



## Chhattisgarh State Renewable Energy Development Agency (CREDA)

(Dept. of Energy, Govt. of Chhattisgarh)

Near Energy Education Park, Village Fundhar

VIP Road Raipur 492015 (C.G.)

Ph.: 0771-7112459

E-mail: [contact.creda@gov.in](mailto:contact.creda@gov.in), Website: [www.creda.cgstate.gov.in](http://www.creda.cgstate.gov.in)

E.BID DOCUMENT NO.10370/CREDA/HOR/RE-3/Solar High Mast/2018 Date 25-07-2018

**FOR DESIGN, SUPPLY, INSTALLATION & COMMISSIONING OF  
SOLAR HIGH MAST WITH FIVE YEARS ON SITE WARRANTEE IN  
VARIOUS SITES OF CHHATTISGARH STATE.**

### Important Events and their schedule for this E.Bid are as follows-

S. No	Particulars	Date	Time	Place
1.	Pre Bid Meeting	02-08-18	From 12:30 PM	At Bio Diesel Conference Hall, Near Energy Education Park, VIP Road, Raipur.
2.	Submission of Bid Documents, Technical Bid	16-08-18	Till 11.30 AM	Office of Chief Engineer (RE - III), Head Office, CREDA, Raipur.
3.	Submission of Samples	16-08-18	Till 11.30 AM	Energy Education Park, VIP Road, Raipur
4.	Examination of Bid Documents, Technical Bid	16-08-18	From 12.30 PM	Office of Chief Engineer (RE - III), Head Office, CREDA, Raipur.
5.	Submission of Price Bid through <a href="http://cspc.co.in">http://cspc.co.in</a>	16-08-18	Till 11.30 AM	<a href="http://cspc.co.in">http://cspc.co.in</a> Web Portal
6.	Opening of Price Bid	16-08-18	After Technical Bid or the next day	At Bio Diesel Conference Hall, Near Energy Education Park, VIP Road, Raipur.

### **Bid Document Cost-Rs 5000.00**

Document can also be downloaded from our website [www.creda.cgstate.gov.in](http://www.creda.cgstate.gov.in)  
The cost of bid as mentioned in NIT shall have to be deposited along with the bid document



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Ref. No.10370/CREDA/HOR/RE-3/Solar High Mast/2018

Date 25-07-2018

**A.** **NOTICE INVITING E.BID**

CREDA invites E.Bids only from Experienced System Integrators of CREDA registered for SPV Projects for FY 2018-19 for standardisation of rates for design, supply, installation, and commissioning of Solar High Mast with five years onsite warrantee in various sites of Chhattisgarh state, as per following details:

S.No.	Item Description	Cost of Bid Document	EMD	Essentials*
1	Design, Supply, Installation & Commissioning of Solar High Mast System of capacity 1200Wp & 12M High with Lithium Ferro Phosphate (LFP) and Lithium Titanium Oxide (LTO) Battery	Rs 5000/-	05 Lakh	<i>* for details pl see eligibility conditions of the bid documents.</i>

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6.	Opening of Price Bid	16-08-18	After Technical Bid or the next day	At Bio Diesel Conference Hall, Near Energy Education Park, VIP Road, Raipur.

**Note:-**

1. Price Bid shall be submitted online only at <http://www.cspc.co.in>,\* however technical bid will have to be submitted in hard copy at Office of Chief Engineer (RE - III), Head Office, CREDA, Raipur. Bidders are advised to follow the instructions provided for Registration and E Submission Process accordingly.
2. The bid forms, General Instructions to Bidders and other details including amendments/changed can be viewed/ downloaded from website [creda.cgstate.gov.in](http://creda.cgstate.gov.in)
3. Tender notice is also available on CREDA website [creda.cgstate.gov.in](http://creda.cgstate.gov.in) in the link notice or <http://www.cspc.co.in>.
4. CREDA reserves all rights to accept/reject any or all tenders in full/part without assigning any reasons.

**(Rajiv Khare)**  
Chief Engineer



**B. CHECK LIST**

To ensure that your bid submitted to CREDA is complete in all respects, please go through the following checklist & tick mark for the enclosures attached with your bid:

S.No.	Description	Attached / Not Attached	Page no. if attached
1	Bid Document Fee and EMD (proof of submission).		
2	Copy of SI Registration Certificate CREDA in SPV Programme for FY 2018-19.		
3	Submission of Engineering Document with Test Report of all major components.		
4	Balance Sheets of last three financial years certified by a registered Chartered Accountant showing minimum positive net worth of Rs 10 Lakh as on 31-03-2018 and overall annual turnover of Rs 5 crore in SPV in FY 15-16, FY 16-17 & FY 17-18.		
5	List with Completion cum Performance Certificates of 01 no. of Solar High Mast with Lithium Battery installed by the bidder duly certified by a Govt Agency/ Govt UT as on 10-08-2018.		
6	Copy of GST Registration Certificate of the bidder.		
7	Original Bid document duly signed & sealed on each page, as a confirmation of acceptance of Terms & Conditions (T&C)		
8	Declaration of the supplier about any relatives working with CREDA		

**(Sign & Seal of the bidder)**

**Details of EMD & Bid Document Fee Attached**

S.No.	Description
1	<b>Earnest Money Deposit</b> - Earnest Money Deposit of Rs.5 Lakh, submitted in the form of DemandDraft/ Banker's Cheque/ FDR/ TDR/ NEFT/ RTGS, drawn on ..... Bank, ..... Branch, bearing DD/BC No..... dated.....(*duly pledged in favour of CREDA) is attached herewith.
2	<b>Bid Document Fee</b> - Bid Document Fee of Rs. 5000/-, submitted in the form of Demand Draft/Banker's Cheque, drawn on ..... Bank, ..... Branch, bearing DD/BC No..... dated.....is attached herewith.

**(Sign & Seal of the bidder)**



**C. UNDERTAKING OF THE BIDDER**

I/We have read carefully and examined the notice inviting bid, schedule, General Rules and terms and conditions of the contract, special conditions, Schedule of Rates and other documents and Rules referred to in the bid document for the supply.

I/We hereby bid my rates for the execution of the work for CREDA as specified within the time stipulated in the schedule in accordance with all aspects with the specifications, designs, drawings and instructions with such conditions so far as applicable.

I/We agree to keep the bid open for Ninety (90) days from the due date of submission thereof and not to make any modifications in its terms and conditions.

A sum of Rs 5 Lakh (Five Lakh) is hereby forwarded as earnest money in the form of crossed demand draft payable/banker's cheque/TDR/FDR/NEFT/RTGS to CREDA at Raipur (C.G.). If I/We, fail to commence or complete the sanction ordered in specified time I/We agree that the CREDA shall, without prejudice to any other right or remedy, be at liberty to forfeit the said Earnest Money absolutely. The said Earnest Money shall be retained by CREDA towards security deposit to execute all the works referred to in the bid documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be required by CREDA.

I/We hereby declare that I/We shall treat the bid documents, specifications and other records connected with the work as secret/confidential and shall not communicate information derived there- from to any person other than a person to whom I/We have authorized to communicate the same or use the information in any manner prejudicial to the safety of CREDA/Government.

I/We shall abide to all the laws and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.

Our state GST registration no. is \_\_\_\_\_ . The PAN No. under the Income Tax Act is \_\_\_\_\_

I/We shall be responsible for the payment of the respective taxes to the appropriate authorities and should I/we fail to do so, I/we hereby authorize CREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.

Dated:

Signature

Place:

Name of bidder with seal

Witness

Signature:

Name:

Postal Address:



**D. General Information about this Bid**

<b>S.No.</b>	<b>Particulars</b>	<b>Details</b>
1	E.Bid No.	10370/CREDA/HOR/RE-3/Solar High Mast/ Bid/ 2018 Date 25-07-2018.
2	Particulars of the work	Design, supply, installation, commissioning of Solar High Mast Systems with five years comprehensive onsite unconditional warrantee.
3	Time Period for completion of the work	Maximum 3 Months from the date of allocation of Work/ Date of completion of Work Order whichever is earlier
4	Mode of submission of Bids	Technical Bid – Off Line Price Bid – E Bidding through <a href="http://www.cspc.co.in">http://www.cspc.co.in</a> website.
5	Last date and time for submission of Bid, Technical Documents & Sample (Offline)	Till 11.30 Hours Date 16-08-2018.
6	Last date and time for submission of Bid and Technical Documents (Online)	Till 11.30 Hours Date 16-08-2018.
7	Period of validity of rates for acceptance	Three months from the date of opening.
8	Date and time of opening of Technical Bid	From 12.30 hours Date 16-08-2018.
9	Date and time of opening of Price Bid	After Technical bid Date 16-08-2018 or on the next date.
10	Place of opening Bid	At Bio Diesel Conference Hall, Near Energy Education Park, VIP Road, Raipur.



**E. ELIGIBILITY CRITERIA:**

1. Bidder must have valid System Integrator registration in CREDA for SPV Programme for the FY 2018-19.
2. Bidder should have experience of supply, installation and commissioning of 01 no. of Solar High Mast System with Lithium Battery on or before 10-08-2018 under Govt/Market Mode scheme of CREDA. If the bidders have installed system (on or before 10-08-2018) in any other states/UT, bidders have to submit Performance Certificate issued by Govt Department / Govt UT in prescribed format. Performance certificate issued by Govt/ Govt Undertaking shall only be considered.
3. Bidder must have a minimum positive net worth of 10 Lakh as on 31-03-2018.
4. Bidder should have a overall annual turnover of Rs 5 crore in SPV in last three Financial Years ending on 31<sup>st</sup> March of each FY i.e. FY 2015-16, FY 2016-17, FY 2017-18.
5. Bidder will have to submit audited copy of balance sheet certified by a registered chartered accountant as a proof for point no. 3 and 4 above.
6. Bidder will have to submit a copy of engineering document with test report including system and foundation drawings and FEA Report for Structure duly certified by a qualified structural engineer of the bided system for its safety and stability against a wind speed of minimum 180KMPH which they want to bid even if the drawings mentioned in the bid are submitted by the bidder.
7. Bidders whose performance is poor in operation & maintenance activities and whose percentage of non- functional/non- working systems is more than 5% will not be allowed to participate in tender. Also they will have to submit a performance certificate of the signed by authorized signatory of O&M section of CREDA for systems installed under Govt/Market Mode. If the bidders have installed system in any other states/UT, bidders have to submit Performance Certificate issued by Govt Department / Govt UT in prescribed format shall only be considered.
8. Bidders may not be allowed to participate in the Bid who have not completed more than 25% of allocated works within stipulated/ extended time limit.
9. The Bidder should have valid GST registration certificate. A copy of which should be enclosed.
10. Bidders who are **Blacklisted/Debarred** by CREDA or any other Govt Agency/ Department / UT, **will not be** allowed to participate in this bid.
11. Bidder who has any litigation pending in any court with CREDA on the date of opening of the bid shall not be eligible for this bid.
12. Bidders/System integrator whose registration has been suspended by CREDA due to bad performance or other reasons shall not be eligible to participate in price bid.
13. Any information/data submitted/rendered by the applicant/bidder if found false/forged/wrong would entitle CREDA to reject/cancel the bid submitted by bidder.

**F. INSTRUCTIONS TO BIDDER:**

1. The Bidder is expected to examine all instructions, forms, terms and specifications as mentioned in the Bid document. Failure to furnish all information required by the Bid documents or submission of a bid not substantially responsive to the Bid Document in every respect will be at the Bidder's risk and is likely to result in out-right rejection of the Bid.
2. Bidder should have a valid system integrator registration in CREDA in SPV Programme.

**3. LOCAL CONDITIONS:**

It shall be imperative on each bidder to fully inform him of all local conditions and factors, which may have any effect on the execution of the works covered under these documents and specifications. AGENCY shall not entertain any request for clarifications from the Bidder, regarding such local conditions.

**4. CLARIFICATION OF BID DOCUMENTS:**

- A. A prospective Bidder requiring any clarification of the Bid Documents may contact AGENCY in writing or by Fax at the AGENCY's mailing address indicated in the Invitation for Bid.
- B. Verbal clarifications and information's given by the AGENCY or its employees or its Representatives shall not be in any way entertained.

**5. AMENDMENT OF BID DOCUMENTS:**

At any time prior to the submission of the bid or prior to the opening of the financial bid for any reason, whether at its own initiative or in response to a clarification requested by the Bidder, CREDA may, modify the Bid documents by amendments.

6. **BIDDING PROCESS-** For ease of accessing the e-bidding website and registration the following is to be done by bidder –

- A. Visit <http://www.cspc.co.in>
- B. Click on e-bidding button on right hand side of the page.
- C. The user will be directed to e-bidding page where all information regarding registration is available along with helpline details.
- D. The Bidder must submit attested copies of all legal documents pertaining to the constitution of their Concern as applicable, along with the Tender, to authenticate their identity, such as affidavit of Sole Proprietorship/Partnership Deed/ Registration Certificate/ Certificate of incorporation of the Company/Memorandum of Association of the Company and Power of Attorney authorising a person to represent the firm in all matters with respect to the Bid.
- E. Price Bid shall be submitted online only at <http://www.cspc.co.in> however technical bid will have to be submitted in hard copy. Bid Documents (including Technical Bid and samples) must reach at Office of Chief Engineer (RE – III), Head Office, CREDA latest by 11.30 AM on 16.08.2018. Tenders submitted after scheduled time and date shall not be considered.
- F. Technical Bid Documents should be submitted in prescribed manner in separate envelopes duly super scribed and placed as follows- (A) Bid Fees and EMD , (B) Eligibility Documents as per point E(1) to E(11) mentioned above (C) Technical Bid and Complete bid document in original duly signed by authorized signatory on each & every page of the bid document.
- G. The envelopes must be clearly marked as “(A) Bid Fees and EMD / (B) Eligibility Documents / (C) Technical Bid and Complete bid document in original /of “**BID DOCUMENT NO.10370/CREDA/HOR/RE-3/Solar High Mast/2018 Date 25-07-2018 DUE ON 16-08-18**”.





7. The Specifications of Solar High Mast Systems should be as specified in the bid.
8. Bidders must have to install MPPT Charge Controller of suitable capacity and specification for LTO & LFP Battery used in the system. Charge Controller of C-10 Rating for LMLA Battery will not be considered.
9. The System must have LED Flood Light.
10. The BMS must be equipped with positive temperature control mechanism so as to control the Battery Temperature in the system.
11. Bidder shall have to submit details of GST & PAN registration numbers issued by the appropriate authority
12. The documentary evidence for meeting the eligibility criteria must mandatorily be submitted along as per check list with bid in prescribed manner.
13. Each offered solar module should have RFID & I-V curve measured with a sun simulator of a SPV Module Manufacturer reregistered/approved by MNRE with record of suitable calibration reference, as per guidelines of MNRE.
14. Bidders must enclose the safety procedure & manual.
15. When Technical Bid Documents & Eligibility documents are delivered through messenger, it should be submitted at Office of Chief Engineer (RE - III), Head Office, CREDA latest by 11.30 AM on 16.08.2018. Nobody is authorized to receive or grant receipt for tender delivered on behalf of CREDA.
16. Bidder should quote their rates considering variation of site conditions, variation in price of different components and keeping the quantum and quality of work in mind. If CREDA anticipates that rate is abnormally low or high, CREDA shall have liberty to amend the rates or reject the bid.
17. **VALIDITY:**  
Full descriptive particulars and complete specifications should accompany the offer. Offers should be kept open for acceptance for at least three months from the date of opening. After finalization of this bid the approved rates shall be valid till one year from the date of award; however CREDA shall have liberty to increase or decrease this validity if needed.
18. The terms, conditions and specifications mentioned in bid document shall be binding on the bidders and no condition or stipulation contrary to the conditions shall be acceptable. It may please be noted that the bidders who do not accept terms and conditions stipulated in this bid documents, their offers shall be liable to be rejected out-rightly without assigning any further reasons.
19. Each page of bid document & enclosures shall be signed by the bidder and seal affixed. All the pages of the documents issued must be submitted along with the offer. In case of any corrections/ alterations in the bid, the bidder should attest the same; otherwise bids may not be considered.
20. CREDA reserves the right (i) to reject or accept any or all tenders wholly or partly without assigning any reason on the grounds considered advantageous to CREDA, whether it is the lowest tender or not and (ii) to split the quantities against the tender on more than one firm

for the same items/ work. No reason will be assigned by CREDA for this and will be binding on the bidders. The bidder who had quoted the lowest price shall be preferred for placing order. Due to large quantum of work & limitation of the time period for completion of the work CREDA shall take consent from more than one bidder if they agree to work on rates standardized by CREDA. CREDA may undergo agreement with those eligible bidders who give consent to work on rates standardized by CREDA and may place work orders to them. Rates approved through this tender may be standardized for all eligible bidders to work in year 2018-2019 and shall be valid till 31-03-2019. However CREDA reserves right to curtail or extend this period.

21. Offers through Telegraph/ Fax/Emails or open offers etc. received shall be summarily rejected.

22. All the bidders shall essentially indicate the break-up of prices as shown in Price Bid. In case any of the charges are not included in the quoted prices, the same shall be clearly shown as extra, indicating specifically the rate/scale of such charges. The lowest prices quoted shall be considered.

**23. BID DOCUMENT FEE AND EARNEST MONEY:**

Each bidder should submit Bid Document Fee and earnest money 5 Lakh for participating in bid in the form of Demand Draft/Pay Order or RTGS/NEFT/FDR/TDR as mentioned in the NIT of **BID DOCUMENT NO.10370/CREDA/HOR/RE-3/SOLAR HIGH MAST/2018 Date 25-07-2018**, in a separate envelope else they will summarily be rejected and returned. Bid Document Fee, EMD submitted in any other form e.g. Cash/Bank Guarantee etc shall not be accepted. [Exemption from EMD shall be given only to those SSI units of Chhattisgarh State who submit the competency certificate on which it should be clearly mentioned that, "the company/firm is registered in Chhattisgarh for manufacturing of that particular product"]. CREDA Competency Certificate for EMD will not be considered as EMD for this Rate Contract Bid.

**24. FORFEITURE OF EARNEST MONEY DEPOSIT:**

It should be clearly understood that in the event of bidder failing to enter into the agreement in the prescribed format on their quoted rates and also fails to execute assigned works within stipulations, if he is so communicated within the validity period of the offer, the full amount of earnest money shall be forfeited and bidder will be debarred from future business with CREDA. CREDA's decision in this respect will be final and binding on the bidder.

**26. PRICE:**

The prices quoted should be firm and F.O.R. destination excluding GST payable on the bill of supply and installation / services. GST as applicable on the date of billing shall be paid additionally as per applicable rate over the above quoted prices

**27. ENGINEERING DOCUMENT & TEST CERTIFICATE:**

Bidder will have to submit a copy of engineering document with test report including system and foundation drawings and FEA Report for Structure duly certified by a qualified structural engineer of the bided system for its safety and stability against a wind speed of minimum 180KMPH which they want to bid even if the drawings mentioned in the bid are submitted by the bidder.

**28. SAMPLES:**

Bidders will have to submit samples of their complete Solar High Mast System for examination before 11.30 AM dtd. 16-08-2018 as mentioned in Bid Invitation Notice. These samples shall be examined by Technical Committee of CREDA.

**29. TAX OBLIGATIONS:**



TDS for Income Tax, GST, Civil Work etc shall be recovered under various acts and deposited with the appropriate authority. Eligible bidder will have to submit break up of costs and taxes before execution of agreement with CREDA so as to ensure tax deposition as per Govt Rules accordingly.

**30. Prevention of Conflict of Interest:**

- a) All persons/groups/agencies/workers/Bidders including their blood relatives who are employed or have been assigned jobs/works with Chhattisgarh CREDA, Raipur are prohibited from bidding for the work mentioned in this document, without prior approval of CEO, CREDA Chhattisgarh, Raipur.
- b) Any violation of this clause will lead to the automatic rejection of the bid irrespective of the stage. If the violation of this clause is found out after the issuance of work order it will lead to the automatic cancellation of the work order from the date of detection. In such case the bid Security Amount/EMD will be forfeited by CREDA, Raipur.

**31. Miscellaneous:**

- a) The Selection Process shall be governed by and constructed in accordance with the laws of India and the courts at Raipur shall have exclusive jurisdiction over all disputes arising under, pursuant to and/or in connection with the selection process.
- b) All forms of canvassing, misrepresentation, or volunteer withholding or omission of facts for the above work will render the applicant ineligible for the bidding process & CREDA, Raipur reserve the right to take action as per law.
- c) CREDA, Raipur in its sole discretion and without incurring any obligation or liability, reserve the right, at any time to:
  - i. Suspend and/or cancel the Selection Process and/or amend and/or supplement the Selection Process or modify the dates or other terms and condition relating thereto; in case of cancellation or suspension of the process CREDA, Raipur will return the security/bid amount in 60 days.
  - ii. Consult with any bidder in order to receive clarification or further information;
  - iii. Independently verify, disqualify, reject and/or accept any and all submission or other information and/or evidence submitted by or on behalf of any Bidder.
  - iv. It shall be deemed that by submitted the proposal, the bidder agrees and releases CREDA, its employees, irrevocably, unconditionally, fully and finally from any and all liability for proven and adjudication claims, losses, damages, costs, expences or liabilities in any way related to or arising from the exercise of any rights and/or performance of ny obligations hereunder.
  - v. The bidder, once applied, will not be allowed to withdraw at any stage. if the bidder wants to withdraw, the entire amount of EMD will be forfeited.
  - vi. The Courts of Raipur will have jurisdiction over all legal disputes under this Agreement

**32. JURISDICTION OF THE COURT:** Any dispute arising out of the contract shall be subject to the jurisdiction of court in Chhattisgarh.

## **G. GENERAL CONDITIONS OF CONTRACT**

1. **DEFINITIONS:** In writing General Conditions of Contract, the specifications and bill of quantity, the following words shall have the meanings hereby indicated, unless there is something in the subject matter or content inconsistent with the subject.

CREDA shall mean the Chhattisgarh State Renewable Energy Development Agency represented through the CEO.

Work shall mean any work entrusted to the bidder as mentioned in the scope of work and sanction order.

The "Engineer in charge" shall mean the Engineer or Engineers authorized by CEO, CREDA for the purpose of this contract. Inspecting Authority shall mean any Engineering person or personnel authorized by CREDA to supervise and inspect the erection of the Solar High Mast System.

"The Eligible SI/ bidder" shall mean the bidder awarded with the contract or their successors and permitted assigns. Contract Price shall mean the sum named in or calculated in accordance with the provisions of the contract as the contract price. General Conditions shall mean the General conditions of Contract.

"Specifications" shall mean the specifications annexed to these General Conditions of contract and shall include the schedules and drawings attached thereto or issued to the eligible SI from time to time, as well as all samples and pattern, if any,

"Month" shall mean calendar month. "Writing" shall include any manuscript, typewritten, printed or other statement reproduced in any visible form whether under seal or written by hand.

2. **CONTRACT DOCUMENT:**

The term "Contract" shall mean and include the General conditions, specifications, schedules, drawings, work orders etc., issued against the contract schedule of price or their final general conditions, any special conditions applying to the particular contract specification and drawings and agreement to be entered into. Terms and conditions not herein defined shall have the same meaning as are assigned to them in the Indian contract Act or any other Act in vogue or by any person of common knowledge and prudence.

3. **MANNER OF EXECUTION:**

Execution of work shall be carried out in an approved manner as outlined in the technical specifications or where not outlined, in accordance with desired Specifications laid down by CREDA, to the reasonable satisfaction of the Engineer.

- i) The eligible Contractor shall conduct a detailed survey of site and submit Site Clearance and necessary documents and survey details in concerned District Office of CREDA in prescribed manner.
- ii) District / Regional Office CREDA shall examine these reports and after satisfaction forward these to concerned Chief Engineer of Head office of CREDA for approval.
- iii) The Contractor shall start work within 15 days after the date of issue of work Order. Work order will be given to the chosen System Integrator only after execution of the agreement with CREDA.



- iv) All the materials required for the installation of Solar High Mast as per Work Order issued shall be kept at site in the custody of the SI. CREDA shall not be responsible for any loss or damage of any material during the installation.
- v) All the electrical works should be done as per Indian electricity Act. The persons engaged for carrying out electrical works should have a valid license of required category accordingly.
- vi) After installation and joint inspection will be done in presence of beneficiary, SI and CREDA and after successful commissioning of Solar High Mast and its approval from CREDA a JCC will be signed and the claim will be forwarded for payments as per guidelines and procedures of CREDA.

**4. VARIATIONS, ADDITIONS & OMISSIONS:**

CREDA shall have the right to alter, amend, omit, split or otherwise vary the quantum of work, by notice in writing to the SI. The eligible SI shall carry out such variation in accordance with the rates specified in the contract so far as they may apply and where such rates are not available; those will be mutually agreed between CREDA and the eligible SI.

**5. INSPECTION DURING ERECTION:**

The Engineer in Charge or his authorized representative (s) shall be entitled at all reasonable times to inspect and supervise and test during installation and commissioning. Such inspection will not relieve the eligible SI from their obligations under this contract. Material can be inspected before dispatch by the authorized representatives of CREDA at the factory at the cost of the eligible SI, if desired by CREDA.

**6. COMPLETION OF WORK:**

Time being the essence of contract, the installation of the Solar High Mast shall be completed within the time schedule prescribed in the Work order. Time Limit will start from the date of site approval/approval of layout.

**7. ELIGIBLE SIs DEFAULT LIABILITY:**

CREDA may by written notice of default to the eligible SI, terminate the contract in circumstances detailed hereunder:

- (a) If in the opinion of the CREDA, the eligible SI fails to complete the work within the time specified in the Work Order or within the period for which extension has been granted by CREDA to the eligible SI.
- (b) If in the opinion of CREDA, the eligible SI fails to comply with any of the provisions of this contract.
- (c) In the event of CREDA terminating the contract in whole or in part as provided in paragraph (a) above, CREDA reserves the right to engage another eligible SI or agency upon such terms and in such a manner as it may deem appropriate and the eligible SI shall be liable to CREDA for any additional costs or any losses caused to CREDA as may be required for the completion of erection of the Solar High Mast and or for penalty as defined under this bid document until such reasonable time as may be required for the final completion of the work.
- (d) In the event CREDA does not terminate the contract as provided in paragraph (a) the eligible SI shall continue performance of the contract, in which case he shall be liable to CREDA for penalty for delay as set out in this bid document until the work is completed.
- (e) The maximum liability of the bidder is limited to 100% of contract value.

**8. FORCE MAJEURE:**

The eligible SI shall not be liable for any penalty for delay or for failure to perform the contract for reasons of FORCE MAJEURE such as of God, acts of public, enemy, naxal problems, acts of government, cyclone, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes provided that the contract, shall within 10 (ten) days from the beginning of such delay notice the CREDA in writing of the cause of delay. CREDA shall verify the facts and grant such extension as facts justify. Delay in supply of any accessories of Solar High Mast by the related vendors, to whom the bidder has placed order, shall also not be treated as force majeure.

**9. REJECTION OF WORKS:**

In the event of any of the material supplied/ work done by the eligible SI is found defective in material or workmanship or otherwise not in conformity with the requirements of this contract specifications, CREDA shall either reject the material and/ or work and advise the eligible SI to rectify the same. The eligible SI on receipt of such notices shall rectify or replace the defective material and rectify the work, free of cost. If the eligible SI fails to do so, CREDA may,

- i At its option replace or rectify such defective materials and/ or work and recover the extra cost so involved from the eligible SI plus fifteen percent service charges of the cost of such rectification, from the eligible SI and/ or terminate the contract for balance work/ supplies with enforcement of penalty as per contract
- ii Defective materials/ workmanship will not be accepted under any conditions and shall be rejected outright without compensation. The eligible SI shall be liable for any loss/ damage sustained by CREDA due to defective work.

**10. EXTENSION OF THE TIME:**

If the completion of installation is delayed due to any reason beyond the control of the eligible SI, the eligible SI shall without delay give notice to the CREDA in writing of his claim for an extension of time. CREDA on receipt of such notice may agree to extend the contract/delivery date of the Solar System as may be reasonable but without prejudice to other terms and conditions of the contract.

**11. MAKES OF EQUIPMENTS TO BE USED IN THE WORK:**

The eligible SI has to ensure that equipments as per Technical Requirements of guidelines of CREDA as complied with. The eligible SI has also to ensure that he will use only components of approved vendors of CREDA. The material/works for which CREDA/MNRE or IEC/BIS/IS specification is not available, engineer-in-charge of the works will examine and approve the material/works, preferably of all makes on which CREDA has report of satisfactory performance. Test certificates for all major equipments should be submitted to the engineer-in-charge of the works before installation of the same.

**12. WARRANTEE PERIOD AND POST INSTALLATION SERVICES:**

The work done/ material supplied by the eligible SI should be warranted for satisfactory operation and against any defect in material and workmanship including Luminaries, Controllers and other balance of equipments, at least for a period of 5(five) years, from the date of commissioning of the Solar High Mast including other works as per scope of work. Warrantee on SPV Modules shall be for 10 (ten) years from the date of commissioning of the Solar High Mast must be warranted for their output peak watt capacity, which should not be



less than 90% at the end of 10 years and not less than 80% at the end of 25 years. The above warrantee certificates shall be furnished to the CREDA for approval. Any defect noticed during this period should be rectified by the supplier free of cost upon written notice from CREDA provided such defects may be due to bad workmanship or bad materials used. The warrantee period shall be extended by the period during which the plant remains non-operative due to reasons within control of the eligible SIs. This warrantee must be an unconditional onsite warrantee and the eligible SI will have to replace the defective material within 7 days positively from the date of information given to him. Care should necessarily be taken to make the Solar High Mast operational, once the reporting of the fault/non operational status is done, within a week. If the Solar High Mast is not made operational within 7 days CREDA may rectify the same at the cost of SI, and the warrantee period shall be extended for a month for the same. This warrantee must be an unconditional onsite warrantee and the eligible SI will have to replace the defective material within 7 days positively from the date of information given to him.

System Integrators shall have to establish their service stations in the state and shall have to keep sufficient quantity of spares and man power to ensure proper service network for taking care of smooth functioning of Solar High Mast System installed by them. SI shall have to give a toll free number to register complaints.

**13. TERMS OF PAYMENT:**

The following terms of payment shall apply for the bid: -

- a) 95% of the cost as per the work order after satisfactory supply, installation, commissioning & performance test of the Solar High Mast System at site with proper handing over.
- b) Balance 5% of the cost of the system as per the work order shall be retained by CREDA as Security Deposit for a period of 60 months. However the same may be released to SI on submission of TDR (duly pledged in favour of CREDA) of equivalent amount in prescribed format valid for a period of five years issued by a scheduled bank. Payment will be done after receipt of Beneficiary contribution to CREDA.
- c) GST shall be paid extra as applicable on the date of billing.

**14. PENALTY FOR DELAY IN COMPLETION OF CONTRACT:**

If the eligible SI fails to complete the erection, testing and commissioning etc, within the phased time schedule specified in the work order or any extension granted there to, CREDA will recover from the eligible SI as penalty of one percent (1%) of the system/work price for each week of delay or part thereof. For this purpose, the date of taking over shall be reckoned as the date of completion. The total penalty shall not exceed 5% (five percent) of the Cost. The repeated fault may result in forfeiture of part or whole of money and even termination of the contract.

Penalty may be recovered from payments due or by invocation of performance security. CREDA may also debar the SI from future business for upto 3 years in case of non performance of work in time limit.

**15. PERFORMANCE SECURITY:**

The Performance Security shall be 5% of the eligible payments and shall be deposited in manner under clause no. 13. For the purpose of 13(b) the EMD may be considered to be converted into part of performance security. EMD shall be refunded only upon submission of at least equal amount towards Performance Security or else EMD shall be deemed to be converted into Performance Security.

16. **INSURANCE:** The eligible SI shall arrange insurance coverage for the materials and Solar High Mast at his/beneficiary's custody for the work under execution and successful commissioning and subsequent handover to the beneficiary. The eligible SI shall take up insurance or such other measures for the manpower so as to cover the claim for damage arising under workmen's compensation Act and other applicable State/ Central laws. CREDA shall not bear any responsibility on this account.
17. **PENALTY DUE FROM THE ELIGIBLE SI:**  
All costs of damages for which the eligible SI is liable to the CREDA will be deducted from any money due to the eligible SI including the security deposit.
18. **ELIGIBLE SI'S RESPONSIBILITY:**  
Notwithstanding anything mentioned in the specifications of subsequent approval or acceptance of the Solar High Mast by CREDA, if any, the ultimate responsibility for satisfactory performance of the entrusted work shall rest with the eligible SI. If in any case the eligible SI does not complete the work as per the Work orders issued to them then CREDA may take over the task & complete the project at the cost of eligible SI.
19. **RESPONSIBILITY TO RECTIFY THE LOSS AND DAMAGE:**  
If any loss or damage occurs to the work or any part thereof or materials/ plant/ equipment for incorporation therein the period for which the eligible SI is responsible for the cause thereof or from any cause whatsoever, the eligible SI shall at his own cost rectify/ replace such loss or damage, so that the permanent work confirms in every respect with the provision of the contract to the satisfaction of the Engineer. The eligible SI shall also be liable for any loss or damage to the work/ equipment occasioned by him in course of any operation carried out to him during performing the contract.
20. **RESPONSIBILITY TOWARDS THE WORKMAN OR OUT SIDERS:**  
The eligible SI shall have to take insurance coverage from any authorized Insurance Company against Workmen compensation due under Workmen Compensation Act and submit copy of the insurance document before issuance of Sanction order. The eligible SI shall ensure all safety measures during execution and repairs of the work. CREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any workman or outsider in course of transport or execution or repairs of work. All the expenditure including treatment or compensation will be entirely borne by the eligible SIs. The eligible SI shall also be responsible for any claims of the workers including PF, Gratuity, ESI & other legal obligations.
21. **NON-ASSIGNMENTS:**  
The eligible SI shall not assign or transfer the work orders issued as per this contract or any part thereof without the prior approval of CREDA.
22. **CERTIFICATES NOT TO AFFECT RIGHTS OF CREDA:**  
The issuance of any certificate by CREDA or any extension of time granted by CREDA shall not prejudice the rights of CREDA in terms of the contract nor shall they relieve the eligible SI of his obligations for due performance of the contract.
23. **SETTLEMENT OF DISPUTES THROUGH ARBITRATION:**
- i. Except as otherwise specifically provided in the contract, all disputes concerning questions of fact arising under the contract shall be decided by the Chief Executive Officer (CEO), CREDA provided a written appeal by the eligible SI is made to CREDA. The decision of the CEO, CREDA shall be final and binding to the all concerns.
  - ii. Any dispute or difference including those considered as such by only of the parties arising out of or in connection with the contract shall be to the extent possible be settled amicably between the parties. If amicable settlement cannot be reached then all disputed issues shall be settled by arbitration.



**24. LAWS GOVERNING CONTRACT:**

The contract shall be constituted according to and subject to the Laws of India and jurisdiction of the High Court of Bilaspur, Chhattisgarh.

**Compliance with Labour Regulations**-During continuance of contract, the contractor shall abide at all times by all applicable existing labour enactment and rules made there under, regulations, notifications and bye laws of state and central Govt or local authority that may be passed/issued or may be issued.

**25. LANGUAGE AND MEASURES:**

All documents pertaining to the Contract including specifications, schedules, notice correspondences, operating and maintenance instructions, drawings or any other writings shall be written in English / Hindi language. The metric system of measurement shall be used in this contract.

**26. CORRESPONDENCE:**

- i. Any notice to the eligible SI under the terms of the contract shall be served by registered mail to the registered office of the eligible SI or by hand to the authorized local representative of the eligible SI and copy by post to the eligible SI's principal place of business.
- ii. Any notice to CREDA shall be served to the CEO, CREDA, Raipur in the same manner.

**27. SECRECY:**

The eligible SI shall treat the details of the specifications and other documents as private and confidential and they shall not be reproduced without written authorization from CREDA.

**28.** CREDA reserves all right to change/ amend any condition of the Bid or accept/reject any or all bids in full/part without assigning any reasons whatsoever.

**29.** CREDA reserves all rights to increase or decrease quantum of works to be allocated to bidders if required without assigning any reason.

**30.** In case of non-compliance of any terms and conditions by bidder, CREDA, may discontinue the contract if required and may forfeit the EMD.

**31.** CREDA reserves the right to cancel the work allotted to the bidder if the bidder fails to complete the work within stipulated/ extended time limit as mentioned in the Work Order. Subsequently CREDA shall also have right to reallocate the work fully or partly to any other eligible bidder for completion of the work. CREDA shall also have right to forfeit payment of uncompleted work of the bidder if require.

**32. AGREEMENT:**

The successful eligible SI shall have to enter into an agreement with the CEO, CREDA in the approved contract agreement form within 07 days of the receipt of call from CREDA.

**33. BID EVALUATION CRITERIA**

- i. Offers of only those parties who are found qualifying based on eligibility Criteria will be taken into further consideration and only those parties qualifying based of these criterion will be allowed to submit their price bid.
- ii. Bids shall be evaluated on the basis of rates without GST.
- iii. Grading of Bidders = L1, L2, L3.....Ln will be decided by the average of the price quoted by the bidder i.e, Sum of the price / No. of categories in the bid.
- iv. CREDA retains right to negotiate rates with L-1 Bidder.
- v. L-1 Rates or the rates approved by CREDA will be considered as the final rate of the project.
- v. Conditional bids shall not be accepted.



- vi. However CREDA shall have rights and liberty to call any /other parties to work on approved rates as and when requires in accordance with quantum of work and scheduled time limits for completion of targets.

**34. ALLOCATION OF TARGETS AND AREA OF WORK**

Initially all the eligible SI will be awarded with equal nos of work. However further allocations shall be made on the basis of their performance subsequently.

**We (on behalf of Eligible SI/bidder) have read all the above stated details & accept to comply with it in total.**

**(Name, Signature & Seal of the bidder)**

## **H. SCOPE OF WORK**

The scope in brief will be as follows-

1. Survey of Sites, designing, supply, installation & commissioning of SPV High Mast Systems including necessary civil work for construction of RCC Foundation and Pedestal as per design and specifications approved by CREDA, on turnkey basis. Bidder shall have to take approval of the engineering documents, Bill of Materials and samples from CREDA prior to commencement of the work. Five years unconditional onsite warrantee for manufacturing defects shall be required for each of the system after successful commissioning and proper handing over.
2. The scope of work shall also includes the followings:
  - Survey of Sites, Submission of site clearance certificate where the SPV High Mast Systems are to be installed. A layout plan of the site should also be submitted clearly indicating the identified location for installation of SPV Modules, Structures and other components shall be installed. Work order shall be issued only after receipt of satisfactory reports suitable for system installation. SI shall furnish all necessary information to beneficiary for SPV High Mast System Warrantee, Do & Don'ts etc. so as to avoid further misunderstandings and disputes.
  - Detailed planning of time bound smooth execution of project.
  - Design, supply, installation & commissioning of SPV High Mast System of required capacities as per design and specifications approved by CREDA, on turnkey basis.
  - Providing User Manuals and Warrantee Cards to beneficiary / CREDA.
  - SI shall have to submit JCCs within 15 days of Installation and Commissioning of SPV High Mast System in District Office of CREDA.
  - Unconditional onsite warrantee for manufacturing defects for Five years faultless operation, assure inventory for maintenance.
  - Providing Prompt Service Facilities to customers/ beneficiaries.
  - Risk liability of all personnel associated with implementation and realization of the project.
  - Training of at least two persons nominated by user, on the various aspects of design and maintenance of the offered system after commissioning of the system.
  - The eligible SI shall maintain sufficient inventory of the spares to ensure that the system can be made functional within 7 days from the communication of breakdown of the system during currency of the warrantee period.

The contractor shall run the system on trial basis and shall closely monitor the performance of the system before handing over the system, so that the assured annual power generation can be estimated for monitoring of the performance of the system. CREDA shall examine the data of generation and ascertain if the generation is adequate with reference to the capacity of the SPV Systems.

Performance Guarantee Test: Successful performance guarantee test to demonstrate the rated capacity of SPV High Mast System as per CREDA's norms shall have to be conducted by SI in presence of representatives of CREDA, if required.

## I. TECHNICAL SPECIFICATIONS:

A solar photovoltaic High Mast System (HM) is an outdoor lighting unit used for illuminating an open area. The Solar High Mast System consists of a solar photovoltaic (SPV) Module, LiFePo4 or LTO storage battery, LED Luminary with Controls & BMS. Electricity generated by the PV module charges the battery during the day time which powers the luminary from dusk to dawn. The system lights at dusk and switches off at dawn automatically.

The SPV Module should be of capacity minimum 200Wp with 24 V nominal voltage, Multi/Mono Crystalline/MNRE approved solar modules with 48 Full Cells, with minimum 15% Module Efficiency), The battery bank should be of LiFePo4 or LTO storage batteries as per MNRE with control electronics, BMS, inter-connecting wires/cables properly sealed. The luminary is based on White Light Emitting Diode (W-LED), a solid state device which emits light when electric current passes through it. All these three items should be mounted as an integrated compact unit. This unit should be mounted at a suitable angle to maximize illumination on the ground. The PV module is placed at the top of the pole so that it receives solar radiation throughout the day, without any shadow falling on it. A battery is placed in the same housing of Luminary. Electronic Efficiency of the system should be minimum 90% with duty cycle dusk to dawn with Autonomy of 2 days or Minimum 24 operating hours per permissible Discharge.

The unit should be mounted on a suitable mounting structure in such a way that it can be lowered or elevated through a winch of suitable size. The winch system (including pulley, locking arrangement and wire rope of suitable size) is required for lowering & elevating the compact unit of modules, battery & luminaries, through a mounting structure around a pole including hardware.

### DETAILED SPECIFICATIONS

S.N.	Particulars	Capacity/ Model
1	SPV Modules	200Wp under STC x 6 nos
2	Minimum Battery	LiFePo4 Batteries – 120AH at 12.8V (with minimum individual cell capacity 20AH at 3.2V) x 06 nos in a suitable weather resistant enclosures and sophisticated designed battery management system (appropriate over charging, over heating deep discharge protection) without paralleling battery bank. Battery & BMS should be in IP-21 Box with the arrangement of proper ventilation but arrangement of prevention of insects. LTO Batteries – 120AH at 11.5V (with minimum individual cell capacity 40AH at 2.3V) x 06 nos in a suitable weather resistant enclosures and sophisticated designed battery management system (appropriate over charging, over heating deep discharge protection) without paralleling battery bank. Battery & BMS should be in IP-21 Box with the arrangement of proper ventilation but arrangement of prevention of insects.
3	Light Source	Total system Wattage (Luminary Wattage) of each luminary should be maximum 45W x 06 nos DC operated confirming to IP65 or above. The LED should be SMD High Power LED of Nichia/ CREE/ Osram/ Phitips/ LG /Samsung /Refond/ EverlighU Seoul/ Bridgelux or equivalent, The LED efficacy should be minimum 130 lm/W (as per LM 80) CCT 5500 -6500 K, CRI Minimum 70 & LED wattage Min. 01W . The luminary efficacy should be minimum 100 lm/w of each luminary as per Lm/79. The Luminous flux should be minimum 6000 lumens & Luminary Must be LM-79 certified from MNRE/NABL Lab. All High-Power LED should be shouldered in MC-PCB and pasted in housing through proper thermal conductive material to ensure proper heat dissipation.

### Pole, Accessories and Foundation

<b>Pole</b>	<p>12 M Long ,20 sided polygonal Raising lowering mast shaft in Single section Suitable for basic wind speed 180 km/hr complete with head frame, Luminaries carriage suitable to install 6 nos. Luminaries, Solar Panels &amp; battery on the top of the mast .There should be provision to install the type tested Winch inside the mast for raising &amp; lowering of complete solar lighting system. The mast must be hot dip galvanized 20 sided polygonal structure having Bottom A/F Dia. 410 mm , top A/ F Dia. 150 mm of 4 mm thick. The high mast should have a designed life of 25 years.</p> <p>Or</p> <p>12 meter long , 20 sided polygonal raising lowering mast in two sections , which should be telescopically joined together with a minimum length of overlap of 500 times the diameter. The dimensions of two sections should be as follows:</p> <p>(a)- Lower section_ bottom dia. 420 mm A/F &amp; top dia.321 mm A/F (b)- Top section _ bottom dia. 299 mm A/F &amp; top dia. 200 mm A/F.</p> <p>Thickness of section should be 3mm .Mast must be hot dip galvanized. Mast design should be suitable for basic wind speed 180 km/hr complete with head frame, Luminaries carriage suitable to install 6 nos. Luminaries, Solar Panels &amp; battery on the top of the mast. There should be provision to install the type tested Winch inside the mast for raising &amp; lowering of complete solar lighting system. The high mast should have a designed life of 25 years.</p>
<b>Material Construction</b>	S 355 grade as per BS- EN10 025
<b>Standard for of galvanization</b>	As per BS EN ISO 1461 minimum 80 Micron
<b>Size of opening and door at base (MM)</b>	Min. 1200 x 250 mm. The Winch will be operated after opening this mast door for maintenance work / Cleaning of solar panels. Locking arrangement should be provided in the access door to prevent theft & safety
<b>Diameter of base plate (MM) - Thickness of base plate (MM)</b>	580 mm 20 mm
<b>Lighting Protection Finial</b>	G I Single Spike of length 1200 mm
<b>Trailing Cable</b>	Copper Conductor, 5 Core, 4 sq mm. Insulation – EPR Insulated PCP sheathed One circuit per mast
<b>WINCH / POWER TOOL</b>	Winch: Mechanical device/anangement to be provided to withstand the complete load of the luminary, PV Modules, Battery during raising lowering of the lighting system for panel cleaning in every week fort night. Double Drum; Gear Ratio 21:4C.D. ;SWL 750 Kg ; Manual ; Self Lubricating, Tested load per drum minimum 750 Kg
<b>Stainless Steel Wire Rope</b>	Wire rope of Grade AISI 316 grade , 7/19 construction, with two SS ropes continues 6 mm diameter and braking load capacity 2200 kg x 5. 3 Nos. from transition plate to LC and 2 Nos. from winch to transition plate. The breaking load test report obtained from govt. laboratory of the wire rope should justify the desired the breaking load capacity.
<b>Number of foundation bolts - PCD of foundation bolts (MM) - Type - Diameter - Length of foundation bolts</b>	6 nos. 500 mm TS 600 25 mm dia. Min. 1000 mm long

<b>Module Mounting structure</b>	Hot dip galvanized 80 micron.
<b>Complete Raising Lowering mast</b>	Both the Raising lowering mast structure and the DC flood lights should be of same vendor. The lighting design report of the solar raising lowering mast, Data sheet of mast, Type test report of winch & load test report of AISI 316 grade wire rope to be provided by the company for technical acceptance of the complete system.
<b>Warranty</b>	The complete solar mast i.e. Flood lights & solar PV module should be warranted for a period of 5 years from the date of installation. However battery should be warranted for a period of 10 years.
<b>Foundation</b>	RCC Foundation at least 2 M deep (single column of 900 mm x900 mm x2500 mm) Suitable for mounting of Pole on a pedestal of 1.0 M height (above GL)
<b>Decorative Pedestal</b>	900 mm x 900 mm x 1000 mm

### Detailed Battery Specifications of Lithium Iron Phosphate Batteries (LFP)

- (i) The battery should be of minimum rating of 12.8V, 120Ah with minimum individual cell capacity of 3.2 V, 20 Ah. Battery Specifications will be as follows-

S.no	Description/ Item	Specifications	Remarks
A	Battery Configuration	12.8 V - 120 Ah	LiFePo4
B	Capacity of individual Cell	Minimum 3.2 V – 20 Ah	
C	Type of Cell	Cylindrical or Prismatic	
1	Nominal Capacity	100 Ah	
2	Nominal Voltage	12.8 V	
3	Voltage Range	10 V ~14.6 V	
4	Total Energy	1280 Wh	
5	Configuration	4S 6P	Maximum six parallel
6	Charging Current	18 A	Rated Charge Current
		20A	Maximum Charge current
7	Discharging Current	18 A	Rated Discharge current
		30A	Maximum discharge current
8	Discharge Cut-off Voltage	10V	
9	Charging Time	Around 4~5 Hours	Rated Charge
10	Weight	14kg +_ 1 Kg	Approx.
11	Cycle life	≥ 4000 Cycles	The cycle life is defined as the number of complete charge/ discharge cycles that the battery is able to support before that its capacity falls under 80 % of its original capacity; cycle life derived at 25 °C
12	Working Temperature Range	-20 °C ~ 60 °C; humidity ≤ 85%	While Discharging
		0 °C ~ 50 °C ; humidity ≤ 85 %	While Charging
13	Storage temperature Range	0 °C ~ 45 °C ;	1 Months
		0 °C ~ 35 °C ;	1-3 Months
		0 °C ~ 25 °C ;	3-12 Months

**PCM Details**

S. No.	Description	Parameters
1	Standard Charge/ Discharge Rate	18A
2	Max. Charge Current	20A
3	Over Charge cut off	14.6V
4	Deep Discharge Cut off	10V

**SOLAR CHARGE CONTROLLER UNIT**

Charge Controller Type	Maximum Power Point Tracking (MPPT)
Charging Current Rating at 12V	20A
Load Current Rating at 12V	15A.
Solar Input Power	200Wp with 29.64V(VOC) and 24.14V(VMP)
Idle Current (Self Consumption)	<20mA
Efficiency	>95%
Temperature Compensation	3mV/ oC
Indications	Green -->Charging Under Process Red --> Battery Low
Battery Voltage Settings	Boost Charging - 14.70V± 0.20V Float Charging - 14.00 V± 0.20V Battery Low Load Disconnect - 10.80V± 0.20V Load Reconnect - 12.60V± 0.20V
Protections	<ul style="list-style-type: none"> <li>• Transient / Surge</li> <li>• Over Charging / Deep Discharge</li> <li>• Overload - Auto shutdown and restart</li> <li>• Solar and Battery Reverse Protection</li> <li>• Reverse Current from Battery at Night</li> </ul>

**Certification:**

1. Bidders have to submit LM-80 for LED Chips, LM-79 and IP-65 or above test reports for LED Luminaries. (Test certificates must be taken from NABL accredited lab).
2. Bidders have to submit EN-50530/ IEC 61683 or equivalent BIS Standard test report for Solar MPPT charge controller. (Test certificates must be taken from NABL accredited lab).
3. Bidders have to submit FEA report of high mast, SS-wire rope test report, Winch test report.



### Detailed Battery Specifications of Lithium Titanium Oxide Batteries (LTO)

- (i) The battery should be of minimum rating of 11.5V, 120Ah with minimum individual cell capacity of 2.3 V, 40 Ah. Battery Specifications will be as follows-

S.no	Description/ Item	Specifications	Remarks
A	Battery Configuration	11.5 V - 120 Ah	LTO
B	Capacity of individual Cell	2.3 V - 40 Ah	
C	Type of Cell	Cylindrical or Prismatic	
1	Nominal Capacity	120 Ah	
2	Nominal Voltage	11.5 V	
3	Voltage Range	10 V ~14V	
4	Total Energy	920Wh	
5	Configuration	5S 3P	Maximum three parallel
6	Charging Current	18 A	Rated Charge Current
		20A	Maximum Charge current
7	Discharging Current	18 A	Rated Discharge current
		30A	Maximum discharge current
8	Discharge Cut-off Voltage	10V	
9	Charging Time	Around 4~5 Hours	Rated Charge
10	Weight	10kg +_ 1 Kg	Approx.
11	Cycle life	≥ 10000 Cycles	The cycle life is defined as the number of complete charge/ discharge cycles that the battery is able to support before that is capacity falls under 80 % of its original capacity; cycle life derived at 25 °C
12	Working Temperature Range	-20 °C ~ 60 °C; humidity ≤ 85%	While Discharging
		0 °C ~ 50 °C ; humidity ≤ 85 %	While Charging
13	Storage temperature Range	0 °C ~ 45 °C ;	1 Months
		0 °C ~ 35 °C ;	1-3 Months
		0 °C ~ 25 °C ;	3-12 Months

### PCM Details

S. No.	Description	Parameters
1	Standard Charge/ Discharge Rate	18A
2	Max. Charge Current	20A
3	Over Charge cut off	14V
4	Deep Discharge Cut off	10V

- (i) The battery and CCU or other electronic components should be placed in a weather resistant IP box (Certificate needed) enclosure suitable for outdoor applications with the arrangements to protect circuits from insects and heat. Also provision for Charging from Module and load output for Luminaries. The charging unit should have two indication – Green for charging and Red for fault , Fuse, ON/OFF switch
- (ii) Bidders have to submit the latest & relevant test reports of Cell confirming to BIS/IEC Standards and NABL test report of complete battery pack.
- (iii) Cells should have safety vent cap for releasing of excess internal cell pressure.
- (iv) The max charge current should be 20A.
- (v) Solar Charge Controller should be a MPPT type Charge controller with IEC Standards for design and environmental parameters, and should be in accordance with the charging parameters of LFP or LTO Batteries.





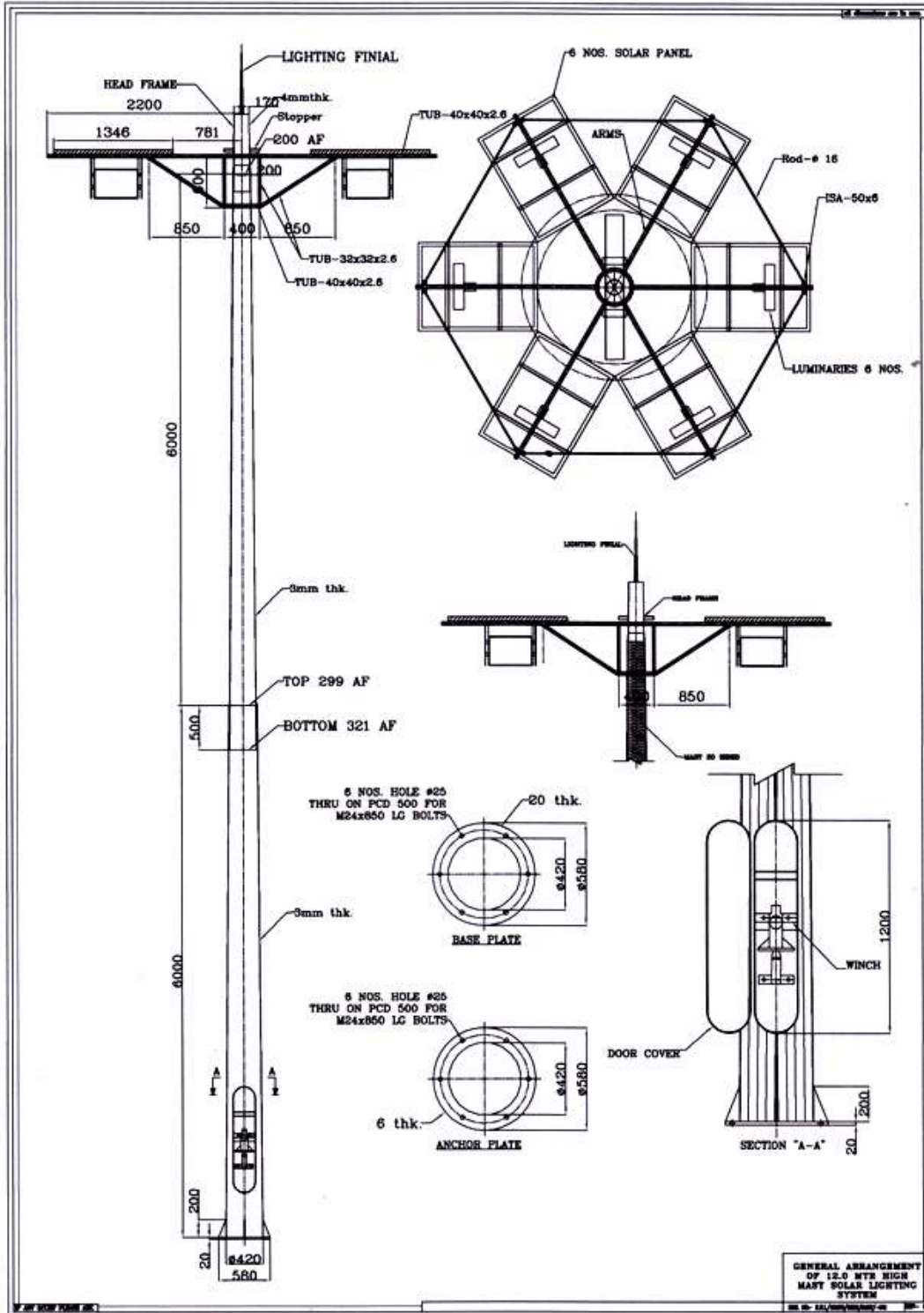
**ELECTRONICS:**

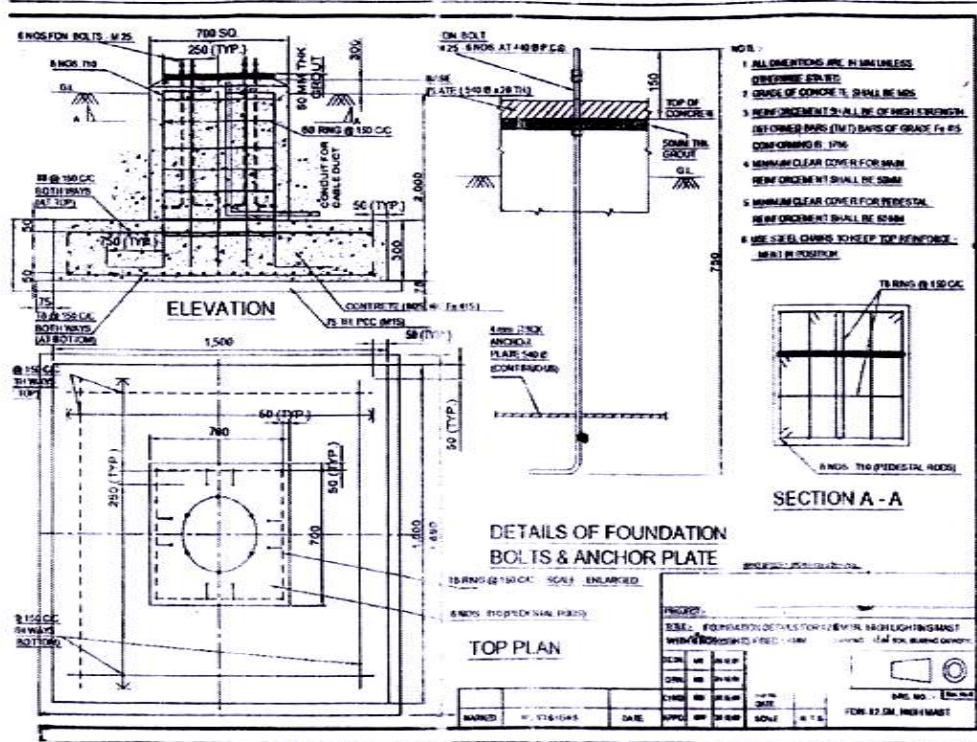
- (i) Electronics should operate only at 12V (Nominal Voltage) and should have adequate temperature compensation arrangement for proper charging of the battery throughout the year.
- (ii) The voltage drop from module terminals to the Charge Controller unit (CCU) should not exceed 1.0 volts including the dropage across the diode and the cable when measured at maximum charging current.

**SOLAR CHARGE CONTROLLER UNIT**

Charge Controller Type	Maximum Power Point Tracking (MPPT)
Charging Current Rating at 12V	20A
Load Current Rating at 12V	15A
Solar Input Power	200Wp with 29.64V(VOC) and 24.14V(VMP)
Idle Current (Self Consumption)	<20mA
Efficiency	>90%
Temperature Compensation	3mV/ oC
Indications	Green -->Charging Under Process Red --> Battery Low
Protections	<ul style="list-style-type: none"><li>• Transient / Surge</li><li>• Over Charging / Deep Discharge</li><li>• Overload - Auto shutdown and restart</li><li>• Solar and Battery Reverse Protection</li><li>• Reverse Current from Battery at Night</li></ul>

# I. DRAWING OF 12M -SOLAR HIGH MAST POLE







**K.**

**PRICE BID – A.**

**Schedule of Rates for Solar High Mast Systems.**

***(As per Specifications & Scope of Work of  
E.Bid Document No.10370/CREDA/HOR/RE-3/Solar High Mast/2018 Date 25-07-2018)***

Design, Supply, Installation and Commissioning of **Solar High Mast Systems** including civil work foundation and other allied works with five years on site unconditional warrantee at various sites of Chhattisgarh State as per scope of work.

<b>No.</b>	<b>Description</b>	<b>Rate/ Unit (without GST)</b>
1	<b>Supply of Solar High Mast System 12 meter high with 1200 Wp Module/ LFP Batteries -(120AH at 12.8V x 6 sets) 45W-LED Luminary x 6nos.</b>	
	<b>Installation and Commissioning at site</b>	
	<b>Comprehensive Operation and Maintenance of Systems for five years</b>	
<b>TOTAL</b>		

Certified that rates quoted above are as per the requirement, specifications, and terms & condition mentioned in the bid document.

Above rates are FOR anywhere in the State of Chhattisgarh inclusive of roadworthy packing, loading, unloading, all types of incidental expenses, insurance, duties and any other job required to properly execute the work with 5 years warrantee as mentioned in the bid document. The GST payable on the bill produced for payment to CREDA shall be paid in addition to above quoted price as per rate of GST applicable at the time of billing.

(No other cost will be claimed above the price quoted)

**Name of the authorized Signatory:**

**Signature of the Authorized Signatory:**

**Seal of Company:**

**Date:**

**PRICE BID – B.****Schedule of Rates for Solar High Mast Systems.**

***(As per Specifications & Scope of Work of  
E.Bid Document No.10370/CREDA/HOR/RE-3/Solar High Mast/2018 Date 25-07-2018)***

Design, Supply, Installation and Commissioning of **Solar High Mast Systems** including civil work foundation and other allied works with five years on site unconditional warrantee at various sites of Chhattisgarh State as per scope of work.

No.	Description	Rate/ Unit (without GST)
1	<b>Supply of Solar High Mast System</b> 12 meter high with 1200 Wp Module/ LTO Batteries -(120AH at 11.5V x 6 sets) 45W-LED Luminary x 6nos.	
	<b>Installation and Commissioning</b> at site	
	<b>Comprehensive Operation and Maintenance of Systems for five years</b>	
<b>TOTAL</b>		

Certified that rates quoted above are as per the requirement, specifications, and terms & condition mentioned in the bid document.

Above rates are FOR anywhere in the State of Chhattisgarh inclusive of roadworthy packing, loading, unloading, all types of incidental expenses, insurance, duties and any other job required to properly execute the work with 5 years warrantee as mentioned in the bid document. The GST payable on the bill produced for payment to CREDA shall be paid in addition to above quoted price as per rate of GST applicable at the time of billing.

(No other cost will be claimed above the price quoted)

**Name of the authorized Signatory:**

**Signature of the Authorized Signatory:**

**Seal of Company:**

**Date:**



**L. Completion cum Performance Certificate**

This is to certify that **M/S \_\_\_\_\_ (With Full Address)**, has successfully completed the work of design, Supply, Installation and Commissioning of **Solar High Mast Systems** in \_\_\_\_\_ State, as per following details :-

S. No.	Location/Site	District	Work Order No. & Date	Cap. Of Solar High Mast System with Lithium Battery	Number of High Mast	Installation Date
<b>Total</b>						

This certificate is being issued against the request of **M/S \_\_\_\_\_**, for their intent for participation in the following Bid:-

S. No.	Bid Number
1	10370/CREDA/HOR/RE-3/Solar High Mast/2018 DATED 25-07-2018 (CREDA)

The Workmanship and performance of the installed systems are found satisfactory.

**Seal & Signature of  
Concern Department/  
Govt. Organization**