

REQUEST FOR BIDS

**Jharkhand Tribal Development Society (JTDS) On Behalf of:
The Government of Jharkhand/India**

**for
installation of solar based Irrigation system
under**

**SCA to TSS
Scheme**

Invitation for proposals for supply, installation & maintenance of Solar based irrigation system under National Competitive Bidding

system.

Time Schedule for the bids:

Bid Reference No.	
Date of commencement of downloading of bid document http://www.jtdsjharkhand.com	12 th Feb 2022 17.00 hours onwards of
Last date for seeking clarification if any.	21 st Feb 2022
Pre-bid meeting	18 th Feb 2022
Last date for Submission of bids	1 st March 2022 Up to 17.00 hours of
Time and date of opening of bids	2 nd March 2022, SPMU JTDS at 11:30 hours.

Note: (1) In the event of the specified date of opening of bids being declared a holiday for the Purchaser, the bids shall be opened on the next working day at the same time and venue.

(2) Completed bids shall be submitted by the Bidders and addressed to the State Project Director, JTDS in the manner described in the Bid Document.

**Sd/
State Project Director
JTDS**

Disclaimer

Kindly Note:

1. This document is not transferable
2. Though adequate care has been taken for preparation of this document, the bidder shall satisfy himself that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any bidder on the pre bid meeting or within ten days from the date of issue of the bid document, it shall be considered that bid document is complete in all respects and has been received by the bidder.
3. The Jharkhand Tribal Development Society (JTDS) reserves the right to modify, amend or supplement this bid document keeping in view the necessity in implementation of the scheme.
4. While the bid document has been prepared in good faith, neither JTDS nor their employees or advisors make any representation, warranty, express or implied or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability and completeness of this bid document, even if any loss or damage is caused by any act or omission on their part.

Jharkhand Tribal Development Society

Details of Notice Inviting Tender

Jharkhand Tribal Development Society invites e-tenders from interested bidders for supply, installation & maintenance of Solar based irrigation system.

Name of the work	Quantity	Estimated Project Cost (in INR)	Earnest Money Deposit (in INR)
Design, Supply, Testing, Installation, Commissioning and Maintenance for a period of 2 years of Solar based Irrigation System (including deep boring).	75	641lakhs (approx.) Unit cost: 8.5 lakhs Unit cost and total cost may change. Cost inclusive of all taxes	NA

1. SCOPE OF WORK

The broad scope of the supply / installation includes design, manufacture, supply, installation, testing commissioning, warranty, operation & Maintenance for 2 years for Solar energy-based pump for irrigation, and commissioning of Solar Photovoltaic pumps sets with all accessories adhering to the standardized norm / BIS / MNRE/IEC/CE specification in the entire state.

- a) Collection of the list of site / village including, locations of the bore wells /dug well, water discharge feasibility reports, if necessary, shadow free area etc. from JTDS/authorized officer.
- b) Visit to the site / village and identifying the designated bore well and selection of site for construction
- c) Deciding the location required in site / habitations after discussing with the authorized officer / gram panchayat/ user / farmer.
- d) Transportation of all materials to the village and keeping the same in safe own custody within village/ site. JTDS shall not be the consignee to receive the materials supplied/ delivered.
- e) Installation of the solar PV water Pumping systems, BOS, solar PV array and required plumbing material as per the technical specifications and standards provided in the tender and testing the same in the presence of Dept Authorized Officer / gram panchayat. In case of sanitary well the float / pedestal arrangement to provide, if necessary.
- f) Intimate JTDS, RE Cell Officials and Executive Engineer / Authorized Officer, Divisions on assignments.
- g) Installation of the water delivery system (piping) up to the existing out let / inlet point.
- h) After initial operation and testing of the pumping system handing over the same to the Gram panchayat / Dept Authorised Officer/user / farmer to be maintained by the firm for 2 years under CMC.
- i) Collection of all documents, including geo-tagged photographs, if connected, of the installed systems and preparing the joint commissioning reports.
- j) Submission of all documents as detailed in the tender document including the jointCommissioning report to JTDS
- k) Periodic maintenance of the system as detailed in this tender.
- l) Opening of service centre/keeping servicing personnel and making available all essential spares in the vicinity of the solar water pumping system will give the desired performance with least interruption.
- m) Submission of periodic reports and returns as per the MIS prescribed by JTDS from time to time.
- n) Supply of the complete systems, including all necessary components, sub- components, spares, tools, tackles etc. as per technical specifications given or compliant with MNRE, IEC, BIS as relevant, in this document including packing, forwarding, safe storage, handling, commissioning, trial and performance testing and handing over, transit insurance.
- o) The solar panel shall be warranted for ten years with rated performance. Security cum PGF(PBG) for the corresponding amount for the period warranty is to be retained by this office.

- p) Solar PV pumps of respective capacity depending upon the yield of bore well will be utilized for the purpose of water supply in the user / farmer / utility as per the requirement of the village.
- r) Comprehensive Maintenance for 2 years and Performance guarantees for the rated delivery / discharge of water as per standard test condition.
- s) All civil structures and site clearances for setting up of the complete job are to be obtained before installation, if not provided in the work order.
- t) All structural drawings to be got approved from JTDS/ any other competent authority, if necessary, unless provided in the work award.
- u) While implementing Solar pumping system in the village/ site the physical condition of the area on shades / water logging during rain should be taken into consideration.
- v) There should not be any damage what so ever in the site / village due to setting up of the solar pumping system and later there is no leakage of any water connection of the said project the in the village / site.
- w) While cabling the array care must be taken such that no loose / open cables lie anywhere related to the supply / installations.
- x) Adequate training has to be provided to the persons to be designated by JTDS/ pump user / farmers in maintenance and upkeep of the installed system. The installed and commissioned systems are to be handed over to the Village Committee / respective Authorised Officer / user / farmer. The bidder must also provide a detailed operation and maintenance manual specific to the installed systems.
- y) Before execution of the supply / installation the yield test of the selected tube well shall be carried out by the agency to ensure the sustainability of the system.
- z) Supply/ installation of all essential transparency boards, markers and all essential; and required documents and manuals clearly explaining the operation and maintenance and troubleshooting of various portion of the system in local language.

2. ELIGIBILITY CRITERIA FOR PARTICIPATING IN THE BIDDING

General Condition:

- a. The bidder must be a consortium/Agency/company (registered under Indian Companies Act 1956) or a Partnership Firm (registered under Indian Partnership Act 1932) or a Sole Proprietorship Firm/NGO. **{Consortium having maximum two partners, Consortium bidding agreement can be downloaded from JTDS website}**
- b. The bidder must be a manufacturer of solar pumps or an authorized execution partner for a manufacturer. Controller manufacturers and panel manufacturers cannot participate as manufacturers.
- c. The manufacturer should have cumulative experience of executing contracts of supply of at least 25 nos. of Solar Irrigation System to any Central Govt/ Any State Govt./PSUs/ Govt Agency/ Bodies. As proof of installation the bidder must submit the work completion certificates in the format given in Annexure-B in favour of each work order issued.

- d. The bidder must have installed in India at least 25 solar irrigation systems that have been in operation. The manufacturer must provide customer work orders, (End User's certificate) in support of the satisfactory operation of the goods as specified above.
- e. System details and customer reference must be given in the format given in Annexure-C (A). JTDS reserves the right to verify system performance with the customer as a part of technical evaluation. If system performance or maintenance is found to be unsatisfactory, the manufacturer will be disqualified.

In case the bidder is a manufacturer

1. The bidder should have minimum 3 (three) years of experience in supply & installation of Solar Pump specifically in Government Departments. Copy of work order must be attached along with Technical Part.
2. Manufacturer's SSI/NSIC/MSME certificate with items manufactured & capacity, Factory License, BIS Certificate, ISO Certificate.
3. The bidder should have minimum 3 (three) years of experience in construction of Deep Boring specifically in Government Departments. Copy of work order must be attached along with Technical Part.
4. The bidder should impart Training to operate the systems.
5. The tenderer should furnish performance statement, giving list of major supplies of construction of deep boring with solar pumping systems effected to firms in India with supporting documents during past 5 years by them giving the details of purchaser's name and address, Work Order no. and date, quantity supplied & whether the supply was made within the delivery schedule. All relevant documents should be from Government sector only.
6. Test certificate of solar pumping system from any NABL accredited agency must be in the name of bidder should be attached.
7. MSME registration certificate for solar energy verified by district industry center, department of industry as a system integrator must be attached.
8. The bidder must submit GST registration certificate, PAN, audited balance sheet, last three-year income tax returns and self-attested copy of GST return of at least two quarter of the last twelve months.
9. The consolidated annual turnover in the previous 3 financial years i.e. from FY 2017-18 shall be not less than 50% of the Tender Value.

In case the bidder is not a manufacturer

In case the bidder is the authorized Dealer/Supplier/Agent/Recognized Industrial Distributor quoting on behalf of their Principal, they shall have to furnish the following: -

10. The bidder should have minimum 3 (three) years of experience in supply & installation of Solar Pump specifically in Government Departments. Copy of work order must be attached along with Technical Part.
11. The bidder should have minimum 3 (three) years of experience in construction of Deep Boring specifically in Government Departments. Copy of work order must be attached along with Technical Part.
12. The bidder should impart Training to operate the systems.
13. The tenderer should furnish performance statement, giving list of major supplies of construction of deep boring with solar pumping systems effected to firms in India with supporting documents during past 5 years by them giving the details of purchaser's name and address, Work Order no. and date, quantity supplied & whether the supply was made within the delivery schedule. All relevant documents should be from Government sector only.
14. Test certificate of solar pumping system from any NABL accredited agency must be in the name of bidder should be attached.
15. MSME registration certificate for solar energy verified by district industry center, department of industry as a system integrator must be attached.
16. ISO certificates for supply & installation of solar pump in the name of bidder must be attached.
17. The bidder must submit GST registration certificate, PAN, audited balance sheet, last three-year income tax returns and self-attested copy of GST return of at least two quarter of the last twelve months. consolidate

Manufacturer's SSI/NSIC/MSME certificate with items manufactured & capacity, Factory License, BIS Certificate, ISO Certificate.

18. Annual turnover in the previous 3 financial years i.e. from FY 2017-18 shall be not less than 50% of the Tender Value.

19. Authorize dealership certificate of manufacturer must be attached along with manufacturer's SSI/NSIC/MSME certificate with items manufactured & capacity, Factory License, BIS Certificate, ISO Certificate.

20. Selection Criteria of Agency/firms/consortium

Sl.No.	Parameter	Range	Mark	Weight
1	Experience and proven track record of working with rural communities	Up to 3yrs	1	5
		3-5yrs	3	
		More than 5yrs	5	
2	Should have successfully implemented solar Based irrigation system in Jharkhand.	3yrs	3	10
		3-5yrs	5	
		More than 5yrs	10	
3	Organization implemented/installed solar based irrigation system all together.	25-34	3	10
		35-50	5	
		More than 50	10	
4	Transparency in financial	Y	5	5
	Accounting (Audited report of Last 3 yrs)	N	0	
5	Infrastructure (Office premises) at state Level at Jharkhand	Y	10	10
		N	0	
6	MSME registration in Jharkhand (copy of valid certificate)	Y	10	10
		N	0	
7	Test Report of solar pump (copy of valid certificate)	Y	10	10
		N	0	
8	Work performance certificate for installation of solar based irrigation system with government departments (numbers)	less than 3	3	10
		3 to 5	5	
		More than 5	10	
9	Presentation			30
10	Total			100

3. INSTRUCTIONS TO BIDDERS:

3.1 GENERAL INSTRUCTIONS

- Interested bidders are advised to view the detailed tender documents on <https://www.jtdsjharkhand.com>
- The bidders shall submit copies of documents defining their respective constitutional or legal status, place of registration and principal place of business of company or firm or partnership.
- Only bidding companies are required to submit Board Resolutions in prescribed format given at **Annexure-E**.
- Bidding firms are required to submit documents related to assignment of Power of attorney to sign the agreement on behalf of bidders.
- Bidding Partnership firms are required to submit complete partnership deeds along with the bid documents.
- The bidder shall submit reports on their financial standing such as audited profit and loss statements, balance sheets, auditor's report for the past three years. All accounting statements must be duly audited and submitted along with auditor's note on accounts and accounting standards.
- The bidders/manufacturers shall submit information on their performance during last 3 years in format given at **Annexure-F**.
- The bidders/manufacturers shall have to indicate their capacity to manufacture/integrate the different solar PV systems asked for in this tender within the specified time after meeting all their other similar commitments.
- The supplied materials should strictly comply with the specifications as mentioned in the bid, otherwise the material would be liable for rejection.
- Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.
- Since timely execution of works is of paramount importance, requests for extension of time shall not be ordinarily entertained.
- Notice inviting tender, bid documents, prescribed technical bid, price bid, terms & conditions will form the part of the tender.
- Bidders may in their own interest visit the sites before submitting bids.
- All Taxes applicable at the time of supply will be admissible.
- In case of supply of any defective material or substandard material, the materials will be rejected & it will be the responsibility of the supplier for taking back & replacing the rejected materials at

their own cost. In case of non-lifting of such rejected materials within a reasonable time, JTDS will have the right to suitably dispose of the same and forfeit the expenses towards such dispute from the amount payable to the vendor.

- JTDS will not be responsible for any incidental or consequential losses of the firms during the contract period or after.
- During the warranty period, MNRE/ State Agencies/ Users reserve the right to cross check the performance of the systems with the minimum performance levels indicated in the MNRE specifications.
- Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted under any condition.
- The Electronic Form/Template of the Techno –Commercial bid, as available on the portal, shall be duly filled in and scanned copies of documents in support of meeting the minimum qualifying requirement of the tender shall be given as attachments
- All subsequent addendum/Corrigendum to the tender shall be hosted in JTDS's official tender portal only.

3.2 SUBMISSION OF BIDS:

- **THE BIDS MUST BE SUBMITTED ONLY in the prescribed format addressed to the state project Director, JTDS.**
- The bidder must ensure that the bids are submitted in the specified format as per the date and time indicated in the Tender notice.

1. DEADLINE FOR SUBMISSION OF BIDS

- Hard copy of the bid shall be submitted at JTDS office on or **before the last date and time specified for submission of the bids.**
- In the event of the specified date for the submission of bids being declared a holiday for JTDS, the bids will be received on the next working day as per the time indicated in tender notification.
- JTDS may, at its discretion, extend this deadline for submission of bids.

2. PROCEDURE FOR OPENING THE BIDS:

- The Technical bid shall be opened at the time & date mentioned by JTDS in the presence of bidders, who choose to be present. If necessary, the firms may be called for Technical Presentation the schedule for which will be intimated by JTDS.
- The Price bid shall be opened after evaluation of technical suitability of the offers. The date for opening of Price bid shall be communicated subsequently. The Price Bid of only those bidders shall be opened who qualify in the technical bid.
- If due to any reason the due date is declared as a holiday the bid will be opened on next working day at the same time.

3. SELECTION OF VENDORS:

- Following opening of the price bids of technically qualified vendors the same will be evaluated by the designated purchase committee.

4. ALLOCATION OF WORK:

- **All supply / installation orders shall be placed with the state local registered office of the qualified vendors only.**
- For a period of 1 year after tender opening date, JTDS may choose to place additional orders for solar based irrigation system to the winning bidders on the same terms as this tender. The actual quantity awarded (if any) will be at the sole discretion of JTDS and will depend upon the winner's performance.
- The allotment of the area will be the discretion of JTDS.

DEPENDING UPON THE PERFORMANCE OF THE VENDORS, JTDS WILL BE AT LIBERTY TO CANCEL/MODIFY/REVISE THE WORK ORDERS OF ANY OF THE SELECTED VENDORS.

ISSUE OF LETTER OF INTENTS (LOI)

- Allocation of work will be done through specific work orders issued in the name of the select bidders.
- Zones: A bidder can apply for more than one zone (maximum 2 zones).

Activity: Solar based Lift irrigation					
Zone	1	Zone	2	Zone	3
District	Unit	District	Unit	District	Unit
Gumla	5	Saraikela-Kharsawan	9	Godda	5
Latehar	4	East Singhbhum	5	Jamtara	4
Lohardaga	5	West Singhbhum	8	Pakur	4
Ranchi	7	Simdega	4	Sahibganj	5
Khunti	4			Dumka	6
Total	25	Total	26	Total	24
Note:					
Number of HHs is tentative and may change.					
JTDS will support in identification of beneficiaries.					
Bidders can apply for maximum two zones.					

5. ACCEPTANCE/REJECTION:

JTDS reserves the right to accept / reject any or all Tenders without assigning any reason thereof and alter the quantity of materials mentioned in the Tender documents at the time of placing purchase orders.

6. VALIDITY OF OFFER:

- The offer must be kept valid for a period of one year from the date of opening of the technical bid or till the completion of the project whichever is later. No escalation clause except the admissible tax component under the period of consideration would be accepted.

7. WARRANTY:

- The complete system should be warranted against any manufacturing defect or bad workmanship at least for a period of 5 (five) years from the date of commissioning of the systems.
- All component must be warranted against any manufacturing defect of bad workmanship for a period of 5 years.
- Warranty certificate to the above effect must be furnished along with the commissioning reports. Any defect noticed during warranty period should be rectified / replaced by the supplier free of cost upon due intimation by JTDS.
- The warranty provided by the bidder for a particular product shall only be applicable to the tendered project even if the warranty period exceeds the period of CMC.
- As a testimony, the successful bidder must submit the warranty certificate and service agreement if any with the OEM for the tendered work.

8. PENALTY AND TERMINATION OF CONTRACT:

- The systems shall be supplied, installed and commissioned within the scheduled time. If the bidder fails to adhere to the schedule, JTDS shall without prejudice to its other remedies under the contract deduct from the contract price as liquidated damages a sum equivalent to 1% of the contract price of un-commissioned project or unperformed services for each week of delay until actual delivery or installation/commissioning up to a maximum deduction of 5% of the contract price for delayed goods or installation and commissioning. Once the maximum is reached (i.e 5 weeks of delay) JTDS may consider termination of the contract.
- However, JTDS may at own discretion allow reasonable time extension upon written application of the supplying firm. If the delay is considered intentional or due to the negligence of the vendor, no extension can be allowed with imposition of penalty. If the delay is considered to be genuine time extension can be allowed without imposition of penalty.

9. FORCE MAJEURE:

The supplier of the system shall not be charged with liquidated damages nor shall his security for performance be forfeited when failure of the supplier in making delivery is due to any event beyond the control of the supplier and could not have been foreseen, prevented or avoided by a prudent person. These include, but are not restricted to acts of nature, acts of public enemy, acts of Government, fires, floods, epidemics, strikes, freights, embargoes and unusually severe weather.

10. INSPECTION:

- All tests and inspections shall be made at the place of delivery. Officers authorized by JTDS shall be entitled at all reasonable time to inspect and supervise and test during erection and commissioning. Such inspection will not relieve the executing firm of their obligation in the contract.
- JTDS shall have the right to have the tests carried out at its own cost by an independent agency at any point of time.

11. PAYMENT: Payment terms will be decided after discussion with the selected agencies.

12. EXECUTION:

Execution of work shall be carried out in an approved manner as outlined in the technical specification or where not outlined, in accordance with relevant Indian Standard Specification, to the reasonable satisfaction of the Authorized JTDS Officer. The general schedule of execution will be as follows

- Under normal circumstances all ordered systems must be installed and commissioned in all respects within 60 days of receipt of firm work order from JTDS.
- Upon intimation about commissioning of the systems by the executing firm a joint inspection will be carried out by the representatives of the executing firm, JTDS and User organization.
 - The issuance of a Job Completion Certificate (JCC) shall, in no way relieve the executing firm of its responsibility for satisfactory operation of the System.
 - To ensure due performance of the contract, Performance Security is to be obtained from the successful bidder awarded the contract.
 - Bid security should be refunded to the successful bidder on receipt of Performance Security.

13. MAINTENANCE:

Upon selection, the bidder agrees to maintain the solar irrigation systems for a period of 2 years from the date of commissioning of each project.

The broad scope shall cover

- i. All systems will be mandatorily maintained for a period of 2 years from the date of commissioning.
- ii. It is mandatory to undertake all on-call maintenance within 7 days from the date of receipt of the call and report details to JTDS.
- iii. The period of maintenance will be extended by the No. of days of delay in attending to on-call maintenance and making the system functional.
- iv. The delay is calculated from the day a ticket is raised against a vendor to the day the ticket is closed.
- v. The bidder shall be informed of a maintenance request via phone and email.

14. LIMITATION OF LIABILITY:

JTDS, will, in no case be responsible for any accident fatal or non-fatal, caused to any worker or outsider in course of transport or execution of work. All the expenditure including treatment or compensation will be entirely borne by the Executants. The Executants shall also be responsible for any claims of the workers including PF, Gratuity,ESI & other legal obligations.

15. DISPUTE:

For adjudication of any dispute between JTDS and the bidders arising in this case, reference can be made to any Law courts under the jurisdiction of Jharkhand High court only. JTDS reserves the right to accept or reject any or all bids without assigning any reason thereof.

I/We have carefully read and understood the above terms and conditions of the bid and agree to abide by them.

Signature of Bidder with Seal

Check list of documents to be submitted

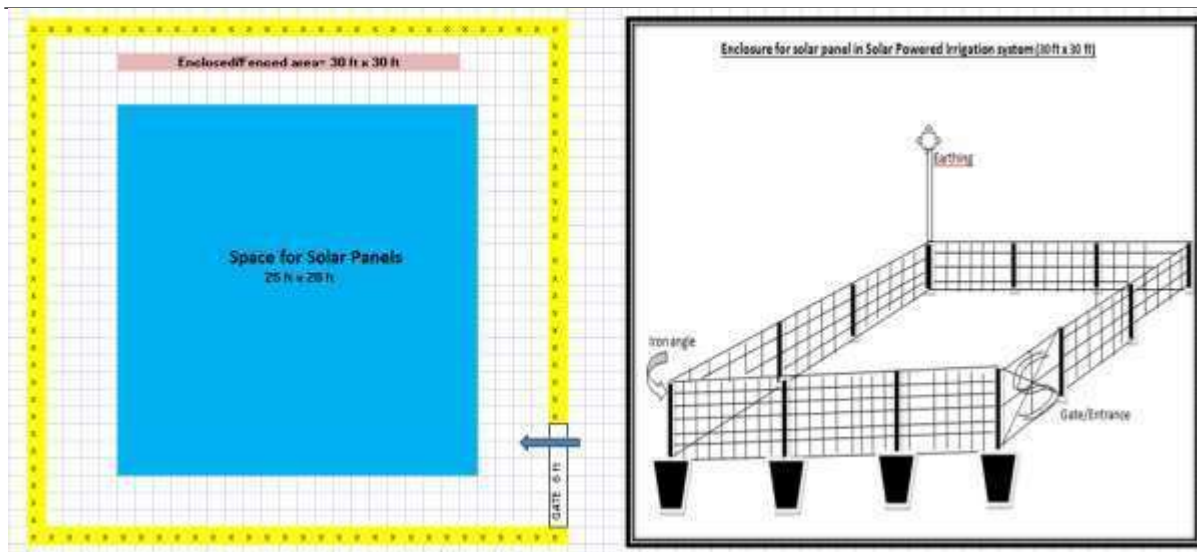
Sl. No	Particulars	
	Forwarding letter duly signed and stamped by the bidder	
	Undertaking duly signed and stamped by the bidder.	
	Certificate of Unconditional Acceptance of all terms and conditions of the tender	
	Confirmation to Technical Specification	
	Copy of Board Resolution in the prescribed format (Applicable to Companies only)	
	Declaration duly signed and stamped by bidder	
	Letter of Authorization	
	Undertaking to supply Indigenous items as per relevant guidelines of MNRE, Gol	
	Willingness to open service centre in the state of Jharkhand and local registered office for execution of the works	
	Power of attorney to sign the agreement on behalf of applicant & partnership deed articles, if any	
	Valid document registering the status of the applicant as manufacturer /systems integrator	
	Organizational Profile containing the original documents defining the constitution or legal status, place of registration / branches, work experience in last 3 years.	
	Copy of GST registration certificate in the name of bidder	
	Copy of the PAN card in the name of bidder	
	Copy of the TIN No. in the name of bidder	

	Copy of Tax return of the bidding company/firm	
	Turnover certificate over last three years exclusively duly certified by Chartered Accountant.	
	Proof of cumulative number & capacity for supply of Solar Irrigation System with Work Completion Report as given format	
	Performance Report of last 3 years as given format	
	Complete Bill of Material (BOM) of the solar irrigation unit with detailed technical specification	

Signature of bidder with seal

TECHNICAL SPECIFICATION FOR SOLAR POWERED IRRIGATION SYSTEM

Sl. No.	Item	Specifications
1	3-5 Hp power solar pump set with all attachments and accessories	as per MNRE specifications (Annexure A).
2	Installation, Commission and maintenance for 2 years	As per MNRE specifications in Annexure A and panel layout drawing below
3	HDPE pipe (Delivery & Suction side)	80/110 mm flexible (ISI Mark)
4	PVC Foot Valve	PVC foot valve with clamps and fittings (ISI Mark)
5	PVC NRV	PVC NRV with clamps and fittings (ISI Mark)
6	160 mm dia PVC pipes	Pressure rating 2.5 Kgf / Sq Cm (ISI Mark)
7	QRC outlets with both side opening and water chamber (2 ft x 2 ft x 2.5, of which 0.5 above ground)	QRC outlets (CI) including clamps, accessories (ISI Mark) and water brick and RCC chamber (2 ft length, 2ft width, 2 ft depth-1.5 ft below ground and 0.5 ft above ground)
8	Borewell Digging	Drilling a 400 ft borewell complete with all accessories
9	Water Testing	Testing the borewell for 24 hours to ensure enough water is available



SPECIFICATION		
1	Total enclosed (Fenced) area	30 ft x 30 ft
2	The area required for solar panel	25 ft x 20 ft
3	Total Iron pole(s) Dimension 40 NB medium GI 8 ft (2 ft below ground and 6 ft above ground)	12 (40 NB Medium GI, 8 Ft)
4	Foundation	1 ft x 1 ft x 2 ft
5	Gate with Godrej 7 levers lock for entrance to fenced area	6 ft
6	Chain fenced mesh	4 mm thick 40x40x1.82 mtrs

Sample Photo - QRC outlets & Water chamber



BORING OPERATION

HYDT

The drilling operation for construction of bores for High Yielding Tube Wells should be carried out by suitable DTH Mounted Rigs to satisfy the following:-

- a) The boring in the over burden should be continued through the rock at least up to 1m so that casing pipes can be properly embedded in the rock.
- b) Boring through rocks shall be 165 mm dia. and total depth from the ground level of the bore shall be sufficient for adequate discharge (preferably avg 200m) and on completion of drilling the site of bore shall be cleaned and it should be capable to give sufficient clear water. The yield should not be less than thousand liters per hour for acceptance as a successful bore.
- c) The diameter of the bores in the over burden shall be sufficient for insertion of 200mm dia. ERW 6mm thick PVC casing pipes with sufficient annular space for grouting the casing pipes.
- d) Even if on drilling any depth from the ground level, the bore remains dry or the yield is found less than 1000 liter per hour and further boring is not possible due to adverse and unsuitable geological condition, the bore shall be declared unsuccessful. Such declaration shall only be accepted when inspected and declared dry/unsuccessful in writing by the E/I or his authorized representative.
- e) After completion of the boring, the bore should be developed and washed by means of air compressor for at least one hour so as to give clean and potable water.

LOWERING OF CASING PIPE

For HYDT- Casing pipes should be properly socketed/welded to ensure a continuous length and lowered through the over burdens so as to reach at least 1 m inside the rock. The contractor shall have to make arrangements for cutting pipe to required length and if necessary, make threads thereon at his own cost to facilitate lowering of casing pipe. The length of casing pipe should be such that at least 90 cm remain projected above the level after completion of the work at site. The top of the casing pipe shall have to be closed by a screwed/welded cap till the hand pump is installed over the bore or installation of motor pump on the bore. The casing shall have to be lowered in such a manner that it remains vertical so as to ensure installation of deep well hand pumps and accessories without difficulty.

MINISTRY OF NEW AND RENEWABLE ENERGY SPECIFICATION FOR SOLAR PHOTOVOLTAIC

WATER PUMPING SYSTEMS

1. SCOPE

These specification covers design qualifications and performance specifications for Centrifugal Solar Photo Voltaic (SPV) Water Pumping Systems to be installed on a suitable bore-well, open well, water reservoir, water stream, etc., and specifies the minimum standards to be followed under New Scheme for Farmers launched by Government of India on 8.3.2019.

2. TERMINOLOGY

In addition to the terminology specified in 3 of IS 5120 and IEC 62253, the following shall also apply.

2.1 Static Water Depth — It is the depth of water level below the ground level when the pump is not in operation.

2.2 Draw-Down — It is the elevation difference between the depth of static water level and the consistent standing water level in tube well during operation of pump set.

2.3 Submergence — It is the minimum height of water level after drawdown above the pump suction casing.

2.4 Manometric Suction Lift — Manometric suction lift is the vacuum gauge/suction manometer reading in meter of water column when pump operates at suction lift.

2.5 Static Suction Lift — Static suction lift/head is the vertical distance between sumpwater level and center of pump inlet.

2.6 Daily Water Output — It is the total water output on a clear sunny day with three times tracking SPV panel, under the "Average Daily Solar Radiation" condition of 7.15 KWh / m² on the surface of SPV array (i.e. coplanar with the SPV Modules).

2.7 Wire to Water Efficiency — It is the combined system efficiency of SPV Converter/Controller with Inbuilt MPPT mechanism, Pump set and piping.

2.8 SPV Controller — Pump Controller converts the DC voltage of the SPV array into a suitable DC or AC, single or multi-phase power and may also include equipment for MPPT, remote monitoring, and protection devices.

2.9 Maximum Power Point Tracker (MPPT) — MPPT is an algorithm that is included in the pump controller used for extracting maximum available power from SPV array under a given condition. The voltage at which SPV array can produce maximum power is called 'maximum power point' voltage (or peak power voltage).

3. CONSTRUCTIONAL FEATURES

3.1 General

3.1.1 SPV Water Pumping System set uses the irradiance available through SPV array. The SPV array produces DC power, which can be utilized to drive a DC or an AC pump set using pump controller.

3.2 A SPV Water Pumping system typically consists of:

3.2.1 Pump Set

Pump set may be of any one of the following types:

- i) Mono-set pump;
- ii) Open well submersible pump;
- iii) Submersible pump;

3.2.2 Motor

The motor of the pump set may be of the following types:

- i) DC Motor BLDC

3.2.3 SPV Controller See 2.8

Note: Some controllers are inbuilt in the motors

3.2.4 Provision for remote monitoring for the pumps must be made in the pump controller through an integral arrangement having following basic functions:

- Controller must be assigned with a unique serial number and its live status must be observed remotely on online portal through login credentials.
- Live status must indicate whether controller is ON/ OFF
- The parameter i.e. the water output, water flow rate, in fault condition, array input voltage/ current, power and motor frequency should be logged at an interval of 10 minutes
- Controller must have a back up to store the data locally (at least for 1 year)

3.3 Solar Photo Voltaic (SPV) Array

3.3.1 SPV arrays contain specified number of same capacity, type and specification modules connected in series or parallel to obtain the required voltage or current output. The SPV water pumping system should be operated with a PV array minimum capacity in the range of **900 Watts peak to 9000 Watts peak**, measured under Standard Test Conditions (STC). Sufficient number of modules in series and parallel could be used to obtain the required voltage or current output. The power output of individual PV modules used in the PV array, under STC, should be a minimum of 200 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.

3.3.2 Modules supplied with the SPV water pumping systems shall have certificate as per IS14286/IEC 61215 specifications or equivalent National or International/ Standards. STC performance data supplied with the modules shall not be more than one year old.

3.3.3 Modules must qualify to IS/IEC 61730 Part I and II for safety qualification testing.

3.3.4 The minimum module efficiency should be minimum 15 percent and fill factor shall be more than 70 percent.

3.3.5 Modules must qualify to IEC TS 62804-1:2015 for the detection of potential-induced degradation - Part 1:

Crystalline silicon (Mandatory in case the SPV array voltage is more than 600 V DC)

3.3.6 In case the SPV water pumping systems are intended for use in coastal areas the solar modules must qualify to IEC TS 61701:2011 for salt mist corrosion test.

3.3.7 The name plate shall conform the IS 14286/IEC 61215

3.3.8 Module to Module wattage mismatch in the SPV array mismatch shall be within ± 3 percent.

3.3.9 Variation in overall SPV array wattage from the specified wattages shall be within zero percent to +10 percent.

3.4 Motor-Pump Set

3.4.1 The SPV water pumping systems may use any of the following types of motor pumpsets:

- a) Surface mounted motor-pump set
- b) Submersible motor-pump set
- c) Floating motor-pump set
- d) Any other type of motor pump set after approval from Ministry.

3.4.2 The "Motor-Pump Set" should have a capacity in the range of 1 HP to 10 HP and should have the following features:

- a) The mono block DC/ AC centrifugal motor pump set with the impeller mounted directly on the motor shaft and with appropriate mechanical seals which ensures zero leakage.
- b) The motor of the capacity ranging from 1 HP to 10 HP should be AC/DC. The suction and delivery head will depend on the site specific condition of the field.
- c) Submersible pumps could also be used according to the dynamic head of the site at which the pump is to be used.

3.4.3 The pump and all external parts of motor used in submersible pump which are in contact with water, should be of stainless steel of grade 304 or higher as required. The motor-pump set should have a 5 years warranty and therefore, it is essential that the construction of the motor and pump should be made using parts which have a much higher durability and do not need replacement or corrode for at least 5 years of operation after installation.

3.4.5 The suction/ delivery pipe (uPVC/HDPE), electric cables, floating assembly, civil work and other fittings required to install the Motor Pump set.

3.5 Module Mounting Structures and Tracking System

3.5.1 The PV modules should be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. The raw material used and process for manufacturing of module mounting structure including welding of joints should conform to applicable IS. The module mounting structure should be hot dip galvanized according to IS 4759. Zinc content in working area of the hot dip galvanizing bath should not be less than 99.5% by mass.

3.5.2 The general hardware for structure fitment should be either SS 304 or 8.8 grade. Modules should be locked with anti-theft bolts of SS 304 Grade. Foundation should be as per the site condition, based on the properties of Soil. Foundation can be done either with the help of 'J Bolt' (refer IS 5624 for foundation hardware) or direct piling, it

should be decided as per the site and relevant IS i.e. IS 6403 / 456 / 4091 / 875 should be referred for foundation design.

3.6 SPV Controller

3.6.1 Maximum Power Point Tracker (MPPT) shall be included to optimally use the power available from the SPV array and maximize the water discharge.

3.6.2 The SPV Controller must have IP (65) protection or shall be housed in a cabinet having at least IP (65) protection.

3.6.3 Adequate protections shall be provided in the SPV Controller to protect the solar powered pump set against the following:

- a) Dry running;
- b) Open circuit;
- c) Accidental output short circuit;
- d) Under voltage;
- e) Reverse polarity;
- f) SPD to arrest high current surge; and
- g) Lightning arrestor.

3.6.4 A good reliable DC Circuit Breaker as per IS/IEC 60947-2 suitable for switching DC power ON and OFF shall be provided in the SPV Controller.

3.6.5 All cables used shall be as per IS 694. Suitable size of cable shall be used in sufficient length for inter-connection between the SPV array to SPV Controller and the SPV Controller to solar powered pump set. Selection of the cable shall be as per IS 14536.

3.6.6 Controller shall be integrated with GSM/GPRS Gateway with Geo tagging. GSM/ GPRS Charges to be included in the Costing till the end of Warranty period of the Pump set.

3.7 Earthing Arrangement

3.7.1 Earthing of the motor shall be done as per IS 9283 in accordance with the relevant provisions of IS 3043. Separate earthing shall be provided for Controller, pump and SPV array.

3.7.2 For safety purpose, it shall be ensured during installation that the earthing is capable of taking care of leakage current.

3.7.3 In case of uPVC/HDPE pipes used as discharge pipe, a separate non-corrosive, low resistance conductor from motor earth terminal to control panel earth terminal shall be provided for earthing.

3.7.4 A lightning arrestor shall be provided with every SPV Water Pumping System.

3.8 Use of indigenous components

It will be mandatory to use indigenously manufactured solar modules with indigenous mono/multi crystalline silicon solar cells. Further, the motor-pump-set, controller and balance of system should also be manufactured indigenously. The vendor has to declare the list of imported components used in the solar water pumping system.

4. PERFORMANCE REQUIREMENTS

4.1 Under the “Average Daily Solar Radiation” condition of 7.15 KWh / sq.m. on the surface of PV array (i.e. coplanar with the PV Modules), the minimum water output from a Solar PV Water Pumping System at different “Total Dynamic Heads” should be as specified below :

For D.C. Motor Pump Set:

- i) 110 liters of water per watt peak of PV array, from a Total Dynamic Head of 10 meter (Suction head, if applicable, maximum of 7 meter) and with the shut off head being at least 12 meter.
- ii) 55 liters of water per watt peak of PV array, from a Total Dynamic Head of 20 meter (Suction head, if applicable, up to a maximum of 7 meters) and with the shut off head being at least 25 meter.
- iii) 38 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 meters and the shut off head being at least 45 meter.
- iv) 23 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 meter and the shut off head being at least 70 meter.
- v) 15 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 meters and the shut off head being at least 100 meter.
- vi) 10.5 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 meters and the shut off head being at least 150 meter.

The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

Indicative performance specifications for the Shallow and Deep well SPV Water Pumping Systems are given below.

Indicative Technical Specifications of Solar Deep well (submersible) Pumping Systems with D.C. Motor Pump Set with Brushes or Brushless D.C. (B.L.D.C.)

Description	Model-I	Model-II	Model-III	Model-IV	Model-V	Model-VI	Model-VI	Model-VII	Model-IX	Model-X	Model-XI	Model-XI	Model-XII	Model-XIV
PV array (Wp)	1200	1800	3000	3000	3000	4800	4800	4800	6750	6750	6750	9000	9000	9000
Motor Pump set capacity (HP)	1	2	3	3	3	5	5	5	7.5	7.5	7.5	10	10	10
Shut Off	45	45	45	70	100	70	100		70	100	150	70	100	150

Dyn amic Hea d (me ters)								15 0						
Wate r outp ut * (Liter s per day)	4560 0 (fro m a total head of 30 mete rs)	6840 0 (from a total head of 30 mete rs)	1140 00 (fro m a total head of 30 mete rs)	6900 0 (fro m a total head of 50 mete rs)	4500 0 (fro m a total head of 70 mete rs)	1104 00 (fro m a total head of 50 mete rs)	7200 0 (fro m a total head of 70 mete rs)	50 40 0 (fro m a total head of 100 mete rs)	1552 50 (fro m a total head of 50 mete rs)	1012 50 (fro m a total head of 70 mete rs)	7087 5 (fro m a total head of 100 mete rs)	2070 00 (fro m a total head of 50 mete rs)	1350 00 (fro m a total head of 70 mete rs)	9450 0 (fro m a total head of 100 mete rs)

* Water output figures are on a clear sunny day with three times tracking of SPV panel, under the “Average Daily Solar Radiation” condition of 7.15 kWh/ sq.m. on the surface of PV array (i.e. coplanar with the PV Modules).

Notes:

1. For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause 4 (i.e. Performance Requirements) specified earlier.
2. If surface pumps are used in lieu of submersible pumps, the water output must match that of the submersible pumps as specified in this table.

5. GUARANTEE OF PERFORMANCE

5.1 The SPV Water Pumping Systems shall be guaranteed for their performance of the nominal volume rate of flow and the nominal head at the guaranteed duty point as specified in 7.1 under the “Average Daily Solar Radiation” condition of 7.15 kWh/m² on the surface of SPV array (i.e. coplanar with the Photo Voltaic (PV) Modules). The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

5.2 Solar Photo Voltaic Water Pumping Systems shall be guaranteed by the manufacturer against the defects in material and workmanship under normal use and service for a period of at least 60 months from the date of commissioning.

5.3 Sufficient spares for trouble free operation during the Warrantee period should be made available as and when required

6. MARKING AND PARAMETERS TO BE DECLARED BY THE MANUFACTURER

6.1 The motor pump-set and Controller used in SPV Water Pumping Systems shall be securely marked with the following parameters declared by the manufacturer:

7.1.1 Motor Pump-set

- a) Manufacturer's name, logo or trade-mark;
- b) Model, size and SI No of pump-set;

- c) Motor Rating (kW / HP);
- d) Total head, m, at the guaranteed duty point;
- e) Capacity (LPD) at guaranteed head;
- f) Operating head range, m;
- g) Maximum Current (A);
- j) Voltage Range (V) and;
- k) Type - AC or DC Pump set; &
- l) Photo Voltaic (PV) Array Rating in Watts peak (Wp)

7.1.2 Controller

- a) Manufacturer's name, logo or trade-mark;
- b) Model Number;
- c) Serial Number;
- d) Voltage Range;
- e) Power Range in kW for Controller; and
- f) Current rating (A)

7. OPERATION AND MAINTENANCE MANUAL

7.1 An Operation and Maintenance Manual, in English and the local language, should be provided with the solar PV pumping system. The Manual should have information about solar energy, photovoltaic, modules, DC/AC motor pump set, tracking system, mounting structures, electronics and switches. It should also have clear instructions about mounting of PV module, DO's and DONT's and on regular maintenance and Trouble Shooting of the pumping system. Helpline number and Name and address of the Service Centre and contact number of authorized representative to be contacted in case of failure or complaint should also be provided. A warranty card for the modules and the motor pump set should also be provided to the beneficiary.

**Solar Irrigation units Installed
(Supporting Documents to be attached)**

Sl. No	Name of the Organization/ Beneficiary	Reference of Work Order/Supply Order issued	No. of Solar irrigation unit supplied	Date of Commissioning	Reference of Work Completion Certificate

**Solar Irrigation units in Operation for 5 years or more
(Min. 5 required. Can be 1 or more customers)**

(Supporting Documents to be attached)

Name of Customer	
No. of solar irrigation Units Installed	
Date of Installation	
Installation Site Address	
Work order details	
Contact Name for reference check	
Contact Phone for reference check	
Contact Email for Reference check	
Contact Designation	

Work Experience of Execution Partner if bidder is not manufacturer

(Supporting Documents to be attached)

Sl. No	Name of Customer	Type of Installation	Date of Installation	Installation Site Address	Completion Certificate Details

Component wise Test Reports

S/N	Major Component	Test Certificates Required	Test description	Designated Test Labs
1	Crystalline Silicon Terrestrial PV Modules	IEC 61215	Design qualification	UL India(up to 400 Wp), TUV Rheinland(up to 400 Wp) , NISE(up to 100 Wp), ETDC
		IEC 61730	Safety Qualification	UL India(up to 400 Wp), TUV Rheinland(up to 400 Wp)
		IEC 61701	Salt Mist Corrosion Test	UL India(up to 400 Wp), TUV Rheinland(upto 350 Wp), ETDC (up to 100 Wp)

BOARD RESOLUTION

(To be submitted on pre-printed Corporate Letter Head)

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED IN THE MEETING OF THE BOARD OF DIRECTORS OF M/S.....

HAVING ITS REGISTERED OFFICE AT.....HELD ON DD/MM/YY AT.... HRS

Resolved that the company/firm do agree to participate in the tender invited by JTDS vide Notice No Dtd..... for

RESOLVED FURTHER THAT, the company/firm does agree to unconditionally accept all terms and conditions mentioned in the afore mentioned tender document.

RESOLVED FURTHER THAT, subject to eligibility, the company/firm agree to open an effective service center in the state of Jharkhand, preferably in the vicinity of projects so as to cater regular maintenance services to the customers of the company/firm.

RESOLVED FURTHER THAT, Ms/Mr Director and/or Ms/Mr... authorized signatory of the company be and hereby authorized to sign, execute and submit such applications, undertakings, agreements and other requisite documents writings and deeds as may be deemed necessary or expedient to implement the above assignment

AND RESOLVED FURTHER THAT, the common seal of the company is affixed, wherever necessary, in the presence of any Director of the company who shall sign the same as token of the presence.

For

Chairman/Company Secretary Name

of the Authorized person

Specimen Signature of Authorized person

The above signature to be attested by the person signing the resolution

**Format of Performance for last 3 years for Manufacturer
(To be submitted on letter head of manufacturer)**

Sl. No	Particulars	Details to be filled up
1	Name of the manufacturer and contact details	
2	Status of bidder (Manufacturer certification)	<i>In support of this the bidder may submit valid certificate from MNRE/Other state agency/to prove they are manufacturers</i>
3	Production/Integrating capacity per annum	<i>In support of this the bidder may submit valid Production/integrating certificate from NSIC/DIC/</i>
4	Total amount of solar irrigation unit installed in last 3 years.	<i>Please submit year wise installed no. of units, capacities, customer</i>
5	Annual Turnover over last 3 years (2018-21)	
6	No. of employee currently working	
7	Awards/Honours received during 3 year	

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

UNDERTAKING BY THE BIDDER

I/we here by undertake that

1. We have thoroughly read and examined the notice inviting tender and the tender document along with all its schedules, annexure etc.
2. The rates quoted by us are firm and final and are meant for execution of the allotted supply / installation within the time frame stipulated in the tender/supply / installation order.
3. All terms and conditions of the tender including the rates quoted by us shall remain valid for a period of min one year from the date of opening of the technical bids.
4. In case our tender is incomplete in any respect or we violate any of the prescriptions given in the tender for submission of the same JTDS shall , without prejudice to any other right or remedy ,be at liberty to forfeit the earnest money deposited by us.
5. In case of award of supply / installation in our favour JTDS shall have the right to convert the EMD deposited by us in to full or part (as the case may be) of the security deposit to be deposited by us against award of the supply / installation.
6. In case we fail to commence or complete the supply / installation as per the time schedules or fail to fulfill any of the terms and conditions given in the tender JTDS shall , without prejudice to any other right or remedy , be at liberty to forfeit the security deposit made by us against the award of the supply / installation.
7. I/We hereby declare that I/We shall treat the tender documents, specifications and other records connected with the supply / installation 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 prejudiced to the safety of JTDS/the State Govt.
8. I/We shall abide by all the laws prevailing at the time of the execution of the supply / installation and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.
9. The entire tender document has been discussed in the Board meeting and a resolution has been concurred for participation in the tender (copy enclosed)
10. We are not blacklisted / debarred / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.
11. In case any false documents submitted and found any time in future the firms shall be liable to be proceeded against as per prevailing laws.
12. Our PAN No. under the Income Tax Act is _____ and GST Registration No. is _____
13. 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 JTDS to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.

Signature of bidder with stamp & date

Letter of Authorization

(to be submitted in the letter head of the bidder)

To,
Tender Authority details

Sub: Design, Supply, Testing, Installation, Commissioning and Maintenance for a period of 2years of Solar irrigation Unit

Ref: Tender Call **Notice No.** -----/ **JTDS, dtd**----- .

Sir,

I/we hereby authorise Ms. /Mr. _____, Designationof our company to sign all relevant documents on behalf of the company/firm in dealing with the above tender. She / He is also authorized to attend all meetingsand submit technical and commercial information as may be required by JTDS in the course ofprocessing of the tender.

We further authorise Ms. /Mr. _____ designation..... of our company to make technical presentation on behalf of the company.

Signature of the authorise persons

1. _____ **Yours faithfully**

Head of the organization

Name and designation of the attesting officer with stamp.

DECLARATION

(To be submitted on the letter head of the company)

To,

Tender Authority details

Sub:- Design, Supply, Testing, Installation, Commissioning and Maintenance for a period of 2 years of Solar irrigation Unit

Ref:- Tender call Notice No. /JTDS, dt.Sir,

I/we hereby declare the following in the context of the aforementioned tender that:

- a) The entire tender document has been discussed in the Board meeting and a resolution has been passed for participation in the tender (copy enclosed)
- b) We are not involved in any litigation that may have an impact of affecting or compromising the delivery of services as required under this tender
- c) We are not blacklisted / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.
- d) In case any false documents submitted and found in future the firms shall be liable to be proceeded against as per prevailing laws.

Yours faithfully,

Authorised signatory

(Stamp).

Certificate of Unconditional Acceptance of the tender

(to be submitted on the letter head of the companyby

Board Resolution)

We _____
a prospective bidders for the work of "Design, Supply, Testing, Installation,Commissioning and
Maintenance for a period of 2 years of Solar irrigation Unit"here by certify that we have carefully studied
and understood the contents of theentire bid document hosted by JTDS on
the website of Govt. of Jharkhand on _____and
hereby confirm our unconditional acceptance to each and every line of the said bid document.

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

Confirmation to Technical Specifications

(to be submitted on the letter head of the company)

Certified that we have carefully read and understood the technical specifications of the products and services to be provided under this tender and we hereby confirm our total adherence to the given technical specifications. The test certificates provided by us also base on the same technical specifications/ parameters.

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

(Common Seal).....

