



**IRRIGATION AND WATERWAYS DIRECTORATE  
GOVERNMENT OF WEST BENGAL  
TEESTA BARRAGE ELECTRICAL DIVISION  
TEESTA ADMINISTRATIVE BUILDING, TINBATTI, SILIGURI**

Memo No: **661**

Dated: **21.12.2023**

**[Invitation for Expression of Interest for Budgetary Quotation]**

**E.O.I. No.: WBIW/EE/TBED/EOI-03/2023-24**

Critical dates of this E.O.I.:

Sl. No.	Particulars	Dates
01.	Start Date of Issuance of EOI Document	21.12.2023
02.	Last date of submission of Queries	29.12.2023
03.	Pre bid meeting	02.01.2024
04.	Last Date of Issuance EOI Document	09.01.2024
05.	Last Date and time for Submission of EOI	09.01.2024
06.	Date of opening of EOI	09.01.2024

**NAME OF THE WORK:**

"Supply, installation, testing and commissioning of Solar-operated Multiturn Electric Actuator along with allied electromechanical works for electrical hoist mechanism to Screw-Hoist system for different Canal Head regulator/Sluice gate at different locations in the district of Jalpaiguri, Alipurduar, Coochbehar & Darjeeling under North Bengal Mechanical & Electrical Circle."

**EXECUTING DIVISION: TEESTA BARRAGE ELECTRICAL DIVISION.**

**YEAR: 2024-25**

## **1.0 Invitation for EOI/Single stage of Bidding**

The successful Bidder will carry out the scope of work in accordance with the specifications provided in a detailed Request for e-NIT document which will be brought out by the Executive Engineer, Teesta Barrage Electrical Division in later stage after obtaining administrative approval of the work. Now, Executive Engineer, Teesta Barrage Electrical Division seeks EOI for budgetary quotes from experienced, reputed Bidders for the above work, who meet the pre-qualification criteria specified in this document will be short-listed to have comparison of cost between various prospective bidder. In case of non-compliance, they may offer their own solution.

## **2.0 Description of the Project:**

### **2.1 Location:**

Different locations in the district of Jalpaiguri, Alipurduar, Coochbehar & Darjeeling under North Bengal Mechanical & Electrical Circle, West Bengal.

### **2.2 Introduction to the project:**

It is observed that manual operation of these head regulator gates is cumbersome. It requires 03 nos. personnel for a single gate and take too much time. Typically, it is seen that about 01 hour per gate is consumed for full travel even after employing 03 Nos. personnel for a single gate. Also, this hoist system does not have Position indicator through which quantum of irrigation discharge may be monitored. Accordingly, existing Screw hoisting system are absolutely required to be electrified for obtaining easy, smooth, quick operation alongwith it's control.

Due to remote location, electricity is not available or electrical connection through long distance network is not cost effective. Work specific data shall be provided in the subsequent detailed e-NIT.

Irrigation & Waterways Department, Govt. of West Bengal intends to use special type Bevel gear box for different Canal Head Regulator / Sluice Gates. For the purpose of better understanding of the requirement, a typical arrangement of Screw hoist System as given in IS 11228 – 1985 along with GA drawing and Bevel Gear arrangement.

## 2.4 Specification of Multiturn Electric Actuator, Bevel Gears & Pinion:

Initial preliminary design and selection has been carried out by department which are given as below for guidance only.

### a) Electric Actuator

- 3-Ph, 415VAC, 50HZ, ON/OFF and Inching duty, Multiturn Electric Actuator having with following specification and features.
- Rated Output torque is 200 N-m (minimum) at 48 rpm (Running: 65 N-m, Seating 195 N-m)
- Motor: Power rating not More than 1.5 KW (2HP), squirrel cage AC induction having S2- 15 min duty cycle rating, Class-F insulation, efficiency standard IE3
- Drive unit: High precision Spur Gears & Pinions, Material- HSLA steel and High precision Worm & Worm Gear, Material-HSLA steel & Phosphor Bronze respectively.
- Travel time: 816 sec.
- Overall actuator efficiency :75 %(minimum)
- Torque & limit switch with mechanical selection and end position latching.
- Integral Reverse forward starter.
- Current position transmitter (CPT, 4-20 mA) along with mechanical position display.
- Enclosure having IP68 rating.
- Hand wheel along with clutch mechanism.
- Relay protection: Single phasing, thermal, instantaneous reversal (automated time delay circuit)

### b) Bevel Gears & Pinions

No of teeth of Bevel Pinion=20 and that of Gears =60.

Module=6

Material: HSLA steel.

Finish: High precision.

Bidders are requested to visit the site & carry out their own design. Such design, manufacture and performance of the Electric Hoist System shall conform to the latest version of IS/BS/DIN Standards / Specification. Accordingly, bidder may propose changes in

design. In the event of changes in design and selection from the above, it should be substantiated with justification by the bidder.

During Design following parameters are to be considered:

- As per IS 11228:1985, Electrically operated lifting speed(L) should be 20 to 70 cm per min. Such speed selection shall be as minimum as possible within the above range, being operation period as well as gate travel span is very short, we need not select more higher lifting speed for safety and smooth operation.
- Highly efficient Actuator equipped with integral reverse forward starter along with all modern feedback control, relays, position indicators, Limit switches, handwheel along with clutch mechanism
- Motor: Power rating shall not be More than 1.5 KW (2HP).
- Motor shall be of 3-Ph, 415VAC, 50HZ, squirrel cage AC induction having S2- 15 min duty cycle rating, Class-F insulation, efficiency standard IE3
- Drive unit: High precision Spur Gears & Pinions, Bevel gears & pinion and Worm & worm wheel made of materials having High UTS, corrosion resistant, tough, capable to take fluctuating load.
- System enclosure shall be protected at IP 68 standard.
- Existing available space and other relevant parameters.
- Overall weight of the system adopted. It should be as low as possible.
- System shall give highest efficiency in its class (75 % minimum).
- System design shall be compact in design, portable
- System shall be easily maintainable.

### **3.0 Indicative scope of work:**

This EOI is meant for obtaining rates of intended Electric Actuator & Bevel Gearing arrangement. After obtaining such rates, a comprehensive estimate will be prepared considering all other allied electrical & Mechanical work along with Electric Actuators and Bevel Gearing and thereafter tender will be floated against which contract will be awarded. Name work shall be:

"Supply, installation, testing and commissioning of Solar-operated Multiturn Electric Actuator along with allied electromechanical works for electrical hoist mechanism to Screw-

Hoist system for different Canal Head regulator/Sluice gate at different locations in the district of Jalpaiguri, Alipurduar, Coochbehar & Darjeeling under North Bengal Mechanical & Electrical Circle"

**Warranty period shall be of Five (05) years for Electric Actuator.**

**4.0 Instructions to Bidders:**

**4.1** Bidders are advised to study all instructions, B.O.Q, forms, terms, requirements and other information in the EOI documents carefully. Submission of the bid shall be deemed to have been done after careful study and examination of the E.O.I documents with full understanding of its implications. **Rate should be quoted exclusive of all taxes and duties. Percentage of different taxes and duties shall also to be mentioned separately.**

**4.2** The response to this E.O.I should be full and complete in all respects. Failure to furnish all information required by the E.O.I documents or submission of a proposal not substantially responsive to the E.O.I documents in every respect will be at the bidder's risk and may result in rejection of its proposal.

**4.3** For better understanding of work, brief description of work as per our preliminary assessment are given for better understanding of the project. In this stage bidder are requested to propose their work description, with quoting rate, so that in later stage under detailed NIT, complete scope of work and technical specification may be enclosed, so that bid may be evaluated on equal footing.

**4.4** The Bidder shall be deemed to be fully conversant with the site conditions and the nature and complexity of the work to be undertaken and considering all eventualities which can arise before, during and after project execution.

**4.5 Bid validity shall be 120 days.**

**5.0 EOI proposal preparation, costs & related issues:**

**5.1** The Bidder is responsible for all costs incurred in connection with participation in this process, including, but not limited to, costs incurred in conduct of informative and other diligence activities, participation in meetings/discussions/presentations, preparation of

proposal, in providing any additional information required by this office to facilitate the evaluation process, unless explicitly specified to the contrary.

Purchaser will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

**5.2** These Expression of Interest (EOI) are purely for estimation purpose and to know the present market rate and under no circumstance, It shall be construed as quotation for placing the supply order. For competitive bidding separate notice inviting Tender will be published.

### **6.0 Pre-bid Meeting**

**6.1** Executive Engineer, Teesta Barrage Electrical Division shall hold a pre-bid meeting with the prospective Bidders on **<02.01.2024 at 15:00 Hrs >** at <O/O Executive Engineer, Teesta Barrage Electrical Division, Teesta Administrative Building, Tinbatti, Siliguri - 734005.

The Bidders will ensure that their queries with regard to the EOI, to be addressed to the EOI issuing Authority shall reach by post, facsimile or E-mail on or before **<29.12.2023 at 14:00 Hrs >** to the officer whose details are provided below (Nodal Officer):

Office of the Executive Engineer  
Teesta Barrage Electrical Division,  
Teesta Administrative Building, Tinbatti, Siliguri – 734005  
E-mail: eetbed@gmail.com  
Mobile: 9875503310

### **7.0 Responses to pre-bid queries and issue of corrigendum:**

The Nodal Officer notified by the EOI issuing authority will endeavour to provide timely response to all queries. However, the department makes no representation or warranty as to the completeness or accuracy of any response made in good faith.

**7.1** At any time prior to the last date for receipt of bids, EOI inviting authority may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the EOI document by issuing a corrigendum.

**7.2** The corrigendum (if any) & clarifications to the queries from all Bidders will be posted on the e- tender portal<<https://wbtenders.gov.in>>. Any such corrigendum shall be deemed to be incorporated into this EOI.

**7.3** In order to afford prospective Bidders reasonable time in which to take the corrigendum into account in preparation of their bids, Purchaser may, at its discretion, extend the last date for the receipt of EOI Bids.

**8.0 Right to terminate the EOI process:**

**8.1** EOI issuing authority may terminate the EOI process at any time without assigning any reason. EOI issuing authority makes no commitments, expression or implied that this process will result in a business transaction with anyone.

**9.0 Bid Submission Procedure**

**<Option 1: In case of Online Submission on e-Procurement portal>**

Bidders should submit their responses to an EOI as per the procedure specified in the e-Procurement portal (specified URL) being used for this purpose.

The bidder must ensure that the bid is digitally signed by the Authorized Signatory of the bidding firm and has been duly submitted (freeze) within the submission timelines. The Department will in no case be responsible if the bid is not submitted online within the specified timelines.

All the pages of the Proposal document must be sequentially numbered and must contain the list of contents with page numbers. Any deficiency in the documentation may result in the rejection of the Bidder's Proposal.

OR

**<Option 2: In case of physical submission of bids at office of Executive Engineer >**

- a. Bids shall be submitted in a single sealed envelope and superscripted <Name of the Work > and <Reference EOI No.>. This envelope should contain two hard copies of EOI proposal marked as "First Copy" and "Second Copy" and one soft copy in the form of a non-rewriteable Compact Disc (CD). CD media must be duly signed using a permanent pen/marker by the Bidder. Bids are to be dropped in tender box kept in the O/O Executive Engineer, Teesta Barrage Electrical Division, Teesta Administrative Building, Tinbatti, Siliguri – 734005.
- b. Bids shall consist of supporting proofs and documents as defined in

the Pre- qualification section.

- c. Bidder shall submit all the required documents as mentioned in this document.
- d. Envelope should indicate clearly the name, address, telephone number, E-Mail ID and fax number of the Bidder.
- e. Each copy of the EOI should be a complete document and the document should be page numbered, must contain the list of contents with page numbers and shall be initialled by an authorized representative of the Bidder.
- f. Different copies must be bound separately.
- g. Bidder must ensure that the information furnished by him/her in respective CDs is identical to that submitted by him in the original paper bid document. In case any discrepancy is observed by the authority in the contents of the CDs and original paper bid documents, the information furnished on original paper bid document will prevail over the softcopy.
- h. EOI document submitted by the Bidder should be concise and contain only relevant information as required under the EOI Bids shall consist of supporting proofs and documents as defined in the Pre-qualification section.

#### **10.0 Short listing criteria:**

**10.1** Purchaser will shortlist Bidders who meet the pre-qualification criteria mentioned in this EOI.

**10.2** Any attempt by a bidder to influence the bid evaluation process may result in the rejection of its EOI proposal.

#### **11.0 Evaluation Process:**

**11.01** Executive Engineer, Teesta Barrage Electrical Division, Teesta Administrative Building, Tinbatti, Siliguri – 734005 will constitute a committee to evaluate the responses of the Bidders in response to this EOI document.



**11.02** The Tender Committee constituted by the Executive Engineer, Teesta Barrage Electrical Division shall evaluate the responses to the EOI and all supporting documents & documentary evidence. Inability to submit requisite supporting documents or documentary evidence, may lead to rejection of the Bidder's EOI proposal.

**11.03** Each of the responses shall be evaluated to validate compliance of the Bidders according to the pre-qualification criteria, forms and the supporting documents specified in this EOI document.

**11.04** The decision of the Tender Committee in the evaluation of responses to the EOI shall be final. No correspondence will be entertained outside the evaluation process conducted by the Purchase Committee.

**11.05** The Tender Committee may ask for meetings with the Bidders to evaluate its suitability for the assignment

**11.06** The Tender Committee reserves the right to reject any or all proposals.

**12.0 Pre-qualification evaluation criteria:**

#	Basic requirement	Specific requirements	Documents required
1	Legal Entity	<ul style="list-style-type: none"> <li>- Should be a company registered under the provisions of the Indian Companies Act, 2013 or a partnership firm registered under the Indian Partnership Act, 1936 or the Limited Liability Partnerships Act, 2008.</li> <li>- Registered with the GST authorities.</li> <li>- Should have been operating for the last three years.</li> </ul>	<ul style="list-style-type: none"> <li>- Certificate of incorporation / Partnership deed</li> <li>- GST registration</li> <li>- Certificate of commencement of business (if applicable)</li> </ul>
2	Board resolution / Power of attorney in favour of authorised signatory	A board resolution OR power of attorney in the name of the person executing the bid, authorizing the signatory to commit the Bidder.	Board resolution; OR Power of attorney with appropriate supporting documents

3	Sales turnover	<p>Annual sales turnover generated from services related to system integration during each of the last three financial years (as per the last published Balance sheets), should be at least twice of their quoted amount.</p> <p>This turn over should be on account of Information Communication Technology (ICT) systems development and implementation (i.e. revenue should be on account of system integration/turnkey solutions or products and their associated maintenance or implementation services, packaged software etc.) only</p>	<p>Extracts from the audited balance sheet and profit &amp; loss; OR Certificate from the statutory auditor</p>
4	Technical capability	<p>Bidder must have successfully completed at least one following nature of work within last five years and value not less than 50% of their quoted value. “SITC of electrical Hoist Mechanism to the Hydraulic gate “</p>	<p>Completion certificates from the competent authority ; OR Work order + Self certificate of completion (Certified by the statutory auditor)</p>
5	Debarment	<p>Debarment should used as a mandatory Pre-Qualification criterion to restrict organizations that have been either debarred by the tendering department for breach of ethical conduct or fraudulent practices, etc. As specified in Rule 151of GFR.</p>	<p>Self-Certified letter that the bidder (or any of its successor)is not in the active debarred list published by: a) Central/ State Public Procurement Portal; and</p>

### 13.0 Examination of Bids and Determination of Responsiveness:

The Bid evaluation committee (TEC) will evaluate whether each Bidder is satisfying the eligibility and qualifying criteria prescribed in the pre-qualification document and declare names of the qualified Bidders.

Prior to the details evaluation, the tender accepting authority will determine the substantial responsiveness of each bid to the bidding documents. For purposes of these clauses, a substantially responsive bid is one which conforms to all the terms and conditions of the bidding documents without material deviations. For that purpose, a separate sheet for Guaranteed Technical Particulars is attached.

Assessment: The detailed assessment for pre-qualification shall be based on the following information submitted by the Bidder:

1. Data submitted in prescribed format given in tender documents.
2. Bidder's techno-commercial proposals for carrying out the entire works in accordance with the specifications in this document.

The techno-commercial submissions must principally demonstrate the adequacy of bidders' appreciation of the:

- The project
- Design and detail engineering
- The methods proposed for mobilization and establishment of site installation and for the timely completion, testing and commissioning and O&M of the project.
- The arrangements for the logistic support for completion, testing and commissioning of all works of the project.-Requirements of the Department.

**14.0 Format for letter of response:**

To  
The Executive Engineer,  
Teesta Barrage Electrical Division,  
Teesta Administrative Building, Tinbatti, Siliguri – 734005  
E-mail: eetbed@gmail.com  
Mobile: 9875503310

Sub: - RESPONSE TO – EOI

Dear Sir,

We, the undersigned, offer the following information in response to the Expression of Interest sought by you vide your EOI No. .... Dated ....

1. We are duly authorized to represent and act on behalf of

\_\_\_\_\_  
(here in after the "respondent")

2. We have examined and have no reservations to the EOI Document including Addenda No(s) \_\_\_\_\_

3. I/We understand that

this EOI is intended for the work "Supply, installation, testing and commissioning of Solar-operated Multiturn Electric Actuator along with allied electromechanical works for electrical

hoist mechanism to Screw-Hoist system for different Canal Head regulator/Sluice gate at different locations in the district of Jalpaiguri, Alipurduar, Coochbehar & Darjeeling under North Bengal Mechanical & Electrical Circle.”

- a) Irrigation and waterways Department, Govt. of West Bengal may float a separate Tender (based on their requirement), with all conditions like Eligibility Criteria, and our participation in this EOI does not guarantee any qualification to that tender.
4. We are attaching with this letter, the copies of original documents defining: -
- a) The Respondent’s legal status;
  - b) Its principal place of business;
  - c) Its place of incorporation (if respondents are corporations); or its place of registration (if respondents are cooperative institutions, partnerships, or individually owned firms);
  - d) Self-certified financial statements of Last three years, clearly indicating the financial turn over and net worth.
  - e) Copies of any project undertaken for the last 5 years, in any Govt department.
5. We shall assist Irrigation and waterways Department, Govt. of West Bengal or its authorized representatives to obtain further clarification from us, if needed.
- a) Executive Engineer of Teesta Barrage Electrical Division, authorized representative, may contact the following nodal persons for further information on any aspects of the Response:

Sl No.	Contact Name	Address	Telephone	E-mail

6. This application is made in the full understanding that:
- a) Department Reserves the right to reject or accept any or all applications, cancel the EOI and subsequent bidding process without any obligations to inform the respondent about the grounds of same.
  - b) We confirm that we are interested in participating in the selection process through this EOI.
7. We certify that our turnover and net worth in the last three years is as under:

Financial Year	Turn over	Net worth

8. In response to the EOI, we here by submitting the following details annexed to this application:
9. The undersigned declare that the statements made and the information provided in the duly completed application are complete, true, and correct in every detail. We also understand that in the event of any information furnished by us being found later to be incorrect or any material information having been suppressed, may delete our name from the list of potential bidders. We further understand that Irrigation and waterways Department, Govt. of West Bengal will give first preference to the applicants considered relevant for the purpose.

Yours sincerely,

(sign)

Name

In the Capacity of  
Duly authorized to sign  
The response for and on behalf of

Enclosure: B.O.Q format.

Sd/-  
Executive Engineer  
Teesta Barrage Electrical Division,  
Tinbatti, Siliguri

**Memo No: 661/1(3)**

**Date: 21.12.2023**

Copy forwarded for information and taking necessary action please for wide publication to: -

1. The Chief Engineer, Mech & Elect, I&W Directorate, 2nd Floor, Jalsampad Bhawan, Govt of West Bengal.
2. The Superintending Engineer, North Bengal Mechanical & Electrical Circle, Tinbatti, Siliguri.
3. Office Notice board.

Sd/-  
Executive Engineer  
Teesta Barrage Electrical Division,  
Tinbatti, Siliguri

**Enclosure to EOI No. WBIW/EE/TBED/EOI-03/2023-24 Circulated Vide Memo No. 661 dated 21.12.2023**

**Quoted Bid Price in this BOQ**

Sl. No	Description of work as per preliminary assessment	Qty	Unit	Description of work proposed by the bidder (for budget quotes)	Quantity (for budget quotes)	Unit (for budget quotes)	Rate (Rs., Exclusive of all taxes) (budget quotes)	Amount (Rs.) (budget quotes)
01.	<p>Supply, installation, testing and commissioning of 3-Ph, 415VAC, 50HZ, ON/OFF and Inching duty, Multiturn Electric Actuator having with following specification and features:</p> <ul style="list-style-type: none"> <li>• Rated Output torque is 200 N-m (minimum) at 48 rpm (Running: 65 N-m, Seating 195 N-m)</li> <li>• Motor: Power rating not More than 1.5 KW (2HP), squirrel cage AC induction having S2- 15 min duty cycle rating, Class-F insulation, efficiency standard IE3</li> <li>• Drive unit: High precision Spur Gears &amp; Pinions, Material- HSLA steel and High precision Worm &amp; Worm Gear, Material-HSLA steel &amp; Phosphor Bronze respectively.</li> <li>• Travel time: 816 sec.</li> <li>• Overall actuator efficiency :75 %(minimum)</li> <li>• Torque &amp; limit switch with mechanical selection and end position latching.</li> <li>• Integral Reverse forward starter.</li> <li>• Current position transmitter (CPT, 4-20 mA) along with mechanical position display.</li> <li>• Enclosure having IP68 rating.</li> <li>• Hand wheel along with clutch mechanism.</li> <li>• Relay protection: Single phasing, thermal, instantaneous reversal (automated time delay</li> </ul>	01	Each					

	<p>circuit)  Make: ROTORK, LIMITORK, FLOWTORK, AUMA or equivalent.</p>							
02.	<p>Supply and Installation of Gearing arrangement comprising of high precision Bevel Gear &amp; pinion on existing hoist nut along with supply, fabrication of suitable MS frame, Shaft, Plummer Block fitted with gun metal bush, flange coupling and required keys etc as per following specification and detail.</p> <p><b>Bevel Gearing specification:</b></p> <p>No of Teeth of Pinion (Zp) =20, Gear ratio =3:1,  Module=6</p> <p>No of teeth of Gear (Zg)= 60</p> <p>Material: HSLA steel</p> <p>Finish: High precision.</p> <p><b>Specification of other components:</b></p> <p>a) MS frame shall be assembled with existing MS pedestal, capable to withstand static &amp; dynamic load of Actuators. Approx weight is 15 kg (Deviation in weight shall be adjusted through the rate available in USOR(M&amp;E) during billing/payment).</p> <p>b) Shaft: 01 No,30 mm Dia, length 450 mm approx., cut</p>	01	Per job					



	<p>with keyway, Matl- SS316.</p> <p>c) Plummer Block: 02 No, ID-50 mm, fitted with Gun metal bush of thickness 10 mm. Matl: Cast steel.</p> <p>d) Flange coupling: Hub flange coupling in pairs ID &amp; OD=30 mm &amp; 100 mm Respectively. Matl- Cast steel.</p>							
03.	<p>Solar Module: Supply, transport, installation and commissioning of ISI marked as per IS 14286 and IEC 61853(1), 61730(1&amp;2), 61710 certified Solar Module of Multicrystalline/ Monocrystalline/ monocrystalline PERC/ bifacial cell with min. efficiency of 15% and fill factor more than 70% laminated between sheet of – Ethylene Vinyl Acetate (EVA) and high transmissivity 3.2/4.0 mm tempered glass, framed in anodized aluminium frame. The power output of individual PV modules used in the PV array, under STC, should be minimum of 300 Watt peak, with adequate provision for measurement to tolerances. Modules supplied with the SPV system should have warranty for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Necessary test certificate also to be supplied.</p> <p>For 2 HP Off-grid Solar-operated Electric actuator/ motor with Monocrystalline/Monocrystalline PERC/bifacial SPV modules-2250-2400 wp.</p>	01	Per Wp					

04.	<p>Module Mounting Structure (For 2HP Solar-operated Electric actuator/ motor): Supply, transportation &amp; installation of G.I manual tracking strure made of MS hollow sections, pipes, plates, angles etc as per IS 1161/1239, 1079/2062, to hold min 300 Wp SPV Module as per drawing and specification of MNRE. The steel structure is to be protected with minimum 80micron galvanization (hot dip) and provided with dual axis manual tracking arrangement three times in a day and seasonal tilting are to be regulated to face sum optimally.</p> <p>The weight of the Module Mounting Structure holding 4 Modules should not be less than 165Kg, holding 5/6 Modules should not be less than 235 Kg and holding 7/8 Modules should not be less than 265Kg.</p>	01	Per KG					
05.	<p>Power conditioning unit with IP54 enclosure: Supply, Transport, Installation and commissioning of IP54 protected enclosure Inverter Unit qualifying IEC 61683-Efficiency measurement and IEC 60068-2-Environment Standard, safety standard suitable for 3 phase A.C. motor, IGBT based high voltage switching inverter with MPPT technology, to take care of the variation of Sun light and will be suitably mounted inside the metal enclosure. Inverter should have protection against Dry run, Over current, Under current, Over voltage, Under voltage, Short circuit etc. System should be able to run at low sunshine and minimum 7 to 8 hours a day run should be possible during normal sunshine, condition. Inverter should have option to auto start for any short trip off due to low light/cloudy situation except for dry run. Inverter should be provided with a display to show the various parameter by the user such as Voltage, Current, Solar panel DC voltage, Inverter IGBT temperature, Output AC</p>	01	Per Set					

	<p>Voltage, output frequency, Pump flow (direct or calculated method), Irradiation etc. The system should store the data at a set interval, be capable to transfer it to external storage device and support communication of ist operational parameters and logs over Modbus protocol. It should also monitor and save total run time, total water pumped etc. There should be provision for interfacing GPRS based data transmission.</p> <p>For 2HP Solar-operated Electric actuator/ motor set</p>							
06.	<p>Cable and Accessories:  Supplying fitting and fixing of UV rated Copper Cable laid inside HDPE conduit and other accessories as per followings with necessary connection with the Solar PV Module, MPPT etc.  i) 4.0 Sq mm single core multi studs  ii) Lugs HDPE pipe, Flexible pipe, Saddle, Cable tie etc.</p> <p>For 2HP per structure</p>	01	Per Mtr					

**Percentage of different taxes and duties shall also to be mentioned separately here under.**

(sign)

Name

In the Capacity of

Duly authorized to sign

The response for and on behalf of