MEGHALAYA NON-CONVENTIONAL AND RURAL ENERGY DEVELOPMENT AGENCY

Near B.S.F. Camp, Mawpat, P.O. Mawpat, Shillong – 793 012
Phone No.0364-2537343/2536138#Fax No.0364-2537611
E-Mail: mnreda.dir@gmail.com Website: www.mnreda.gov.in

SHORT TENDER NOTICE

for

DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING

OF 10 KWP WIND SOLAR HYBRID SYSTEM

POWER PLANT AT, TURA GOVT. COLLEGE IN MEGHALAYA.

For the Financial Year 2015-16

MEGHALAYA NON-CONVENTIONAL AND RURAL ENERGY DEVELOPMENT AGENCY

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NIT No.: MNREDA/1645/2015/48 **Dated Shillong, the 29th October, 2015.**

Tender document issued to M/S _____

_____

_____

against application vide letter No. _____

dated _____ and payment of Rs. 10,000.00 (Rupees ten thousand) only by Cash/Bank Draft No. _____ dated _____ of _____ Bank towards the cost of Tender Document (Part – A and Part – B), Category _____.

Issued By:
For Member Secretary cum Director
Meghalaya Non-Conventional & Rural
Energy Development Agency.

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PART – A

Commercial & Technical Bid

MEGHALAYA NON-CONVENTIONAL AND RURAL ENERGY DEVELOPMENT AGENCY

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SHORT TENDER NOTICE

NIT No. MNREDA/1645/2015/48 Dated Shillong, the 29th October, 2015.

Sealed tenders are invited from eligible registered Indian Manufacturers (manufacturers mean manufacturers of Aerogenerator/Small Wind Turbine/SPV modules or battery or PCU) or MNRE Channel Partners for the design, supply, installation, testing and commissioning of 10 Kwp Wind Solar Hybrid Power Plant at Tura Govt. College, Tura in Meghalaya as per MNRE specifications, with two years warranty and three years mandatory comprehensive maintenance contract (CMC).

Tender documents will be issued during working days from 29.10.2015 to 09.11.2015 in the office of the undersigned on payment of Rs. 10,000.00 (Rupees ten thousand) only or can be downloaded from website of MNREDA. Separate Tender cost for each category shall be paid as per tender schedule by way of cash or bank draft only. Bank Draft should be drawn in favour of Member Secretary cum Director, MNREDA, Shillong. Tender documents shall be received in the office of the undersigned up to 09.11.2015 at 12 noon and shall be opened in the same place and date at 4.00 PM.

The undersigned reserves the right to cancel the tender and/or reject any or all the bids without assigning any reason thereof.

Member Secretary cum Director
Meghalaya Non-Conventional & Rural
Energy Development Agency
Shillong.

MEGHALAYA NON-CONVENTIONAL AND RURAL ENERGY DEVELOPMENT AGENCY
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SHORT TENDER NOTICE

NIT No. MNREDA/1645/2015/48 **Dated Shillong, the 29th October, 2015.**

Sealed tenders are invited from eligible registered Indian Manufacturers "(manufacturers)" mean manufacturers of SPV modules or battery or PCU) and MNRE Channel Partners for the Design, Supply, Installation, Testing and Commissioning of off grid 3 KW each Solar Power Plants as per MNRE specifications, with two years warranty and three years mandatory comprehensive maintenance contract (CMC) at various locations in the State of Meghalaya.

Tender documents will be issued during working days from 2.11.2015 to 9.11.15 in the office of the undersigned on payment of Rs. 5,000/- (Rupees Five thousand) only or can be downloaded from website of MNREDA. Separate Tender cost for each category shall be paid as per tender schedule by way of cash or bank draft only. Bank Draft should be drawn in favour of Member Secretary cum Director, MNREDA, Shillong. Tender documents shall be received in the office of the undersigned up to 9.11.2015 at 12 noon and shall be opened in the same place and date at 3:30 PM.

The undersigned reserved the right to cancel the tender and/or reject any or all the bids without assigning any reason thereof.

Member Secretary cum Director
Meghalaya Non-Conventional & Rural
Energy Development Agency
Shillong.

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SHORT TENDER NOTICE

NIT No. MNREDA/1645/2015/48 **Dated Shillong, the 29th October, 2015.**

Name of Work:

Design, Supply, Installation, Testing and Commissioning of 10 Kwp Wind Solar Hybrid System at Tura Govt. College Tura with 2(two) years warranty and 3(three) years Mandatory Comprehensive Maintenance Contract (CMC).

Wind Solar Hybrid System Power Plants (Capacity 10 Kwp.	Estimated Amount (In lakh)	Bid Security (In Rs.)	Last Date & Time of Submission	Date & Time of Opening
	37.15	74,300.00	09.11.2015 At 12 noon	09.11.2015 At 4:00 P.M.

Member Secretary cum Director
Meghalaya Non-Conventional & Rural
Energy Development Agency.

Memo. No. MNREDA/1641/2015/548-(A) **Dated Shillong, the 29th October ,2015.**

Copy to :-

1. The State Informatic Officer, National Informatics Centre Meghalaya, Shillong. — With a request to display the NIT & Tender Document on the website. Both hard & soft copy of Tender Document enclosed herewith.
2. M/s. Eastern Chronicle Shillong. — With a request to publish in one issue of your newspaper and to be submitted the bill in duplicate along with sample of Advertisement for necessary payment.
3. Notice Board. MNREDA, Shillong.

Member Secretary cum Director
Meghalaya Non-Conventional & Rural
Energy Development Agency, Shillong.

INSTRUCTIONS TO BIDDERS

Minimum Qualifying Criteria for Bidding:

1.1 The bidder must have the following minimum criteria to qualify for bidding:

(i) The bidder should be a registered Indian company / Firm / Joint Venture / MNRE Channel Partner/ Individual registered as manufacturer of Solar Module or Battery or PCU or Aerogenerator.

(ii) The bidders should have their products approved by MNRE/ IEC.

(iii) The bidder should have an average annual turnover of **Rs. 75.00 lakhs** in the last three years. Certified audited balance sheets for the last three years should be submitted.

(iv) The bidder should have cumulative experience of having executed projects similar to the bid capacity in the category. Certified work orders and satisfactory performance reports from project owners should be submitted.

(v) The bidder must have adequate service network for maintenance of the system in North Eastern Region. Details to be furnished.

(vi) The bidder must have valid VAT registration certificate.

(vii) The Joint Venture lead Partner should meet a minimum of 50% of the financial criteria like average Turnover and Technical experience and will be solely responsible for Bid Security, Performance Guarantee and the work as indicated in the NIT.

Non-submission of above documents shall result in rejection of bid.

2. Tender Document

In addition to this Tender document, any other documents/ instructions/ amendments/ revisions issued by MNREDA to the bidder till the date of opening of the bid shall also be deemed to be an integral part of the bid document. Failure to furnish all the information as per the bid document in every respect shall result in rejection of the bid.

3. Cost of Tender Document

3.1 Tender document can be purchased from MNREDA office on payment of Tender cost of Rs. 10,000/- (Rupees ten thousand) only either by cash or Bank Draft drawn in favour of Director, MNREDA, Shillong for each category.

3.2 Bidders may also download the bid document from MNREDA website and submit the cost of the bid document as indicated at 3.1 above in the form of Demand Draft along with Commercial & Technical Bid (Part – A).

Non-submission of cost of Tender document shall result in summary rejection of bid.

4. Bid Security

4.1 Bid Security as indicated in the NIT Schedule in the form of Bank Guarantee/Call Deposit/FDR from any scheduled or nationalized bank of India pledged in favour of Member Secretary cum Director, MNREDA, Shillong should be furnished without which tenders will be summarily rejected.

4.2 The bidders who claim exemption shall have to produce relevant papers from the proper authority i.e. NSIC registration certificate, etc.

4.3 Bid security shall be returned to the bidders after issue of final work orders.

5. Submission of Bid

The bid should be submitted latest by the date and time indicated in the NIT Schedule. The bid should be submitted in 2 (two) parts i.e. Commercial & Technical Bid and Financial Bid.

5.1 **Commercial & Technical Bid**: consisting of the following documents:-

i. Tender Paper (Part – "A") duly signed and sealed by the Authorized person/s of the firm.
ii. Cost of Tender document, if downloaded or certified copy of money receipt for the tender document issued by MNREDA.
iii. Data Sheet duly filled up and completed as per tender document.
iv. Documents required under Minimum Qualifying Criteria for Bidding.
v. Any deviation with justification thereof.
vi. Any other documents as mentioned in this tender document.

5.2 **Financial Bid:** consisting of the following documents:-

i. Tender Paper (Part – "B") duly signed and sealed by the Authorized person/s of the firm.
ii. Price Bid - can be quoted on plain paper but it should be in the format given.

5.3 Commercial & Technical Bid should be sealed in a separate envelope, hereinafter referred to as **First Envelope**, marked as "Commercial & Technical Bid.

5.4 Commercial & Technical Bid should not contain price of any items otherwise the bid shall be disqualified.

5.5 Financial Bid should be sealed in a separate envelope, hereinafter referred to as **Second Envelope**, marked as "Financial Bid.

5.6 Financial Bid should not contain any technical matter or other matter except price bid. The date of opening of the price bid will be notified to qualified bidders after Commercial & Technical bid evaluation.

5.7 First Envelope and Second Envelope should be sealed in a third envelope marked as Wind Solar Hybrid System, NIT No. and Date of opening of tender, Name & Address of the bidding firm and should be addressed to Director, Meghalaya Non-Conventional And Rural Energy Development Agency, Near B.S.F. Camp, Mawpat, P.O. Mawpat, Shillong – 793 012.

6. Opening and Evaluation of Tender

6.1 On the date and time indicated in the NIT Schedule, only the outer envelope and First Envelope shall be opened. If the cost of the tender document and bid security are found to be in order, then the Technical & Commercial bid document shall be accepted and kept for evaluation. Otherwise, the tender document shall stand rejected and shall be returned to the bidder.

6.2 The bid document which is accepted shall be evaluated first as per the qualifying criteria and if found to be qualified, the technical and commercial bid shall be evaluated.

6.3 If the bid document is not qualified as per the qualifying criteria, it shall be treated as nonresponsive and the Technical & Commercial bid shall not be evaluated and shall be returned to the bidder.

6.4 Only the bidders whose Technical & Commercial bids are responsive shall be eligible for opening of the financial bids.

7. Opening of Financial Bid

Date of opening of Financial Bid shall be intimated individually to those bidders who have qualified in the Technical & Commercial offer.

7.1 The price quoted should be firm and valid for 6 (six) months from the date of opening of the price bids. The price should be quoted as per the format provided in the tender document**.** Price break up of various components must be clearly indicated in the format and failure to comply with the above shall result in rejection of the Bid.

7.2 The rate should be written in English, both in figures and in words. In case of any differences between the prices mentioned in figures and words, the prices mentioned in words shall be considered final. Also, in case of any arithmetical error in regard to the total amount and individual rates, the individual rates shall be taken as final and the total amount shall be calculated accordingly.

8. Award of Contract

The Contract shall be awarded to the lowest (L1) bidder and the bidder shall inform acceptance of the award within 7 (seven) days from the date of issue of the work order failing which the work shall be offered to the next lowest bidder at the L1 rate.

9. Additional Information

Any other information which are required to be furnished as per detailed tender papers but which have not been specifically indicated.

10. Deviation

Any deviations to the terms and conditions stipulated in detailed tender papers including payment terms etc. must be clearly specify if there is any deviation with justification.

11. **Attestation**

All supporting papers (photocopies) which are not in original should be duly attested by a gazetted officer/notary.

12. Other Terms & Conditions

12.1 Insertion, post-script, addition and alteration shall ~~not~~ be confirmed by bidder's signature and stamp.

12.2 Incomplete tender or tenders not submitted as per requirement as indicated in the NIT shall be rejected.

12.3 Bidders shall submit their offer strictly as per terms and conditions of the tender document.

12.4 Failure to furnish all information and documentary evidence as stipulated in the bid document or submission of an offer that is not substantially responsive to the bid document in all respects shall be summarily rejected.

12.5 All bids shall be received in duly sealed cover only within the due date and time. No bids shall be received after the due date and time.

12.6 MNREDA reserves the right to reject part or whole of the bid/order without assigning any reason thereof, postpone the date of receipt and opening of the bids or cancel the bid without bearing any liability, whatsoever, consequent upon such decision.

12.7 Issuance of bid documents shall not be construed that the bidders would be automatically considered qualified.

GENERAL TERMS & CONDITIONS

1. Signing of Tender Paper

The Tender Document as issued by MNREDA should be signed at every page by the Authorized person of the firm and it will be viewed as acceptance of each and every conditions containing therein.

2. Time of Completion

The work should be completed within **120 (one hundred twenty) days** from the date of issue of final work order. However, the supply of all the major materials for the work like SPV modules, battery, inverter, structures, cables, etc should be completed within **60 days** from the date of issue of final work order, failing which the work order shall stand cancelled and the Contract Performance Guarantee shall be forfeited. Recovery of the mobilization advance shall also be effected.

3. Agreement

An Agreement has to be signed within 15(Fifteen) days of issue of final work order. The Agreement shall be prepared by the successful bidder in the prescribed format (**Appendix 1**) on a non-judicial stamp paper of Rs. 100.00 (Rupees one hundred) only and signed by the authorized persons of the Firm and MNREDA. The annual maintenance contract agreement shall be signed separately on completion of installation and commissioning of the system.

4. Warranty

The System supplied should be under warranty for a period of **2 years** and the SPV Module for a period **of 10 years** from the date of commissioning of the System.

5. Payment Terms and Conditions

The Bidders shall be entitled to the following payment terms:

(a) Mobilization Advance: The contractor shall be paid 30% (thirty percent) of the contract value as mobilization advance on application and against a Bank Guarantee of like amount from any Nationalized Bank or Scheduled Bank valid for a period of 180 (One Hundred Eighty) days from the date of acceptance of work.

(b) 40% (forty percent) of the contract value shall be paid against receipt of materials at site and in good conditions, subject to availability of funds.

(c) 20% (twenty percent) of the contract value shall be paid on completion and commissioning of the System, subject to availability of funds.

(d) Balance 10% (ten percent) shall be released at the expiry of warranty period and after submission of performance report duly certified by the concerned project officer.

6. Contract Performance Guarantee.

The successful bidders shall submit the Contract Performance Guarantee (CPG) @ 10% of the bid amount within 7(seven) days from the date of issue of work order failing which the work order will be liable to be cancelled.

7. Subletting of Contract

The Contractor shall not, without the prior consent in writing of the MNREDA, assign or sublet or transfer his contract, or a substantial part thereof other than raw materials or any part of the work of which makers are named in the contract, provided that any such consent shall not relieved the contractor from any obligation, duty or responsibility under the contract.

8. Contractor to Inform Himself Fully

(a) The Contractor shall be deemed to have carefully examined the general conditions, specifications and Schedules and also to have satisfied himself as to the nature and character of the plant and equipment to be supplied and installed under the contract, the site conditions and all relevant matters.

(b) If he shall have any doubt as to the meaning of any portion of the contract/work order, he shall before signing/accepting it, set forth the particulars thereof and submit them to the MNREDA in writing in order to remove such doubts.

9. Service Center

It is mandatory that the bidder should have a local service centre in the North Eastern Region and preference will be given to those Firms who have the service centre in the State of Meghalaya.

10. Breach/ Cancellation of the Contract

In case of non-performance in any form or change of the covenants and conditions in this contract by contractor, MNREDA shall have the power to **annul**, rescind, cancel or terminate the contract and upon its notifying in writing to the contractor that it has so done, this contract shall be absolutely determined. The decision of MNREDA in this regard shall be final and binding.

11. Responsibility of the Contractor

The contractor shall guarantee and be entirely responsible for the execution of the contract in accordance with the specifications, schedules and appendices. He shall further guarantee and be responsible for the quality and workmanship of all materials and completed works, correct designs, drawings, correct delivery of materials, erection, testing and commissioning, within the warranty. On completion of commissioning, a separate agreement shall have to be signed in respect of a comprehensive annual maintenance contract for a period of three years after the warranty period.

12. Safety Measures

The Contractor shall have to undertake necessary measures for providing adequate safety and precautions to avoid any accident which may cause damage to any equipment/material or injury to workmen. MNREDA shall not responsible for any such accidents.

13. Delivery of System

(a) The contractor shall deliver the plant/systems in accordance with the terms of the contract at the time/times at the place/places and in the manner specified in the contract. The contractor shall comply with instructions that may be given by the MNREDA from time to time regarding the transit of the plant and material.

(b) Notification of dispatch or delivery in regard to each and every consignment shall be made to the MNREDA immediately after dispatch or delivery. The contractor shall submit to the MNREDA consignee invoice in duplicate and packing account of all stores dispatched or delivered by him.

(c) In case of any occurrence of loss or damage in transit up to destination, it shall be the liability of the contractor to initiate and pursue the claim with the Insurance Company. He should take immediate steps to repair the damaged equipment or arrange a replacement thereto. Any extension of time limit required in such contingency will be considered by the MNREDA on merit.

14. Inspection of Material

The material shall be dispatched by the supplier after inspection by the Director cum Member Secretary, MNREDA or his representative. The supplier shall give 15 day's written notice of any material ready for inspection. The material shall be erected in the project only after acceptance of the same. The installation of the work shall be carried out under the close supervision of the Project Officer, MNREDA. The final inspection after installation and commissioning shall be carried out by Project Officer, MNREDA. MNREDA can also get the systems tested by any approved test centre/ laboratory. Rejected material (if any) will be replaced by the supplier at its cost within a stipulated time.

15. Court of Competent Jurisdiction

The Courts of Shillong only have jurisdiction in this case.

SCOPE OF WORK & TECHNICAL SPECIFICATIONS

1. Scope of Work

The Scope of Work shall include the following:

a) Design, manufacture, supply, installation & commissioning of Wind Solar Hybrid System.
b) Detailed planning of smooth execution of the project
c) Performance testing of the complete system
d) Warranty of the system for 2 years faultless operation.
e) After sales service

This would inter-alia include

a) A clear understanding of the features of the proposed project site. This may require a prior visit to the proposed site.
b) Supply of the complete systems, including all necessary components, sub components, spares, and tools etc. as per technical specifications given elsewhere in this document.
c) Erection and commissioning of the supplied systems on the specified site.
d) Providing pedestals if required for mounting of the PCU'S/inverter and control panels.
e) All structural drawings to be approved by the Project Officer Incharge, MNREDA.
f) Any other work urgently required as per site conditions.
g) The bidder must also provide a detailed operation and maintenance manual specific to the installed systems.
h) Fabrications, supply and the installation of suitable support for the PV panels and other components whichever is required with the accessories.
i) Civil work for SPV structure.
j) Wind Solar Hybrid System shall be installed as per the specifications provided in the technical offer.
k) Provide sealed & tested energy meters at consumption side & generation side of SPV Power Plant.
l) Provide electrochemical marking (embossing) on each solar module which will shows name of manufacturer, year of manufacturing and capacity of solar module.
m) Supply of manual for Operation and Maintenance of all the system in English or local language.
n) Supply and installation of control equipments required for the system.
o) Training of the user for operation and maintenance of the system.
p) Any additional works not covered above, but necessary for the functioning of the system and required as per specification incorporated.
q) Regarding cabling work (external & internal) the tenderer is required to visit the site and as per actual site conditions quote (including drawing & design) accordingly.
r) Regarding actual work to be carried out at the site, tenderer needs to execute the work in consultation with the office of MNREDA.
s) The tenderer shall provide Comprehensive Maintenance Contract (CMC) of 3 years after the end of the warranty period.
t) The tenderer shall provide the necessary training to the identified representative approved by MNREDA during the course of 5 years of warranty and CMC periods for proper daily operation and maintenance of installed system.
u) All cabling and load connections should be carried by the tenderer with proper synergy with the existing electrical systems of proposed project site.

2. General Technical Description & Configuration

a. Solar PV Module

Crystalline high power solar cells shall be used in the Solar Photovoltaic module. Each Solar module shall consist of redundantly interconnected solar cells and shall have the Peak Power rating of not less than 250Wp. To connect the solar module interconnection cable shall be provided. Module shall be made of high transmitivity glass front surface giving high encapsulation gain and silicon rubber edge sealant for module protection and mechanical support. All materials used shall have a proven history of reliable and stable operation in external applications. Solar module shall be crystalline type, employing lamination technology using established polymer (EVA) and tedlar laminate.

Solar module shall be in accordance with the requirements of IEC 61215. In addition, the modules must conform to IEC 61730 Part 1- requirements for construction & Part 2 - requirements for testing, for safety qualification or Equivalent IS.

b. Power Conditioning Unit

Power Conditioning Unit (PCU) provides an un-interrupted AC power using battery power. DCDB output will be fed to PCU which mainly consists of MPPT Charge Controller, Inverter, Voltage Stabilizer and distribution panel along with necessary Displays, Indicators and Alarms. The power conditioning unit shall convert DC Power by SPV modules and store in battery bank. Power Conditioning Unit (PCU) should preferably confirm to IEC standards or equivalent BIS standards.

The PCU in addition to battery charging during sunny hours also feed the loads from SPV Power Plant. The Solar Photovoltaic Power Plant shall cater to the electricity demand as per the proposed hours or duration per day. The system shall have the provision of charging battery bank through mains as well. It should be designed such that during sunny hours the loads are fed from SPV Power Plant in addition to battery charging. If the power produced from the Power Plant is not sufficient to feed the loads then the balance power shall be fed by Battery bank. In case Battery bank is not sufficiently charged, then the balance energy can be drawn from the Utility Grid. The Power Plant shall provide a reliable and independent power supply at a voltage and frequency levels to suit the grid voltage and frequency.

The power conditioning unit should be an integrated unit comprising MPPT solar charger and bidirectional inverter.

a. Battery Bank

- The batteries should be AGM- VRLA/Tubular Gel .
- The batteries shall use 2V cells and capacity to be designed for C10 rate.
- Suitable carrying handle may be provided.
- A suitable battery rack with interconnections & end connectors shall be provided to suitably house the batteries in the bank.
- The batteries shall be suitable for recharging by means of solar modules via incremental / open circuit regulators.
- Battery interconnecting links shall be provided for interconnecting the battery in series and in parallel as needed.
- Connectors for inter cell connection (series / parallel) shall be maintenance free. Insulated terminal covers shall be provided.

b. Module Mounting Structure

The Module Mounting structure is to be manufactured with Mild-steel angles, Sheets, Mesh & channels preferably spray/Hot dip Galvanized. These structures are to be designed for suitable mounting on RCC structure on Rooftop / Ground. These structures are to be designed to withstand wind up to 150 Km/hr from backside of the panels, as per specific requirement at Site. The structures should be designed for either fixed tilt or with provision for seasonal adjustment to maximize the power generation. The structures should be compatible for on roof and on ground installation as well.

c. ACDB and DCDB

AC Distribution Board/ Isolator Box:

- An ACDB shall be provided in between PCU and Loads.
- It shall have MCB of suitable rating for connection and disconnection of PCU from load.
- It shall have MCB's to supply power to loads such as computer, lighting loads and power plug sockets.
- It shall have energy meter to record energy supplied to loads.

DC Distribution Board:

This shall consist of MCCBs of suitable specifications & which can withstand the required flow of dc current. The option for isolating the battery bank & SPV arrays should be made. Best quality Ah meter shall be installed to measure the cumulative charging & discharging status of battery bank.

d. Earthing & Lightning Arrestor

Earthing Protection:

The structure of the PV Module shall be grounded properly using adequate number of earthing kits. All metal casings/ shieldings of the plant shall be thoroughly grounded to ensure safety of the power plant.

Lightning Arrestor:

The SPV power plant shall be provided with lightning and over-voltage protection. The main aim of this protection will be to reduce the over-voltage to a safe value before it reaches the PV or other sub-system components. The source of over-voltage can be lightning, atmospheric disturbances, etc.

e. Remote Monitoring:

All the relevant parameters of PCU should be available for remote monitoring over the internet using GPRS based monitoring solution.

Design Guidelines & Specification :

i) **The scope of work:**

For 10 Kw Wind Solar Hybrid System (6 Kw Aerogenerator & 4 Kwp Solar Power Systems).

(a) **Aerogenerator combination of approved MNRE: 6 Kw Wind Aerogenerator with stop switch vide C-WET/R&D/Empl/2010-11-02A dated 4.8.2010 issued by Centre for Wind Energy Technology, Chennai.**

(b) A 4 Kwp SPV Panel
(c) Battery Bank 2V cell, 48V, 800 AH
(d) Charge Controller and battery charger
(e) 10 KVA Inverter of both AC & DC expect of Aerogenerator and SPV with 230 AC output.
(f) Mounting structure for SPV Panel and aerogenerator
(g) Junction Boxes, DC distribution Board and AC distribution Board
(h) Lighting and over voltage protection and earthing
(i) Provision of street lighting system and domestic connection
(j) Power House and security fencing
(k) 2(two) energy meters are to be installed at both generation side and consumption side.

ii) The supplier and manufacturer are to design the systems and furnished the technical specification based done the above guidelines in the scope of work without furnishing the above details no offer will be considered. The Wind Solar Hybrid design will be considered and give priority to the firm/supplier/manufacturer who had the experience of similar kind of work.

iii) Board Technical Specification of the aerogenerator should include the unit capacity, No. of blades rotor diameter, cut-in-wind speed and rotor wind speed of its capacity. The Specification should be as:-

a) **Number,Capacity, speficiation and power curve of Aerogenerator proposed:-**
Aerogenerator : (To furnish in a separate sheet for different atype of approve wind Aerogenerator for as per combination)

i) Capacity :

ii) Make & Model No. :

iii) Rated wind speed :

iv) Peak power ;

v) Start generating wind speed :

vi) Survival wind speed :

vii) Propeller diameter :

viii) Propeller material & No. of blades :

ix) Generator :

x) Weight :

xi) Voltage controller :

xii) Over speed protection :

xiii) No.of machines :

xiv) Tower Height :

(b) **Number & Specification of SPV Modules :**

SPV Modules :

i) Capacity

ii) Make

iii) Peak power per module

iv) Weight

v) Dimension W xHxD

vi) Temperature

vii) Wind Load

viii) Humidity No.of SPV Modules

Notes :- Aerogenerator should be approved Govt. of India, Ministry of New and & Renewable Energy.

iv) Solar PV Modules & Array:

(a) Solar Modules shall consists of redundantly interconnected 36 Photovoltaic cell and the peak power rating shall to be specified as per design.

(b) SPV Modules must be tested and certified by an independent testing laboratory that is accredited with ISO guide 25. The Module type must be qualified as per IEC 61215 pr IE 1992 or CEC 503 for mono crystalline silicon and IE 616464 or CEC 50B or IEC 61646 or IEEE 1262 or multi crystalline silicon module has to be tested and certified by SEC, MNRE, Govt.of India.

(c) Photo electrical conduction efficiency of SPV Modules should be greater than 12% Modules shall be made of high transitivity glass front surface giving high encapsulation gain and silicon rubber edge sealant for Modules protection and mechanical support.

(d) The rated power output of modules shall not vary more than 5% from the average power rating.

(e) A minimum warranty of 10 years is available with degration of power generated not exceeding 10% over the entire 10 years period.

(f) The fill factor of modules shall not be less than 1.7
The Module should be provided with a Junction for provision of external screw Terminal connection and with an Arrangement for low voltage drop by pass/blocking dioxide.

<u>Data sheet should be furnish as follow</u> :-

a) Module type :
b) Module dimension :
c) No.of Cell & Wattage :
d) Solar cell manufacturer type :
e) Make of Solar Module :
f) Solar Module frame material :
g) Nominal voltage :
h) Operating voltage of solar module :
i) Peak Power voltage (Vmp) at :
j) Peak Power Current (Imp) :
k) Open circuit voltage (Voc) at :
l) Maximum temperature rise of solar cell. :
under severe working conditions
over maximum ambient temperature
m) Operating temperature conditions of Modules :
n) Weight of each module :

o) Array combination of Modules in series and parallel should be design and indicate properly for all types of power plants.

p) Mounting structure, orientation and tilt of PV Modules :-

The array mounting structure of modules shall be made of hot dip galvanished M.S. angle of size not less than 1617x807x42 SQMM. All nuts and bolts shall be made of very good quality stainless steel SS-304.

q) The structure shall be design to allow easy replacement of any modules.

r) Supper structure design and foundation of fixation of mounting arrangement shall with stand minimum horizontal wind speed of 200 kw/hour. Modules alignment and title angle shall have to be calculated to provide the maximum annual energy output and solar array will be tilted at appropriate angle from 40o to +90o in order to get maximum output from SPV panel. Each supporting structure shall be fixed on RC concrete foundation structure.

s) All faster shall be of stainless steel SS-304

t) The foundation for module mounting structure shall be 1:2:4 PCC construction.

u) Clearance between ground Level and bottom edge of SPV Module array of Modules should not be less than 1 meter.

(v) **Junction Boxes :**

(a) The Junction Boxes shall be made of FRP with dust water and vermin and water proof (IPSS) and made of Thermo Plastic.
(b) The Terminals shall be of copper bus bar arrangement of appropriate size shall have fuses, in such a way where it shall be possible to isolate a single array from the system by removing the fuse without disturbing the system operation.
(c) All cables passing into junction boxes shall be terminated correctly.

(d) Suitable arrangement shall have to be provided for connecting reverse Blocking Diodes in the array junction boxes.
(e) The required number of junction in each type of power plant should be indicated in the array diagram.

(vi) **D.C.Distribution Board :**

(a) D.C.D.B shall have to provide between Array and PCU.
(b) It shall have MCCB of suitable rating for connection and disconnection of array section
(c) It shall have measuring instruments for measuring array voltage and array current.

(vii) **A.C.Distribution Board :**

(a)An ACDB shall be provided in between Inverter and load and between aero generator and battery charger.
(b) It shall have MCCB of suitable rating for connection and disconnection of Inverter from the load.
(c) It shall have energy meter i.e. voltmeter and almeter.

(viii) **Charge controller & Battery charger :**

(a) The charge controller shall be dual input i.e. it can be either from SPV panel and from the aero generator. A selector switch shall have to be provided from choosing between two modes. When battery are charged from A.C.Sources, the charging current should be set manually depending on the capacity of the sources and charging requirement of the battery.

(b) Maximum point power tracker shall be integrated in the charge controller to maximum energy drawn from solar PV array. The MPPT should be Micro processor/micro controller based to minimize power loss. The efficiency should not be less than 90% and should be designed to meet solar array capacity.

(c) The charge controller shall have a provision for charging from the Aero generator to the battery and also to feed directly from aero generator to load.

(d) Charging sequence from SPV array or Aerogenerator shall be as follows :-

(a) **From SPV Array :**

(i) The Battery shall be charge at the maximum rate depending on solar radiation till the battery terminal voltage is 2.4 volt per cell.

(ii) The battery charging should be automatically terminate when the rate of increase of battery voltage is steady or when battery terminal voltage reaches 2.75 volts per cell.

(iii) The charger shall switch on the "Tackle charge: after this

(b) **From Aero Generator** :

(i) The battery shall be charged at the rate manually set depending on the battery Condition or capacity of aerogenerator. The maximum rate shall be internally presset.

(ii) The battery charging should be automatically terminated when the rate of increase of battery voltage is steady or when the battery terminal voltage reaches 2.75 volts per cell.

(ix) **Inverter :**

(a) The Inverter shall continuously monitor and control and the output interface within a stipulated range by means of suitable software and should be compatible with the charge controller and distribution panel and may integral design.

(b) The Inverter should be design for continuous, reliable and prime power supply.

(c) The Inverter shall have high conversion efficiency from 25% load to the full rated load. The conversion efficiency 1t 25% load shall not be less than 90% of the full rated load. The efficiency of the inverter shall be more than 92% at full rated load.

(d) The Inverter shall have high over load capacity. The overload capacity of the inverter shall be minimum of 200% at full rated load output for 30 seconds and 300% of full rated load output for 10 seconds. During overload conditions, the inverter shall be capable of maintaining the rated voltage and frequency as per specification. The overload capacity should be specify.

(e) The inverted should have automatic restart facility after overload triggered shutdown.

(f) Technical data sheet/specification are(should be submitted with the bid):

(a) D.C.Input voltage/A.C.Input voltage
(b) Output voltage
(c) Output voltage regulation.
(d) Overload capacity
(e) Continuous power rating
(f) Peak output shape
(g) Output wave shape
(h) Efficiency at ambient temperature
(i) Ambient Temperature
(j) Humidity range
(k) Short circuit protection
(l) Cooling type
(m) Enclosure construction
(n) Front Panel control
(o) Dimension
(p) Weight
(q) Mounting arrangement
(r). Other detail protection
(s). Other details indications

(x) **Battery & Battery Bank :**

(a) The batteries should be of flooded electrolyte type, positive tubular plate, low maintenance lead batteries and shall confirm to ISI 651.
(b) The batteries shall be of 2V cells with end cut off voltage 1.8 per cell and battery terminal should be provided with covers.
(c) Design voltage of system should by 48V system
(d) Battery capacity of each plant should be designed taken as a full rated load capacity available from the solar array with two days autonomy taking into consideration.
(e) Batteries should be provided with micro porous vent plugs with floats and suitable handle.
(f) A suitable battery rack with interconnection & end connector shall be provided to in between the batteries in the bank. The features and dimensions of the battery rack shall have to provide along with the bid
(g) The batteries shall be suitable for recharging by means of solar modules via incremental/open circuit regulator.
(h) Bidder shall mention the design cycle life of batteries at 85% depth of discharge at 25 degree C. Details for 30% & 50% DOD shall be provided.
(i) The batteries shall be designed for operating in ambient temperature of site.
(j) The battery container shall be made of hard rubber.
(k) The self discharge of batteries shall be less than 3% per month at 20 degree C and less than 6% per month at 30 degree C.
(l) The charge efficiency shall be more than 90% upto 95% state of charge.
(m) The topping up frequency shall be 18-24 months.
(n) The batteries shall consist of individual cells, which can be carried separately with case while transporting.
(o) Bidders to specify capacity & end cell voltage at different discharge rates
(p) Battery rack & accessories Battery interconnecting links shall be provided for interconnecting the cells in series and in parallel as needed. Connectors for inter cell connection (series/parallel) shall be maintenance free screws. Insulated terminal covers shall be provided.

(q) **Specification should consist of** :

i) Manufacturer
ii) Type battery
iii) Nominal voltage
iv) End cell voltage
v) Capacity of battery system
vi) Depth of discharge
vii) Efficiency of battery
viii) Duty cycle
ix) Combination of battery series and parallel
x) Structural details
xi) Battery guarantee
xii) Filling System : Auto fill

(xi) **Cables interconnecting** :

(a) All cables shall be supplied confirming to IS 1554/694-1990 and shall be of 650V/1.1 Kv grade and PVC insulted.

(b) Cables in the array yard shall be laid directly in ground at a depth of 500 mm in the excavated trenches along with approve route and cover with sand cushion. A continuous single brick protective layer of first class brick shall be placed on the entered length of the underground cable before refilling the trench with loose soil.

(c) Cable inside the control room shall be laid in trenches duly covered with RCC slab.

(d) Copper terminations shall be made with suitable cable lungs & sockets etc. crimped properly and passed through proper cable glands at the entry & exit point of the cubicle.

(e) Cable terminations shall be made with suitable cable lugs & sockets etc. crimped properly and passed through proper cable glands at the entry & exit point of the cubicle.

(f) All cables/wires shall be marked with good quality ferrite of proper sizes so that cables can be identified easily.

(g) Interconnecting cable size of Modules to Modules, array to array/junction boxes junction box to controller, controller to DCDB, DCDB yo ACDB to main distribution and aero generator to charge controller, aero generator to inverter or load should be indicated.

(xii) **Light and over voltage protection :**

(a) The SPV power plant should be provided with lighting and over voltage protection. The main aim of over voltage protection is to reduce the over voltage to a tolerable level before it reaches the PV modules and other sub-system component as hilly areas are prone to lighting and other atmospheric disturbance.

(b) The lighting conductor shall me made of 25mm diameter & 4000mm long G.I. spike as per provision of IS 2309-1969. The lighting conductor shall be earthed through 20mmx300mm thick G.I.Flat plate with earth pit. Necessary concrete foundation for holding the lighting conductor in position to be made.

(c) The earth pit shall be made with G.I. pipe, 4.5m long 40mm diameter including accessories watering pipe using charcoal and salt as required as per provision of IS-3043.

(xiii) **Earthing :**

(a) Each array structure of the SPV yard shall be grounded properly : Adequate number of lighting conductor shall be provided inside the array field to the provided an acceptable degree of protection as IS:1309.

b) All non-current metal parts must be earthed with two separate and distinct earth continuity conductors

(xiv) **Power House & Security fencing :**

(a) Power House should consists of one room for battery, one room for controller and inverter switch yard in built with one toilet Block.

(b) Size of Power House should be specific clearly for each room and different type of power plant.

(c) Flooring of power house should be RCC, walling should be 1st class brick and roofing should be made of C.G.I. sheet of good quality and ceiling by the 4mm thick plywood.

(d) Security fencing of power house and switch yard modules array shall be provided with barbed wire fencing mounted in an angle iron of2.200 height with a 160 mm long portion bend at 30o incline outside as per required length of each type of power plant.

(e) Detail construction drawing should be furnished for approval by MNREDA before going ahead with the civil work structure of power house and security fencing of switch yard.

(xv) **Lighting system :**

(a) Inside a power house for each room and outside main door should be provided with a 9 watts CFL Lamp fixture luminair properly wiring by making used of PVC conduit pipe.

(b) Necessary replacement of lamp & fixture to the utility point as per requirements.

(xvi) **Supply of spare kits & tools :**

The supplier shall provide spare required during warrantee period free of cost. Beyond warrantee period the supplier shall ensure that spare are made available to MNREDA at reasonable charges. Repairing tools & kits i.e. multimeter, screw driver sets, spanners etc. should be supplied for each plant.

(xvi) **Packaging, shipping & marking** :

The supplier shall be responsible for assuring that all commodities shipped are properly package and protected to prevent damage or deterioration during shipment. Packaging and shipping cost shall be borne by the supplier. Customs clearance and all costs and actions associated with import duties taxes and processing of documents within India are borne by the bidder.

(xvii) **Installation & commissioning** :

(a) The offer should include provision for installation of the entire system.

(b) The supplier is responsible for the supply of instrument required to commission and installation. The plant will be commissioned in the presence of authorized personnel or its nominated representative. A commissioning protocol should be provided in the offer and an acceptance report will be prepared and signed by all participating parties.

(xviii) **After sales service :**

The offer should include the terms and conditions for after sales service. The detailed content of the service proposed, and its duration should clearly be stated. Bidders having own/authorized service centers in Shillong or North East Region shall be given preference.

(xix) **Training and after sales service :**

Training and after sales service is an important component of supply. The terms and conditions for training and after sales supply and service are to be presented clearly in the bid and the extent and duration of after sales support clearly defined. An explanation of preventative maintenance schedule, plan of operation, scope and implementation of the sale service is to be defined.

(xx) **Experience :**

A comprehensive list of past projects implemented by the bidder/bidder group company/collaborator in India or Broad, including clients, dates size of projects and any other relevant material should be included in the offer. The award of work will be done strictly based on past experience of similar kind of works.

(xxi) **Documentation** :

One set of installation manual/user manual shall be supplied along with the system assembly of the complete system shall be shown with computer aided design and drawing form. Step by step maintenance procedures shall be given in the manuals.

(xxii) **Guarantee performance agreement :**

An Agreement listed system and sub systems of the offer for each component guarantee has to be signed between supplied and MNREDA.

(xxiii) **Deviation of the tender** :

In case of deviation the below format should be observes.

(a) **Generation conditions of Contract** :

Sl.No. Specification clause Deviation by the Tender Justification by the tender.

(b) **Technical Specification of Contract** :

Sl. No. Specification clause Deviation by the tender Justification by the tender.

(c) **Repair and maintenance** :

(a) The manufacturer/supplier are requested to provide “on site” training to the users in O & M of the systems and equip them to attend to the minor repair themselves.

(b) The manufacturer/supplier will have to be undertaken an Annual Maintenance contract of 3(three) years after the end of the warranty/guarantee period.

(c) The manufacturer/supplier should provide spares for 3 years trouble free operation of the system.

MEGHALAYA NON-CONVENTIONAL AND RURAL ENERGY DEVELOPMENT AGENCY

Near B.S.F. Camp, Mawpat, P.O. Mawpat, Shillong – 793 012
Phone No.0364-2537343/2536138#Fax No.0364-2537611
E-Mail: mnreda.dir@gmail.com Website: www.mnreda.gov.in

PART – B

Financial Bid

PART-'B'

5. **BIDDING SCHEDULED**:

Sl. No.	Description of Item Rate	Rate(Rs.)	Amount (Rs.)
A.	Equipments:		
i)	6 Kw Wind Aerogenerator		
ii)	4 Kwp Solar Photovoltaics Modules		
iii)	48V, 800 AH LMLA Battery Bank		
iv)	Inverter 48V DC Input, 230 V DC output 5 KVA		
v)	Charge controller		
vi)	SPV Mounting structure with foundation		
vii)	Aerogenerator foundation		
viii)	Wind runner		
ix)	Wind Aerogenerator stop switch		
x)	Lighting arrester		
xi)	Earthing Kit		
xii)	AC DB		
xiii)	DC DB		
xiv)	Cabling networks as per required		
	Total "A" equipment cost		
B.	Installation and commissioning		
C.	Battery House as per required size and Civil Works		
D.	Transportation and taxes		
E.	Total A+B+C+D		
F.	AMC three years		

(Rupees_____) only.

Notes:- 1. For Wind Aerogenerator depends on combination to make 60% wind and 40% solar Item A.

(i) Should specify the size without which offer will be rejected.

(2) For A (xiv)-size of cable with total quantity should be enclosed along with bidding Scheduled without which offer will be rejected.

Date:_____ Signed & Seal of the authorize

_____ signatory of the Firm.

APPENDIX-I

AGREEMENT

PREAMBLE:

Contract for design, supply, manufacturing inspection, packing and forwarding, transportation, installation & commissioning of_____Kwp solar photovoltaic plant systems at_____ location in the State of Meghalaya.

This contract made this____day of_____ Two thousand Fifteen at Shillong.

BETWEEN

Meghalaya Non-Conventional and Rural Energy Development Agency(MNREDA) having its office at Near BSF Camp, Mawpat, Shillong-793012, East Khasi Hills District, Meghalaya, India, hereinafter referred to as the "PURCHASER" which term or expression unless excluded by or repugnant to the context or the meaning thereof, shall be deemed to includes its successors and permitted assigns, OF THE ONE PART,

AND

M/s_____having its office at_____
Hereinafter referred to as "Supplier" which term or expression unless excluded by or repugnant to the context or meaning thereof shall be deemed to include its successors and permitted assigns), **OF THE OTHER PART,**

AND WHEREAS

a. The PURCHASER has decided to get the work of supply, installation and commissioning of

_____Kwp Solar Photovoltaic Power Plant at_____ location in the State of Meghalaya.

b. The SUPPLIER has declared that he has valuable specialized knowledge and expertise fo Manufacturer, Shop Testing, packing, Forwarding, Transportation, Transit Insurance, Supply, Installation, Testing and Commissioning of Solar Photovoltaic power Plant Systems.

c. The Supplier has obtained clarifications on technical and commercial aspects, inspected the site and generally all matters incidental thereto and ancillary thereof, affecting the execution and completion of the job, and

d. The SUPPLIER has agreed to undertake the aforesaid work as per the Specifications and the terms and conditions of the PURCHASER.

e. The SUPPLIER has accepted the tender of the SUPPLIER for the aforesaid work and on the basis of above declarations of the Supplier, has decided to enter into this agreement with the SUPPLIER.

NOW IT IS HEREBY AGREED AND DECLARED BY AND BETWEEN THE PARTIES HERETO AS FOLLOWS:

Article-1

1.1 In consideration of the total contract price of Rs._____(Rupees _____)only and as per details specified in Purchase Order to be paid by the PURCHASER to the SUPPLIER for scope of work and services the SUPPLIER hereby covenants with the PURCHASER to perform the work detailed in Purchaser Order and Technical Specification.

1.2 Subject to the provisions of this contract, completion of the work within the stipulated time is the essence of the contract. The SUPPLIER shall arrange to effect deliveries of the materials, facilities and other services under this contract within the time schedule and in such manner that the completion of all items of work shall be synchronized in such a way that the overall schedule of the various items specified in the contract is observed and adhered to.

1.3 Notwithstanding the approval accorded by the PURCHASER to the appointment of any sub-Suppliers including those which may be specified in the contract, the SUPPLIER shall be solely responsible for the completion of the work as per specifications and within the time schedule agreed in this contract. Approval of any sub-Supplier by PURCHASER shall not relieve SUPPLIER from any of his liabilities or obligations under the contract and he shall be responsible for the acts, defaults and neglects of any sub-Supplier as fully as if they were the acts, defaults or neglects of SUPPLIER.

Article-2

The contract price is inclusive of all applicable charges, insurance, freight, TOT, Octroi, Excise Duty, Professional Tax, VAT and all the other taxes and duties.

Article-3

This contract shall come into effect from the date of Purchase Order.

Article-4.

In case of any failure in the due performance of the contract to deliver any part of the equipment or complete the work within the time fixed under the contract or any extension thereof granted to him by MNREDA and to fulfil his obligations in time under the contract, he shall be liable to pay MNREDA liquidated damaged as mentioned in the Purchase Order.

Article-5

The following documents shall form and be read and construed as an integral part of this contract: Purchase Order No.MNREDA/_____.

Article-6

All notices under this contract shall be given in writing and shall be deemed sufficiently given when delivered either in person or by telegram, fax/telex or by registered mail or courier addressed to the other party at its address set forth in the preamble to this contract with a copy to the nominated representative at site.

Article-7

This contract is executed in English language.

Article-8

The contract shall be subject to the exclusive jurisdiction of the courts under the Meghalaya High Court at Shillong.

IN WITNESS HEREOF the Parties hereto by representatives duly authorized have executed the contract on the day, month and the year first above written.

Signature	Signature
For and on behalf of Supplier	For and on behalf of Meghalaya Non-Conventional and Rural Energy development Agency.
(Seal of the office)	(Seal of the office)
In the Presence of:	In the Presence of:
1.	1.
2.	2.

CONTRACT PERFORMANCE GUARANTEE

(To be stamped in accordance with Stamp Act)
(The stamp paper should be in the name of issuing bank)

Bank Guarantee No.

Ref:

Date :

To,

Director,
Meghalaya Non-Conventional and Rural Energy
Development Agency (MNREDA),
Near BSF Camp, Mawpat, Shillong-793012.

Dear Sir,

In consideration of the MNREDA Meghalaya Non-Conventional and Rural Energy Development Agency (hereinafter referred to as the (MNREDA) which expression shall unless repugnant to the context or meaning thereof includes its executers, administrators, successors and assigns) having accepted offer of Supply Installation Testing Commissioning(SITC) of Solar Project of_____ Kwp at _____ by M/s._____with its Registered/Head Office at _____(hereinafter referred to as "Supplier", which expression shall unless repugnant to the context or meaning thereof includes its executers, administrators, successors and assigns) a contract by issue of (MNREDA) Letter of Award No._____Dated_____ and the same having been unequivocally accepted by the Supplier resulting in a "Contract" bearing No._____for Supply Installation Testing Commissioning(SITC) of Solar Project of_____Kwp at_____and the Supplier having agreed to provide a contract performance guarantee for the faithfull performance of the entire contract equivalent to Rs._____(in figure and words).

Whereas the above said Letter of Award being assigned by MNREDA Authority Signatory (hereinafter referred to as the "MNREDA", which expression shall unless repugnant to the context or meaning thereof includes its executers, administrators, successors and assigns) vide MNREDA's , letter No._____dated_____ w.e.f. 01.01.2015 and accepted by the Supplier, thereby requiring the Contract Performance Guarantee for the same amount to be issued in favour of MNREDA.

We_____(Name & Address), having our Head office at_____and Branch office at_____(hereinafter referred to as "Bank", which expression shall unless repugnant to the context or meaning thereof includes its executers, administrators, successors and assigns) do hereby guarantee and undertake to pay promptly to MNREDA, on demand any and all monies payable by the Supplier to the extent of_____as aforesaid at any time upto_____(DD/MM/YYYY) without any demur, reservation, contest, recourse or protest and/or without any reference to the Supplier. Any such demand made by MNREDA on the Bank shall be conclusive and binding notwithstanding any difference between the MNREDA and the Supplier or any dispute pending before any court, tribunal or any other authority. The bank undertakes not to revoke this Bank guarantee during its currency without previous consent of the MNREDA and further agrees that the guarantee herein contained shall continues to be enforceable till the MNREDA discharges this guarantee.

The MNREDA shall have the fullest liberty without affecting in anyway the liability of the bank under this guarantee from time to time to extend the time for performance of the contract by the Supplier. The MNREDA shall have the fullest liberty, without affecting this guarantee to postpone from time to time the exercise of any powers, vested in them or of any right which they might have against the Supplier, and to exercise the same at any time any manner, and whether to enforce or to forbear or to enforce any covenants, contained or implied, in the contract between MNREDA and the Supplier or any other course of remedy or security available to the MNREDA. The Bank shall not be released of its obligation under these presents by any exercise by the MNREDA of its liberty with reference to the matters aforesaid or any of them or by a reason of any other acts of omission or commission on the part of the MNREDA or any other indulgence shown by the MNREDA or by any other matters or thing whatsoever which under law would, but for this provision, have the effect of relieving the bank.

The bank also agrees that the MNREDA at its option shall be entitled to enforce this guarantee against the bank as a principal debtor, in the first instance without proceeding against the Supplier and notwithstanding any security or other guarantee that the MNREDA may have in relation to the Supplier's liabilities.

Notwithstanding anything contained herein above our liability under this guarantee is restricted to_____and it shall remain in force upto and including_____and shall be extended from time to time for such period, as may be desired by M/s._____on whose behalf this guarantee has been given.

Dated this_____day of_____20___ at _____

Witness. 1.

Signature _____ (Signature)_____

Name _____ Bank Rubber Stamp

Official Address_____

_____ Name _____

_____

(Designation with Bank Stamp)_____

Witness. 2. Attorney as per

Signature _____ Power of Attorney No._____

Name_____ Dated _____

Official Address _____

_____

_____