) Recommended spares, tools and tackles
- m) Signage
- n) Project Document
- o) Periodic operation Maintenance Log Book and Maintenance Manual, equipment Manual

4.0 **Water and Electricity:**

The arrangement of construction power and water, if required, during execution of the work, will be arranged by the contractor within the contract value.

5.0 **Overall Controlling Officer and Site Controlling Officer:**

As decided Executive Engineer, ADDA, Durgapur.

6.0 **Cost consideration of additional work:**

If the cost of any additional work required to be executed at any site could not be derived from the obtained rate of different items against this tender, the cost of additional work will be considered at per PWD (Govt. of WB) Schedules (latest) rate.

7.0 **Completion Time**

The work must be completed within **120 days** from the date of handing over of site

8.0 **Approval**

**Design and Drawing:** The contractor will obtain approval for all the designs associated with civil, mechanical and electrical work which includes design of foundation, structure cable sizing, fabrication work, layout design, wiring diagram etc. prior to the execution of work and for this purpose the contractor will submit all design and drawing for obtaining approval from ADDA.

**Materials:** Contractor will obtain approval for the materials deliverable under the project.

9.0 **Materials and Workmanship**

Qualified, experienced people should be deployed to install the **PV Power Plant**. All materials will be of the best quality and workmanship capable of satisfactory operation under the operating and prevailing climatic conditions of respective. Unless otherwise specified, they will conform in all respect to the latest edition of the relevant code and standards. The project must be supervised by a qualified Engineers so that the work will be as per drawing and related IS/IEC Code. The work will be performed confirming safety precaution of all level of worker execute the project.

10.0 **Insurance:**

The contractor must be responsible for transportation of material, loading and unloading, safe storage at site including its security and will hand over the complete system after commissioning.

It is therefore, purchaser advice the contractor to take appropriate insurance, to take of any eventuality that may occur till commissioning of the power plant.

Contractor will be solely responsible for recovery of any losses or damages or death or injury of their personal or others, if occur, during execution of work irrespective of insurance is done or not by the contractor.

11.0 **Warranty**

The contractor must ensure that the goods supplied under the contract are new, unused and of most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the contract.

The warrantee period of the complete PV Systems will be **60 calendar months** from the date of commissioning of the total project. However, the modules will have warranty for 25 years with

degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period as per guideline of MNRE Government of India.

The equipments or components, or any part thereof of the Power Plant, if so found defective during warrantee period, the contractor will remain liable to repair or replace immediately under warrantee obligation to the satisfaction of the Purchaser in order to ensure trouble free operation of the Power Plant.

In case of PV Module, the contractor has to transfer Performance Guarantee Certificate from the original manufacturer to the Purchaser for subsequent arrangement.

In order to ensure satisfactory performance of the Power Plant, the contractor should take up periodic maintenance as may be required and also attend breakdown maintenance as and whenever required within the warrantee period and scope under warranty obligation.

Within the scope of warranty, the Contractor will repair or replace of any defective part of the Plant & Equipment supplied, Works done and services rendered under the Contract and render periodic maintenance as a preventive measure to up keep performance of the power plant and also to attend breakdown maintenance as and whenever needed.

## **12.0 Comprehensive Maintenance contract (CMC)**

All the equipments (Except the SPV Modules for which the performance guarantee period is 25 years) will be provided with Comprehensive Maintenance for 5(five) years from the date of commissioning. The equipments or components, or any part thereof, so found defective during Comprehensive Maintenance period will be forthwith repaired or replaced within the scope of warrantee obligation to the satisfaction of the ADDA.

## **13.0 Maintenance service**

The maintenance of Solar Photovoltaic Power Plant include periodic maintenance, overhauling, attending breakdown maintenance, and repairing or replacement of defective PV modules, invertors, and other components, providing of consumables within the tenure of maintenance service of five years.

### **a) Routine maintenance:**

In order to carry out routine maintenance of the power plant, the contractor will provide all labour, material, consumables etc. within the scope of maintenance service. Routine maintenance will include but not limited to the followings:

- i) Checking and tightening of all electrical connections
- ii) Checking and tightening of mechanical fittings
- iii) Checking and restoring of earthing system,
- iv) Dusting and cleaning of Inverter and other electrical equipments
- v) Routine maintenance as recommended by the Original Equipment Manufacturer
- vi)

**b) Breakdown maintenance:**

Breakdown maintenance will include but not limited to the followings:

- i) Breakdown maintenance will mean the maintenance activity including repairs and replacement of any component or equipment of the power plant, which is required to be carried out as a result of any sudden failure/breakdown of that particular component or equipment while the plant is running.
- ii) The contractor will be responsible to carry out breakdown maintenance of the power plant and will provide the required manpower, materials, consumables, components or equipment etc. for breakdown maintenance.
- iii) The contractor will undertake necessary maintenance/ troubleshooting work of the Solar PV Power Systems. Down time will not be more than 03 (three) working days from time of occurrence or reporting. However, if the breakdown is not repairable within 3 (three working) days due to some specific reason, the contractor must seek extension of time by giving sufficient acceptable reasons within three working days of the occurrence of the fault. In such case, the contractor will also specify the specific date within which the fault will be restored and the system will be put in operation again. However, the final decision taken by the Purchaser considering all such reason will be binding for the contract.
- iv) Each and every complaint communicated by any means either from Purchase or User, the contractor will acknowledge the complaint by providing specific complain registration number in order to track the response of the complaint.

**c) Maintenance Report**

Maintenance register must be maintained at site. However quarterly maintenance report along with the monthly generation statement submitted by the contractor to PURCHASER on quarterly basis.

**14.0 Earnest Money**

Initial Earnest money Rs.1,00,000.00 (Rupees one lakh.) only. Balance amount of earnest many (i.e. 2.00% tendered amount – Rs.1,00,000.00) to be paid at the time of Formal Agreement in the form of DD/ Pay Order in favour of Asansol Durgapur Development Authority, payable at Durgapur.

**15.0 Security Deposit :**

10.00% of Quoted Value. (8.00% from R.A. Bill and 2.00% from Earnest many deposited)

**16.0 Price:**

The Basic price is fixed and firm. However if the tax structure will change it may be considered by ADDA against the prayer of the Contractor.

Prices will be quoted and payable in Indian Rupees only.

**17.0 Payment:**

All payments to be made to the Contractor under the contract will be in Indian rupees only. Payment schedule proposed to be as follows:

As per ADDA Norms

18.0 Taxes , Duties, Levies :

As applicable.

19.0 End Users Training

The Contractor will arrange for training at site for the end users. The contractor will provide training materials for the training programme. **The training will be the part of contract and no extra cost will be provided for organizing the training programme.**

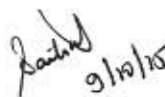
20.0 Handing Over

The work will be taken over by PURCHASER upon successful completion of all tasks to be performed at site(s) on equipment supplied, installed, erected, commissioned and run **successfully for 30 days** by the contractor in accordance with provision of this order. During handing over complete project work, the contractor will submit the followings for considering final payment.

- i. All As-Built Drawings & Design of the power plant
- ii. Detailed Engineering Document with detailed specification, schematic drawing, Design and test results, manuals for all deliverable major items, Operation, Maintenance & Safety Instruction Manual and other information about the project
- iii. Bill of materials
- iv. Inventory of spares at projects sites
- v. Completion certificate as per prescribed format provided by ADDA



Executive Engineer,  
Asansol Durgapur Development Authority  
City Centre, Durgapur-16



## General Terms and Conditions

### 1.0 Mode of Execution

The Work will be procured as a complete package. The entire work will have to be executed on turnkey basis. Any minor item(s) not included in the schedule or specification but required for completion of the work will have to be carried out/supplied without any extra cost. While submitting the offer the Bidder will consider cost of those items and may indicate separately as additional deliverable items

### 2.0 Equipment and Materials:

All materials and equipment will be supplied by the contractor. The supply of materials will also include transportation, loading and unloading at work site Contractor will arrange pilfer proof proper storage at his own cost and risk at site for their equipment and materials. The complete system will be under the custody of the contractor till successful commissioning and handing over, at his own risk and cost. PURCHASER in no case will be held responsible for any loss/damage or theft of materials / equipment, so long those will continue to remain under the custody of the contractor.

Equipment and material will comply with description, rating, type and size as detailed in this specification. Equipment and materials furnished will be complete and operative in all respect. All accessories, which are necessary for safe and satisfactory installation and operation of the equipment, will be provided by the contractor. All parts will be made accurately to standard gauges so as to facilitate replacement and repair in due course. All corresponding parts of similar equipment must be interchangeable. Contractor will carefully check the available space and the environmental conditions for installation of all equipments at site and will design the system accordingly.

### 3.0 Tools & Tackles :

The contractor will provide all reliable tools & tackles for proper execution of work. Purchaser will in no way, be responsible for supply of any tools & tackles for execution of the work.

### 4.0 Codes and Standards

All equipment and materials to be furnished under this specification will be designed, manufactured and tested in accordance with the latest revisions of the relevant Indian Standard (IS)/IEC/MNRE as applicable.

The electrical installation will meet the requirement of Indian Electricity Act, and Indian Electricity Rules as amended up-to-date and also the applicable section of the latest revision of the relevant IS Code of Practice.

### 5.0 Statutory Acts:

The work will be done in compliance with the IS Specification, I.E. Rules, Indian Electricity Acts, other relevant Rules, Act and Regulation now in force with latest amendments, if any.

### 6.0 Testing and Inspection

Material Inspection will be carried out on submission of all test reports /certificates after manufacturing and on formal intimation for inspection and testing. The contractor will give notice for inspection and testing of any material being ready for dispatch. The Purchaser or its authorized representative, if desires, will attend at the manufacturing shop and may proceed with the routine tests. The material will have to be dispatched at site only after clearance from the purchaser. The inspection setup and instruments must be arranged by the contractor within the contract price.

**7.0 Commissioning**

After installation and testing of the equipment/works as per above, commissioning of the power plant and works will be carried out and here the term "Commissioning" will mean the activities of functional testing of the power plant after installation and testing, including tuning or adjustment of the equipment for optimum performance and demonstrating to the Purchaser that the equipment performance meets the requirements of the specifications.

**8.0 Road Permits**

The contractor will arrange the waybill if required.

**9.0 Accident Risk:**

Purchaser will not be responsible in connection with any sort of accident which may occur during transportation of materials/equipment, execution/ maintenance of works of the PV Power Plant. The Contractor will have to provide safety precautionary arrangement for his workmen in order to avoid any such incident / accident.

**10.0 Stoppage of Work :**

Purchaser will neither be responsible nor be liable to bear any compensation for any interruption of work in the site due to war, strike, earthquake, lightning, flood, cyclone etc. Purchaser will also not responsible for any compensation due to stoppage of work as a reaction from the local public due to any undue action on the part of the contractor causing annoyance

**11.0 Force Majeure**

For purpose of this clause, "Force Majeure" means an event beyond the control of the contractor and not involving the contractor's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and fright embargoes etc. Whether a "Force majeure" situation exists or not, will be decided by Purchaser and its decision will be final and binding on the contractor and all other concerned.

In the event that the contractor is not able to perform his obligations under this contract on account of force majeure, he will be relieved of his obligations during the force majeure period. In the event that such force majeure extends beyond six months, Purchaser has the right to terminate the contract.

If a force majeure situation arises, the contractor will notify the Purchaser in writing promptly, not later than 14 days from the date such situation arises. The contractor will notify the Purchaser not later than 3 days of cessation of force majeure conditions. After examining the cases, the Purchaser will decide and grant suitable additional time for the completion of the work, if required.

**12.0 Liquidated Damage :**

Scheduled date of completion will be treated as essence of the contract. Liquidated damage will be imposed at the rate of 0.5% of the unexecuted value per week delay up to a maximum of 2.5% at the sole discretion of the Controlling Officer. If there is a valid acceptable reason for delay of execution, the Controlling Officer may at his discretion consider lower down of the penalty rate or even waive the penalty on having written prayer from the contractor along with valid reason.

**13.0 Risk Purchase :**

If the contractor fails on receipt of the order, to take up the work within reasonable period or leave the work site after partial execution of the work, the Purchaser will have the liberty to get the work done through other agency at his (Contractor) risk, cost and additional cost if any. If the situation so warranted to compel the Purchaser to cancel the order placed on the Contractor, he (Contractor) will be liable to compensate the loss or damage, which the Purchaser may sustain due to reasons of failure on his part to execute the work in time.

14.0 Disputes:

Dispute (s), if any, will be settled by mutual agreement through Amicable Settlement and in case of failure, the dispute(s) will be settled through Arbitration.

**Amicable Settlement**

If any dispute(s) is not resolved through mutual settlement, Purchaser and Contractor will attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the forty-fifth day after the day on which notice of dissatisfaction was given, even if no attempt at amicable settlement has been made.

**Arbitration:** Unless settled amicably, any dispute will be finally settled by arbitrator(s) who will be appointed from amongst the suitably qualified person(s) to be agreed by both the parties for arbitrations. **The Arbitration and Reconciliation Act 1996 will apply.**

15.0 Legal case:

All attempts must be made to settle any dispute through mutual agreement or through arbitration. In case, if such attempts fail, settlement is required to be made within the jurisdiction of Kolkata High Court only.



Executive Engineer,  
Asansol Durgapur Development Authority  
City Centre, Durgapur-16

9/10/15

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# Technical Specification

## Technical Specification of 60 kWp Grid –Connected Solar PV Power Plant

### 1.0 Outline of the scheme of the project :

- 1.1 The array capacity of the PV Power plant will be minimum **60 kWp**.
- 1.2 The PV array will be installed at the available space earmarked at project site.
- 1.3 The power from PV array will be feed into grid through 2Nos. grid Connected string inverter of minimum nominal capacity 25 kVA, 3Ø 415 V 50Hz AC
- 1.4 Outputs of the grid-tied string inverter will be terminated to an **Inverter combiner LT Panel** to be located close to the inverters.
- 1.5 The output of the **Inverter combiner LT Panel** will be terminated and connected with supply mains through a **Grid interfacing LT Panel**.
- 1.6 An Export Import Energy Meter to be installed nearer to the Grid interfacing Panel or nearer to the Inverter combiner panel before connected to the mains to measure the energy produce from the PV Power Plant
- 1.7 The SPV power plant to be installed should be Robust, Economic, Efficient and Time tested and having a good aesthetic view matched with the Building.

### 2.0 Solar PV Modules

The Cell of the Modules will be crystalline silicon preferably poly-crystalline silicon. The capacity will be consider as per declared capacity in the published technical brochures of the proposed PV Module Manufacturer.

Any of the following types of PV Modules can be used:

Type	PV Module capacity type	No of PV Cell
Type -1	240 Wp/250 Wp	60 Nos.
Type-2	290 Wp / 300 Wp	72 Nos.

However no mismatch in PV Module type will be allowed

The PV modules must qualify the relevant **IEC 61215 or IS 14286 and IEC 61730**. The proposed PV Module must have the Test Certificate issued from accredited test laboratories of MNRE Government of India under JNNSM Programme. The test certificates issued from IEC accredited laboratories will also be acceptable.

**Proposed PV Module must be manufactured in India.**

Each PV module used in this solar power project must use an RF identification tag. The information must be mentioned in the RFID used on each module as per guideline of MNRE Government of India (This can be inside or outside the laminate, but must be able to withstand harsh environmental condition)

### Performance Warranty:

The manufacturer should warrant the output of Solar Module(s) for at least 90% of its rated power after initial 10 years & 80% of its rated power after 25 years from the completion of trial run at site.

If, Module(s) fail(s) to exhibit such power output in prescribed time span, the Contractor will either deliver additional PV Module(s) to replace the missing power output with no change in area of land used or replace the PV Module(s) with no change in area of land used at Owner's sole option.

**Manufacturer of proposed PV modules must have the ISO 9001:2008 or ISO 14001 Certification for their manufacturing unit for their said manufacturing item.**

**Desired specification of the PV Module will include but not limited to the following:**

Sl No	Item	Description
1.0	Certification	i) IEC 61215 or IS 14286 ii) IEC 61730
1.1	Type Test certificate issuing authority.	NABL/ IEC Accredited Testing Laboratories or MNRE accredited test centers.
2.0	PV Cell	
2.1	Type	Crystalline Silicon preferably Poly-crystalline Silicon
3.0	PV Module	
3.1	Rating at STC	i) 240 Wp/ 250Wp, 60 cells (without any negative tolerance) ii) 290 Wp / 300Wp, 72 cells (without any negative tolerance)
3.2	Efficiency	minimum 15%
3.3	Fill factor	Minimum 70%
3.4	Withstanding voltage	1000V DC
3.5	Glass	
3.5.1	Thickness	3.2 mm (minimum)
3.5.2	Type	High transmission, low iron, tempered & textured glass.
3.6	PV Module Junction Box	
3.6.1	Protection level	IP 65 or above
3.7	Bypass Diode	
3.7.1	System Voltage (V sys)	1000 V dc
3.7.2	Number	3 numbers (minimum)
3.8	Module Frame	
3.8.1	Type	Anodized aluminum frame

### 3.0 PV Array

**Desired specification of the PV Array will include but not limited to the following:**

Sl No	Item	Description
1.0	Nominal Capacity	Minimum 60 kWp
2.0	PV Module interconnection connector	MC-4 / Tyco connector
3.0	PV Module interconnection cable and array cable	PV 1-F standard /NEC standard "USE-2 or RHW-2" type
4.0	PV array String Voltage	Compatible with the MPPT Channel of the inverter

#### 4.0 PV Module Mounting Structure

During Structural design following points must be include but not limited to the following:

- (i) The Module Mounting structure must be made of MS as per IS Standard (latest edition)
- (ii) Weight of the Metallic part of PV Array structure excluding nuts and bolt must be minimum same weight of PV Module of the total PV Module.
- (iii) The structure should be capable of withstanding a wind load of 180 km/hr after installation.
- (iv) All structures including any metallic part thereof must be protected against any corrosion. The structures must also be compatible with the materials used in the module frame, fasteners, fixtures, nuts, bolts or any similar nature of metallic components whichever are required to complete the job.
- (v) The array structure will be made of hot dip galvanized MS structure of minimum galvanizing thickness 80 micron
- (vi) Structures will be supplied complete with all members to be compatible for allowing easy installation.
- (vii) The module mounting structure will have to be designed and fabricated with tilt angle not less than the latitude of the installation place.
- (viii) The structure will be designed for easy and simple mechanical and electrical installation. It will support SPV modules at the mentioned orientation and absorb, transfer the mechanical loads to the ground or any suitable/ existing strength structure as deemed fit.
- (ix) Nuts and Bolts of Array structure

Usage Location	Type of Nuts and Bolt
PV Module fixing nuts and Bolts with the PV Module structure	Stainless steel
All other Nuts and Bolts of PV Module mounting Structure	MS chrome plated (GI)

- (x) All fasteners, fixtures for supporting conduits will be made with stainless steel or aluminum
- (xi) Supporting structures including module Mounting structure will have to be adequately protected against all climatic condition. The array structure will support SPV modules at a given orientation and absorb and transfer the mechanical loads to the columns or any suitable structure as deemed fit.
- (xii) The structures will be designed for simple mechanical and electrical installation. There will be no requirement of welding or complex machinery at the installation site.
- (xiii) Detailed engineering, drawings, specification and instructions for civil and other related structural works will be prepared by the Contractor/ architectural firm for erection and installation of the PV Array structure. Before execution of the same, prior approval is to be taken from Purchaser.
- (xiv) The supplier will specify installation details of the PV modules and the support structures with appropriate diagrams and drawings.

#### 5.0 PV Array Junction Box (AJB)

Array Junction Box (AJB) shall have to be used for termination of string prior connecting array with each inverter. There shall be two Arrays Junction Box incase, the inverter is located elsewhere away from PV Array. The minimum one number of PV Array Junction Box

will be **against each inverter**. The desired specification of the PV Array Junction Box and accessories shall include but not limited to the following:

Sl No	Item Description	Desired Data
1.0	Enclosure	
1.1	Degree of Protection	IP65 with UV Protected
1.2	Material	Polycarbonate.
1.3	Withstanding voltage	1000V DC
1.4	Withstanding Temperature	100 °C
1.5	Accessories mounting arrangement	DIN Rail or as suitable
1.6	Front cover	Transparent
1.7	Number of Strings entry	As may be required
1.8	Approved Make	Hensel/ Spelsberg /ABB /Ensto or or equivalent make <i>(as per acceptability of PURCHASER)</i>
2.0	Cable Entry and Exit	
2.1	Position	Bottom at cable entry and exit
2.2	Cable Entry and Exit connector type	MC 4 / Tyco Connector ( PV Array String cable)
2.3	Cable gland	Earthing cable entry
3.0	Surge Protecting Device (SPD)	
3.1	Type	DC
3.2	Approved Make	OBO Betterman / Dehn / Citel /ABB or equivalent make <i>(as per acceptability of PURCHASER)</i>
3.3	Protection class	Type 2
3.4	Rating (8/20)	20 kA
3.5	Number of set	As may be required as per string Design (minimum 1 set against each MPPT Chanel)
4.0	Fuse with fuse holder	
4.1	Position	Positive and negative terminal for each series string
4.2	Type	Glass fuse, for PV Use only
4.3	Rating	Current: Minimum <b>1.25</b> times the rated short circuit current of the series string
4.4	Approved make	Cooper Bussman/ Ferazz Shamut or equivalent make <i>(as per acceptability of Purchaser )</i>
5.0	Earthing Provision	Terminal blocks will have to be provided for Earthing
6.0	Terminals, lugs and bus bar	Tinned copper

## 6.0 Grid Connected Inverter

The power from PV array is to be feed into grid through two numbers of grid connected string inverter each of minimum nominal capacity of 25 kVA, 3Ø, 415 V, 50Hz AC

The string inverter to be supplied should be field proved in Indian context and must have good track record for satisfactory operation for at least six months. In this respect, performance certificate from any user may have to be submitted in due course (during finalization of inverter) if necessary. The Inverter to be supplied must have technical service support setup in India and having the factory testing facility (Routine test) in India.

Desired **specification of each 25 kVA** string inverter will include but not limited to the following:

Sl. No.	Operating Parameter	Desired specification
1.0	Type	Grid Connected String Inverter
2.0	Usage	Specially used for PV system
3.0	Standards	

Sl. No.	Operating Parameter	Desired specification
3.1	Efficiency Measurement	IEC 61683/ Equivalent BIS Std.
3.2	Environmental testing	IEC 60068-2 (1,2,14,30) / Equivalent BIS Std.
3.3	Interfacing with utility grid	IEC 61727 or Equivalent
3.4	Islanding Prevention Measurement	IEC 62116 or Equivalent
3.5	Type Test certificate issuing authority (for item no 3.1 , 3.2)	Accredited Testing Laboratories.
4.0	<b>Input (DC)</b>	
4.1	Aggregated PV array connectivity capacity	30 kWp (minimum)
4.2	MPPT Voltage range	Compatible with the array voltage
4.3	Total number of MPPT	two or more
5.0	<b>Output (AC)</b>	
5.1	AC Active Power	25 kW at unity pf
5.2	AC Grid Connection	3Ø 400 V + N 50Hz ,
5.3	Adjustable AC voltage range	As per prevailing Grid code.
5.5	Frequency range	As per prevailing grid code
5.6	AC wave form	Pure Sine wave
5.7	THD	As per prevailing Grid code.
6.0	<b>General Electrical data</b>	
6.1	Efficiency	minimum 95 %
6.2	Sleep mode consumption	Less than 10 W
7.0	<b>Protection</b>	
7.1	DC Side	1. Reverse-polarity protection 2. Reverse current to PV array protection, over voltage, Under voltage protection 3. Over current
7.2	AC side	1. DC inject protection to grid 2. Over voltage and Under voltage 3. Over current 4. Over and under grid frequency protection, 5. Anti Islanding protection
7.3	Isolation Switch	PV array Isolation switch ( DC) ( If DC isolating Switch is not provided in the inverter it will be provided by the contractor separately nearer to the inverter
7.4	Ground fault detection device (RCD) which can detect changes in ground current. Rating will be as suitable for inverter	To be provided for transformer-less inverter.
8.0	<b>Display</b>	
8.1	Display type	LCD /LED Display
8.2	<b>Display parameter</b>	
8.2.1	DC	Voltage Current Power
8.2.2	On grid connected mode	Line status Grid voltage Grid frequency Export Power Cumulative Export Energy

Sl. No.	Operating Parameter	Desired specification
9.0	Interface (Communication protocol)	Suitable port must be provided in the inverter for i) On site upgrade of Software, ii) On site dumping data port, iii) Web based remote monitoring system
10.0	Web monitoring	Matched with the monitoring and data logging system
11.0	Mechanical Data	
11.1	Protection Class	IP 65( Outdoor type) IP 54 (Indoor type)
11.2	Temperature	0 <sup>o</sup> C to 55 <sup>o</sup> C
11.3	Cooling	Natural / forced cooling
11.4	Type of Fixing	Wall Mounted

#### 7.0 Web enable on line data logger and Remote Monitoring Unit :

- (i) Web enable data logging system may be an integrated part of the inverter or a separate unit.
- (ii) The data Logger should have the provision of recording electrical parameters on DC and AC side at different stages to study performance of system as well as to study status of the system at a particular instant. The data logger should have required transducer to monitor and record the required system data.
- (iii) Web based Remote Monitoring system must be compatible with data logger.
- (iv) The other required accessories, hardware and compatible software will have to be provided as an integrated part of the system to monitor the real time data (maximum 20 minutes delay) through web server. The Data logger will continuously send data to the server.
- (v) The system can be monitored from anywhere through internet without installing any specific application software. The server will not be provided by the Purchaser.
- (vi) **The rental charges and other charges of the IP address, data storage space in the host server and free access of the Data through Web for a period of five (5) years will be included in the Quoted price.**
- (vii) The contractor will supply and install data cable with required switch or router having sufficient number of port from the Web-enabled Data Logger up to the existing/ future internet facility at the project site for data communication to WEB.
- (viii) In case the data cable to be laid at outdoor for a significant distance, SPD (surge suppressing device) suitable for communication network, as much number at suitable location are required must be provided with the system.
- (ix) The data logger and remote monitoring system is not inbuilt to the inverter then the data logger and the remote monitoring system must be put into a , a Polycarbonate enclosure having transparent front panel
- (x) The Web based monitoring system should have the provision of graphical representation of the data will include but not limited to the following:

Sl. No.	Operating Parameter	Desired specification
1.0	Input data	PV Power PV Energy
2.0	Output data	

2.1	Inverter	Export Power Export energy
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All data will be recorded chronologically date wise. The data file should be MS Excel/XML/or any readable form compatible and should have the facility of easy downloads

### 8.0 Inverter Combiner LT Panel

Each output of the string Inverter will be terminated in an **Inverter Combiner LT Panel** through 415V TPN MCB at the output of the string inverter.

Desired specification of **Inverter LT Panel** will include but not limited to the following:

Sl No	Parameter	Desired Specification
1.0	In coming MCB (Inverters side)	
1.1	Number	02(two) numbers
1.2	Approved make	ABB / L&T / Siemens/ Schneider /Hager/ Legrand/ Havells/Crabtree or equivalent ( <i>as per acceptability of Purchaser</i> )
1.3	Number	01(one) number
1.4	Type	4 pole
1.5	Rating	415V, 63A, 10 kA
2.0	Outgoing MCCB (Grid Side)	
2.1	Number	01(one) number
2.2	Approved Make	ABB / L&T / Siemens/ Schneider /Hager/ Legrande or equivalent ( <i>as per acceptability of PURCHASER</i> )
2.3	Type	TPN
2.4	Rating	415V ,125 A , 50 kA
3.0	Surge protection device	
3.1	Number	02 (two) Numbers against each inverter
3.2	Approved Make	OBO Betterman / Dehn / Citel /ABB or equivalent make ( <i>as per acceptability of Purchaser</i> )
3.3	Usage as declare by Manufacturer	For AC use only
3.4	Protection class	Type 2
3.5	Number of set	01 Set
3.6	Rating	20 kA (minimum)
4.0	Indicator	R,Y,B
4.0	Earthing Provision	Terminal Blocks will have to be provided for Earthing
5.0	Enclosure	
5.1	Degree of Protection	IP-42/43 for indoor type or IP 65 for outdoor type
5.2	Type	double door sheet steel (16SWG), powder horizontal / vertical enclosure dust and vermin proof
5.3	Type of Fixing	Wall mounted
5.4	Accessories mounting arrangement	DIN Rail or as suitable
5.5	Number of entry and exit	As may be required

### 9.0 Grid interfacing LT Panel

Output of the Inverter Combiner LT panel will be terminated to a **Grid Interfacing LT Panel**. The Grid Interfacing Control Panel will be installed nearer to the feeder pillar panel of 300A 415 V LT BUS

outside the building. The Grid interfacing panel will be installed in a separate outdoor type Feeder Pillar Housing to protect the control panel from rain water dust and vermin.

Desired specification of each **Grid interfacing LT Panel** will include but not limited to the following:

Sl No	Parameter	Desired Specification
1.0	Isolator	
1.1	Rating	150A
1.2	Type	TPN
1.3	Handle	To be provided
1.4	Approved make	ABB / L&T / Siemens/ Schneider /Hager/ Legrande or equivalent ( <i>as per acceptability of PURCHASER</i> )
4.0	Indicator	R,Y,B
5.0	Earthing Provision	Terminal Blocks will have to be provided for Earthing
6.0	Enclosure of the control panel	
6.1	Degree of Protection	IP-42/43
6.2	Type	double door sheet steel (16SWG), powder coated horizontal / vertical enclosure dust and vermin proof
6.3	Type of Fixing	Wall mounted/ structure mounted type
6.4	Accessories mounting arrangement	DIN Rail or as suitable
7.0	<b>Feeder pillar Housing</b>	
7.1	Installation	Feeder Pillar panel Box will be installed of a brick work structure of minimum height 500mm. The base brick work structure must be properly cement plaster and neat cement finish.
7.2	Feeder Panel Box material	Metallic
7.3	Type	Outdoor type
7.4	Size	Suitable for housing of Grid interfacing panel

#### 10.0 Plant Metering Arrangement:

The Plant metering system may be included in the Inverter Combiner panel or Grid interfacing LT Panel as per suitability. The system metering system will include but not limited to the following:

Sl No	Parameter	Desired Specification
1.0	Metering Arrangement	
1.1	Instantaneous Measuring parameter	i. Voltage, ii. Current
1.2	CT/ PT Make	KAPPA/ SERVO/AE/ KALPA or equivalent make ( <i>as per acceptability of PURCHASER</i> ).
1.3	Type of meter	Electronics
1.4	Display type of meter	LED/LCD
1.5	Meter Make	L&T / Siemens/ Schneider/ Secure or equivalent ( <i>as per acceptability of PURCHASER</i> )

## 11.0 Export Import Energy Meter :

One number 3 Ø 4 wire 415V AC 3X (20A-100A) whole current **Export Import Energy Meter of L&T / Genus / Secure or equivalent as per acceptability of Purchaser.** The Meter to be supplied must be tested and calibrated. The export Import Energy meter will be installed at the separate housing within an enclosure. The Export Import Energy meter will be installed at a suitable location before Point of Common Coupling (PCC) with grid side in the feeder Pillar Box or nearer to the Inverter Combiner LT. The meter must be put into a Polycarbonate enclose of IP 54 with transparent front cover

## 12.0 Cables & Wirings :

The Specification of wiring material of PV Power plant will include but not limited to the following:

Sl No	Item	Description
A	DC Cable for Array field	
1.1	Conductor	Tinned annealed stranded flexible copper according to IEC 60228 class 5
1.2	Standard	PV-1F / 2 PfG 1169/08.2007 / VDE Standard E PV 01:2008-02 /Equivalent
1.3	Make	LAPP/Top Solar/Nexans/ Schneider/Polycab or equivalent ( <i>as per acceptability of Purchaser</i> )
B	AC Cable	
2.1	Rated Voltage	1.1kV
2.2	Construction	
2.2.1	Conductor	Copper
2.2.2	Insulation	XLPE
2.2.3	Make	RR Cable/ Polycab/LAPP/ Havell's /MESCAB or equivalent ( <i>as per acceptability of Purchaser</i> )
C	PVC Conduit tees, bends etc	
3.0	Standard	ASTM D 1785 u PVC
3.1	Ambient Temperature	0 °C to 50 °C
3.2	Type	UV stabilized , temperatures, Shock proof chemical resistant
3.3	Make	Oriplast /Supreme o or equivalent ( <i>as per acceptability of Purchaser</i> )
D	GI Pipe	
4.0	Make	TATA/ Jindal/Bansal or equivalent ( <i>as per acceptability of Purchaser</i> )

### Guideline of Cabling

- i) The Buried Cables must be run through GI conduit in the cable is unarmored
- ii) The cable must be laid through PVC conduit or GI pipe on roof and indoor. In case of using metallic pipe as conduit proper grounding of the conduit must be done.
- iii) Conductor size of cables and wires will be selected based on efficient design criteria. The wiring size of will be designed such that maximum voltage drop at full power

From the PV Array to Inverter(s) should be less than 2%.

From Inverter to AC Grid interfacing panel should be less than 3%.

- iv) Cable terminations will be made with suitable cable lugs & sockets etc, crimped properly and cables will be provided with dry type compression glands wherever they enter junction boxes/ panels/ enclosures at the entry & exit point of the cubicles. The panels bottoms should be properly sealed to prevent entry of snakes/lizard etc. inside the panel. All cables will be adequately supported. Outside of the terminals / panels / enclosures, will be protected by conduits. Cables and wire connections will be soldered, crimp-on type or thimble or bottle type.
- v) Only terminal cable joints will be accepted. Cable joint to join two cable ends will not be accepted.
- vi) All cable/wires/control cable will be marked with good quality letter and number ferrules of proper sizes so that the cables can be identified easily.
- vii) All cable will be suitable marked or coded for easy identification. Cables and wires will confirm to the relevant standards suppliers to specify the specification.
- viii) GI cable tray with perforation of suitable size must be used for laying of cable on the floor or Roof.
- ix) All fasteners will be made of Stainless steel or Aluminum.
- x) Minimum two number loop must be provided at the start and end each span of underground cable laying.

**13.0 Cable from Inverter Panel to Grid Interfacing Panel upto Point of Common Coupling**

Supply laying fixing of **3 and ½ core 1.1 kV** Grade armoured, XLPE insulated , minimum **35 sqmm** copper cable comply with the design and guideline as per Technical Specification clause **No 12.0** from Inverter Panel to Grid interfacing Panel to Point of Common Coupling (Supply Mains) . **The cable is of RR Cable/ Polycab/LAPP/ Havell's /MESCAB or equivalent make (as per acceptability of Purchaser).** This also includes lying, Glanding, termination of cable in all complete.

**14.0 Equipment and array structure earthing:**

- i. Equipment grounding (Earthing) will connect all non-current carrying metal receptacles, electrical boxes, appliance frames, chassis and PV panel mounting structures in one long run. The grounding wire should not be switched, fused or interrupted.
- ii. Earth busbar of galvanized (Hot Dip) MS flat 25 mm x 6 mm on wall having clearance of 6 mm from wall including providing drilled holes on the busbar complete with GI bolts, nuts, washers, spacing insulators etc. as required
- iii. Connecting the equipments to earth busbar including S & F GI (Hot Dip) wire of size as below on wall/floor with staples buried inside wall/floor as required and making connection to equipments with bolts, nuts, washers, cable lugs etc. as required and mending good damages Solid GI wire of 4 SWG or 20 mm x 3 mm galvanized (Hot Dip) MS flat as per suitability.
- iv. Array Structure must be connected to the earth with S&F 20 mm x 3 mm galvanized (Hot Dip) MS flat on wall/floor with GI saddles as required and connection to equipments incl. drilling holes, with bolts, nuts, washers etc

- v. The complete earthing system will be electrically connected to provide return to earth from all equipment independent of mechanical connection.
- vi. Test point will be provided for earth pits.
- vii. Earthing system design should be as per the standard practices.
- viii. The Earthing pit must be of Chemical gel type with Chem-Rod as grounding rod.
- ix. The Code of Practice Earthing will be IS 3043 (latest edition)
- x. Necessary provision will be made for bolted isolating joints of each earthing pit for periodic checking of earth resistance.
- xi. **Minimum four (04) numbers of earth pit.**
- xii. Earthing Pit Cover needs to be provided. Masonry enclosure on the top of the earth electrode of overall size 86.36 cm x 86.36 cm x 46 cm deep (below Ground level) complete with cemented brick work(1:6) of 25 cm width duly plastered with cement mortar (inside) CI hinged inspection cover of size 36.56 cm x 35.56 cm with locking arrangement.

#### 15.0 PV Array Cleaning Arrangement

Necessary equipment is to be provided at site to facilitate easy cleaning of the PV Array. Water pipe line with necessary numbers of outlet tap with Post is to be laid down in the array field for cleaning of the PV Module. The water line is to be connected to the suitable nearest point of water source. The whole work will be executed within the contract value.

#### 16.0 Fire extinguisher

A,B,C type fire extinguisher of 5 kg with fixing arrangement on wall. The fire extinguisher should be of latest IS standard.

#### 17.0 Spares ,Tools and Measuring Instruments:

The minimum number and different type of recommended spares, tools and measuring instruments must be supplied under this project within the contract value. Also any special tools, spares, measuring instruments if required as may be will be provided by the contractor. The tools and measuring instrument will include but not limited to the following:

Sl No	Description	Quantity
01	Digital Multi-meter to measure DC and AC parameters	1 Nos.
02	Tool Kit comprises of at least following tools: (i) Screw driver set (ii) Pliers (iii) Box ranges Set	1 Set

#### 18.0 Signage:

**Project information Signage:** The Signage will be made up of metallic base of minimum size 3' x 2'. The Signage provide with detail of the project as approved by ADDA. The font size on the signage has to be big enough so that everyone can read it easily. The Signage will be fixed up two (02) prominent place of the project area.

**Schematic Diagram:**

Schematic Diagram of Installation must be provided on a display board of minimum size 3'x 2' made up of metallic base. The schematic diagram must be fixed up at any prominent place of installation.

**Safety Signage:** Safety Signage must be provided mentioning the level and type of voltage and symbols as per IE Rule at different position as may be required.

**19.0 Codes and Standards**

All equipment and materials to be furnished under this specification will be designed, manufactured and tested in accordance with the latest revisions of the relevant Indian Standard (IS)/IEC/MNRE as applicable. The electrical installation will meet the requirement of Indian Electricity Act, and Indian Electricity Rules as amended up-to-date and also the applicable section of the latest revision of the relevant IS Code of Practice.



Executive Engineer,  
Asansol Durgapur Development Authority  
City Centre, Durgapur-16

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01/10/15

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09/10/15

## Schedule of work

Design, supply, installation, testing and commissioning of **60 kWp** Grid Connected Solar PV Power Plant inclusive of with five years Comprehensive Warranty and Comprehensive Maintenance Contract in all complete.

Sl. No	Items	Quantity
<b>II</b>	<b>Supply Item</b>	
1.	PV Array of minimum capacity 60 kWp as per reference SI no. <b>2.0 and 3.0</b> of Technical Specification	1 Set
2.	PV Module Mounting Structure and Structure Accessories as per reference <b>SI no. 4.0</b> of Technical Specification (Quantity - 1 set)	1 Set
3.	PV Array Junction Boxes (AJB) as per reference <b>SI no. 5.0</b> of Technical specification	Minimum (02) two set (Minimum one set against Each Inverter)
4.	Grid Connected String Inverter of nominal AC capacity 25 kVA as per reference <b>SI no. 6.0</b> of Technical specification	2 Nos.
5.	Web enable on line data logger and Remote Monitoring Unit including all Remote Monitoring Arrangement with Data Cable from Data Logger to the Existing Location of the Modem at installation site etc As per reference <b>SI no. 7.0</b> of Technical Specification	1Set
6.	Inverter Combiner LT Panel as per reference <b>SI no. 8.0</b> of Technical Specification	1 Nos
7.	Grid interfacing LT panel with Feeder Pillar Housing as per reference <b>SI no. 9.0</b> of Technical Specification	1 Set
8.	Plant Metering arrangement as per reference <b>SI no. 10.0</b> of Technical Specification	
9.	Export Import Energy Meter per reference <b>SI no. 11.0</b> of Technical Specification	1 No.
10.	Cables and Wiring as per reference <b>SI no. 12.0</b> of Technical specification (This item cost is excluding the item mentioned under reference <b>SI no. 13.0</b> of Technical Specification)	1 LOT
11.	Supply, laying ,fixing of suitable <b>3 and ½ Core 35 sqmm XLPE insulated armoured copper</b> cable from Inverter Combiner LT panel to Grid interfacing LT Panel to Point of Common Coupling (Supply Mains) as per reference <b>SI no. 13.0</b> of Technical Specification	100mtr
12.	Supply of Equipment, Array structure Earthing materials , Earthing systems as per reference <b>SI no. 14.0</b> of Technical Specification	1LoT
13.	Supply of required plumbing materials and Equipments for PV Array Cleaning arrangement as per reference <b>SI no. 15.0</b> of Technical Specification	1 Lot
14.	Supply of Fire Extinguisher as per reference <b>SI no. 16.0</b> of Technical Specification	2 Nos
15.	Supply of Spares ,Tools and Measuring Instruments as per reference <b>SI no. 17.0</b> of Technical Specification	1Set
16.	Supply of Signage as per reference <b>SI no. 18.0</b> of Technical specification	1 Set
17.	Supply of required civil work materials required for the PV Power Plant Project as may be required to comply the Technical Specification	1 Lot

Sl. No	Items	Quantity
<b>II</b>	<b>Service Item</b>	
18.	Receiving and Loading from source, Transportation, Unloading at site, Stacking and Safe storage with proper security arrangement of the material with pilfers proof arrangement of the materials for the Power plants with suitable insurance till Commissioning and Handing over of the Project.	1 Job
19.	Design, Installation, Testing and commissioning of the PV Power Plant	1 Job
20.	Training of the ADDA Personals and Documentation	1 Job
21.	Comprehensive Maintenance for five years including Rental Charge of Web Server portal for remote Monitoring of the PV Power Plant for five years	1 Job

**N.B. I) All technical guideline which are available with this tender are for providing guideline only. This may be treated as example and may be followed if found in line with ultimate requirement.**

**II) Any sort of Approval which are required before energisation , to be arrange by successful bidder on behalf of ADDA.**

**III) All requisite supporting arrangements to provide support to hold all PV Panels / Electrical Panels / any other component to be provided & installed by the successful bidder with all labour & materials.**



Executive Engineer,  
Asansol Durgapur Development Authority  
City Centre, Durgapur-16

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9/10/15

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9/10/15

## Proforma –(1)

### Bid Form

(To be submitted by bidders on official letter head of the company)

Ref. No:

Date:

To,  
The Executive Engineer,  
Asansol Durgapur Development Authority.  
1st Administrative Building,  
City Centre, Durgapur-713216

**Subject:** Bid for design, supply, installation, testing and commissioning of 60 kWp Grid Connected Solar PV Power Plant in complete to be installed at roof top of First Administrative building, Durgapur of Asansol Durgapur Development Authority, West Bengal on turnkey Basis

**Reference : NIeT No:**

Sir,

I, the undersigned, being the authorized signatory of .....( Name of the Bidder), having read and examined in detail the NIeT including minimum eligibility criteria in particular, instruction to Bidders, general terms & conditions, special terms & conditions and specification, do hereby submitting our offer to execute the contract as per terms & conditions as said forth in your Tender document.

1. We confirm having submitted the eligible criteria as required by you in your Tender Document along with this proposal. In case you require any further information or clarification in this regard, we agree to furnish the same in time.
2. We have submitted the requisite amount of "Earnest Money" in the form of ....., on ..... Bank vide no..... dated .....
3. Our contact details related to this tender are as follows:

Information	Local office ( In West Bengal)	Head office
Name of the Contact Person		
Designation		
Telephone No		
Fax No		
Mobile No		
Email Address		

4. We confirm that our bid in response to the NIeT is consistent with all the requirements of submission as stated in the Tender Document and subsequent communications from ADDA.

5. We have neither made any statement nor provided any information in this Bid, which to the best of our knowledge is materially inaccurate or misleading. Further, all the confirmations, declarations and representations made in our Bid are true and accurate.
6. We declare that the submitted our offer is without any deviations and are strictly in conformity with the documents issued by ADDA.
7. We declare that content of the Tender Document including NleT and subsequent corrigendum, addendum, if any, are acceptable to us and we have not taken any deviation in this regard. This is to expressly certify that our offer contains **no deviation** either in direct or indirect form.
8. We also declare that in case any deviations are noticed which might have crept inadvertently, that such deviations without reservation of any kind are automatically deemed to have been withdrawn by us.
9. If you accept our offer, we agree to complete the entire work in accordance with work completion time given in the Tender document. We fully understand that the work completion time stipulated in is the essence of the contract, if awarded.
10. We also declare that, we have never been blacklisted and / or there were no debarring actions against us as on date due to any reason what-so-ever, by any Government or Government Agencies. In the event of any such information pertaining to the aforesaid matter found at any point of time either during the course of the contract or at the bidding stage, our bid/contract will be liable for truncation / cancellation / termination without any notice at the sole discretion of ADDA.

**Company Seal :**

**Name :**

***Signature***

**Designation:**

# **Asansol Durgapur Development Authority**

*(A Statutory Body of Government of West Bengal)*

*Asansol Office: Sahara Apartment, Kumarpur, G.T. Road, Asansol -713 304*

*Durgapur Office: 1<sup>st</sup> Administrative Building, City Centre, Durgapur-16*

*Ph no: (0341) 225-7377, 225-7378; (0343) 254-6815, 254- 6716, 254- 6889; Fax: (0341)-225-7379 & (0343) 254-6665, 254- 5793 . Web site: [www.addaonline.in](http://www.addaonline.in)*

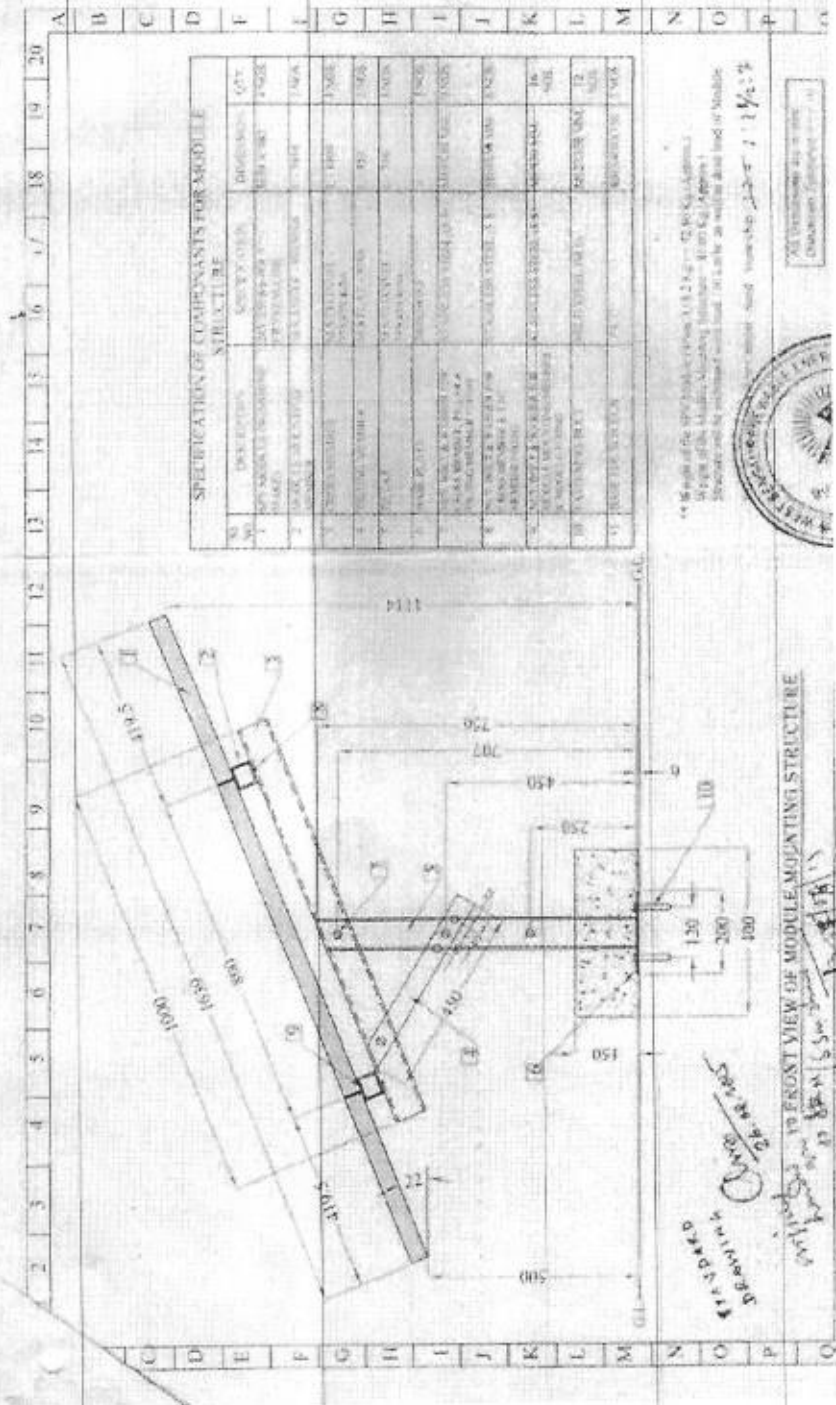
**NOTICE INVITING e-TENDER NO:-ADDA/DGP/ED/N-57/15-16;**  
**dated : 09.10.2015**

**DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 60 KWP  
ON-GRID SOLAR POWER PLANT AT ROOF TOP OF FIRST ADMINISTRATIVE  
BUILDING, DURGAPUR OF ASANSOL DURGAPUR DEVELOPMENT AUTHORITY,  
WEST BENGAL.**

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# Standard Drawing of Solar PV Module Mounting Structure

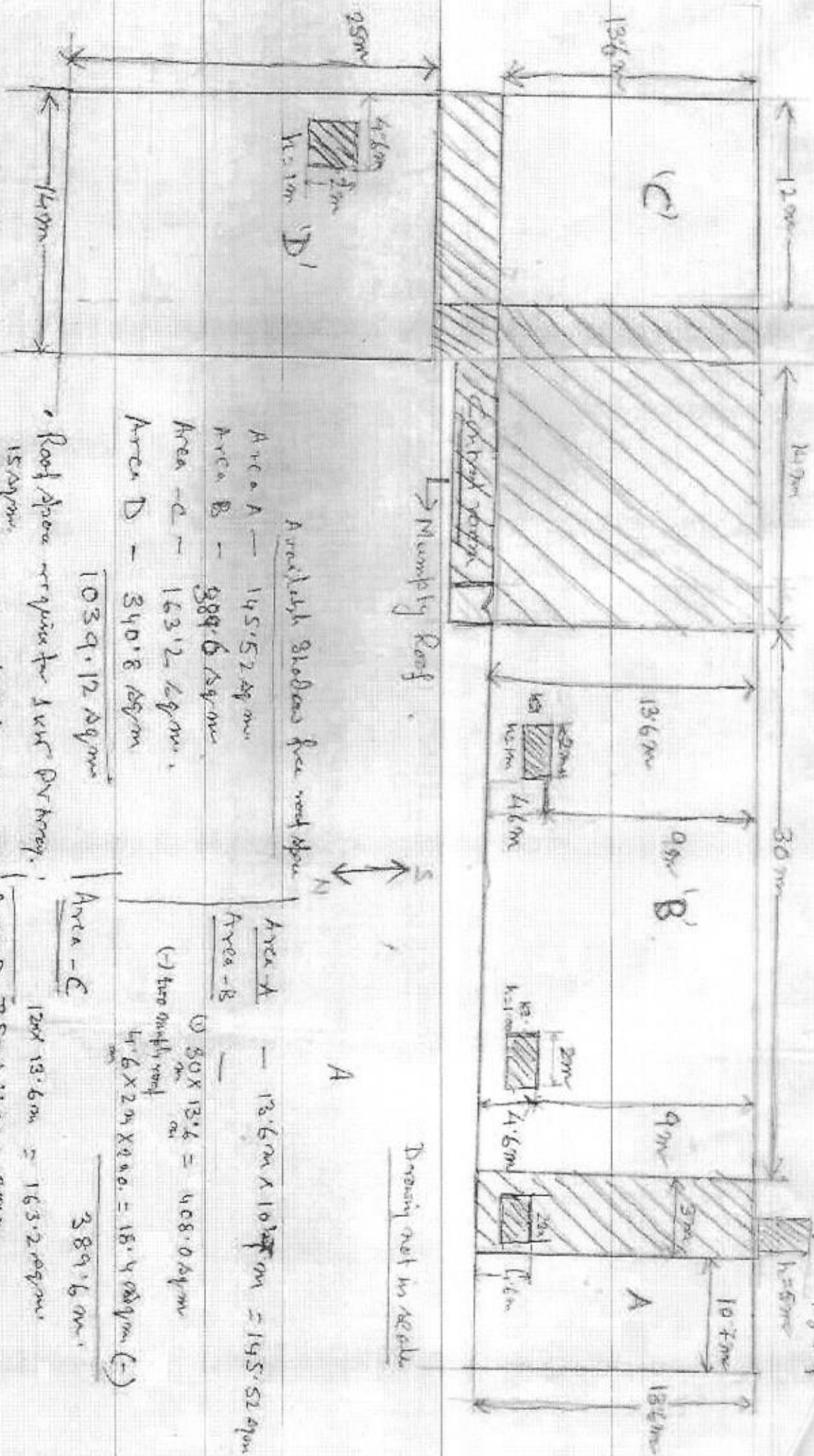








# Roof Layout of A D D A Dwiggins



Available Spaces for roof area

- Area A - 145.52 sqm
- Area B - 389.6 sqm
- Area C - 163.2 sqm
- Area D - 340.8 sqm

$$1039.12 \text{ sqm}$$

- Roof area requires for PV Array, 15 sqm
- Roof area is available for 69.22 kWp

- Considering the future addition of the array, it is suitable for 60 kWp PV Array.

A

Area A - 13.6m x 10.7m = 145.52 sqm

Area B

(1)  $30 \times 13.6 = 408.0 \text{ sqm}$

(2) two small roof

$4.6 \times 2.9 \times 2 = 26.8 \text{ sqm}$

Area C

$12.9 \times 13.6 = 175.44 \text{ sqm}$

Area D

$2.9 \times 4.6 = 13.34 \text{ sqm}$

$4.6 \times 2.9 \times 2 = 26.8 \text{ sqm}$

Drawing not in scale