

PUBLIC HEALTH ENGINEERING DEPARTMENT



Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)

Invitation for Bid,
Instructions to Bidder,
Pre qualification,
Conditions of Contract

NIT No. 07/2018-19

VOLUME-I

TENDER- DOCUMENT

ADDITIONAL CHIEF ENGINEER
PUBLIC HEALTH ENGINEERING DEPARTMENT
Region II-Jodhpur

June 2018



OFFICE OF CHIEF ENGINEER (RURAL), PHED
2-CIVIL LINES, JAL BHAWAN, RAJASTHAN, JAIPUR 302006
Phone: 0141-2222183, Fax: 141-2223197, e-mail: raj_ce@nic.in

NOTICE INVITING TENDERS FOR WORKS

1- **Online Line tenders** are hereby invited in **Three-Cover system** on behalf of the Governor of Rajasthan for the following work on **Rate contract Basis** from the bidder, who must be one of the following entities to be eligible to participate:-

- A channel partner of MNRE (possessing valid empanelment with MNRE as on date of submission of bid) having rating of 2E or above and must be either an indigenous manufacturer of SPV modules or manufacturer of submersible pump set or system integrator to be eligible to participate. The bidder shall submit list/ any other supporting document of empanelment in MNRE in required rating. The bidder shall also submit a declaration of being either an indigenous manufacturer of SPV modules or a manufacturer of submersible pump set or a system integrator.
- Consortium of any one of the entities mentioned above with any civil contractor registered with CPWD, Postal, Telecom, Railways, MES, Other State governments/ Central government undertakings/ Organizations and having experience of standalone water treatment plants/RO Plants.

Consortium of more than two entities shall not be permissible. In case of consortium, consent of both the entities for forming a consortium shall be submitted on legal documents along with bid, without which the bid will be rejected. **(Joint Bidding Agreement Format attached)**. Submission of bid (and award of contract, if any) shall be in the name of Lead member only. However, neither the lead member nor the other member of Consortium shall be allowed to exit from the consortium at any stage. **For prequalification, the lead member shall be required to fulfill any one of experience criteria of eligibility (i.e. either clause 4.3.1 or clause 4.3.2 of ITT, Vol-I) individually, while all other criteria of eligibility may be fulfilled either individually or jointly by the members of consortium.** The bidders who are black listed in any state would not be eligible to bid in PHED Rajasthan tender.

Details of this tender notification can also be seen in NIT exhibited on web site www.dipronline.org. The tender document can be seen on website <http://eproc.rajasthan.gov.in> and <http://sppp.raj.nic.in>. Tender is to be submitted online in electronic format on website <http://eproc.rajasthan.gov.in> as per schedule given below

2- **GENERAL DETAIL OF WORKS:**

S.N.	NIT No.	07/2018-19 dated 04.06.2018 Estimated Cost 2722.30 lacs
1	Work Description	Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)
2	Earnest money	Rs 54.45 lacs in favour of Additional Chief Engineer, PHED, Region II-Jodhpur (Rs. 13.61 lacs only for eligible AA class contractors).
3	Cost of Tender Documents	Rs. 5,000.00 in favour of Additional Chief Engineer, PHED, Region II-Jodhpur in the form of DD only
4	Process fees	Rs. 1000.00 in the favour of MD RISL payable at Jaipur in the form of DD only.

3- **IMPORTANT DATES:**

S. N.	Events	Date & Time	Location
1	Document Download /Sale start date and time	05.06.2018 (at 11:00 AM)	https://eproc.rajasthan.gov.in

S. N.	Events	Date & Time	Location
2	Document Download /Sale end date and time	05.07.2018 (at 6:00 PM)	https://eproc.rajasthan.gov.in
3	Pre Bid Meeting date & time	13.06.2018(at 3:30 PM)	Meeting Hall, 2-Civil lines, Jal - Bhawan, Jaipur Rajasthan.
4	Bid submission Start Date and time	22.06.2018 (at 3:30 PM)	https://eproc.rajasthan.gov.in
5	Bid submission End Date and time	05.07.2018 (at 6:00 PM)	https://eproc.rajasthan.gov.in
6	Date and time for physical submission of DD of EMD & RISL Processing fee	up to 06.07.2018 (11:30 AM)	Office of Additional Chief Engineer, PHED, Region II- Jodhpur
7	Opening of Technical bid	up to 06.07.2018 (11:30 AM)	Office of Additional Chief Engineer, PHED, Region II- Jodhpur
8.	Opening of Price bid	Will be informed to all qualified bidders	Through E-Mail /FAX /Web site of E-Procurement, Rajasthan

Note: In case, there is holiday on any of the date mentioned above, the activities assigned on that date shall be carried out on the next working day.

4- ELIGIBILITY CRITERIA:

4.1 TECHNICAL CRITERIA

4.1.1 Capability The bidder shall possess a latest satisfactory test report of complete SPV water pumping system having pump capacity of minimum **1.32 Kw** (=maximum kW of Solar operated pump in scope of the work tendered) issued by MNRE or MNRE accredited test centers on or after 01.01.2014. The test report shall include satisfactory report of SPV modules, submersible pump-motor and protection system (against dry run, short circuit & reverse polarity).

Note: The same make of Solar Penal, pumps, inverter/controller for which the test report is submitted by the bidder shall have to be provided during execution of works.

4.1.2 Technology evaluation certification The bidder shall possess certificate of evaluation of the technology proposed to be used for de-fluoridation for satisfactory performance, non-toxicity, potability of treated water and confirmation that animal, fish, oyster or any living organism has not been used in the manufacturing of media. The technology proposed must have been used successfully in any Govt. organization for community drinking water supply. Bidder shall not be allowed to change the offered technology without prior permission of the department. Submission of evaluation certificate by the bidder with the tender is mandatory.

Note:

1. Certificate from Govt. organization issued by authority not below the rank of Executive Engineer shall accompany the bid for satisfactory performance of the technology offered for de-fluoridation.
2. The test report for non-toxicity and potability of treated water (indicating chemical parameters of raw water and treated water) issued by any of AIH&PH/ CSIR labs/ IITs/ NITs/ BIS/ SIIR/ any NABL accredited lab shall also be submitted with bid. The test report should not be older than 6 months from date of submission

of bid.

3. A declaration by the manufacturer of media shall invariably be enclosed with bid for non-use of animal, fish, oyster or any living organism in media and its non-toxicity, usability for de-fluoridation of drinking water and fluoride uptake capacity indicating reference of national or international standard/ patent on which the media is being manufactured by him. The declaration shall also indicate name of bidder to whom the manufacturer shall be supplying the media.

4.1.3 ISO certification The bidder should possess ISO 9001-2008.

4.2 FINANCIAL CRITERIA

4.2.1 Average annual turnover Average annual turnover during the period of last 3 years should not be less than **Rs. 2722.30 Lacs** (=estimated cost of work) for manufacturing/ providing, installation, commissioning and O&M of SPV operated installations and any type of standalone water treatment plants.

4.2.2 Net Worth Net worth of the bidder as on the last date of previous financial year (of which audited balance sheet is available) shall not be less than **Rs. 1361.15 Lacs.** (=1/2 x average annual turnover).

4.2.3 Credit Limit Credit Limit (Fund based and non fund based) available with the bidder shall not be less than **Rs. 2450.07 Lacs.** (=90% of the Average Annual Turn Over).

4.2.4 Bidding Capacity Bidding Capacity of the bidder calculated as below on the date of NIT shall not be less than **Rs. 2722.30 Lacs** (=estimated cost of work)
Bidding Capacity = $2 \times A \times N - B$
Where: A= Maximum annual turnover manufacturing/ providing, installation, commissioning and O&M of SPV operated installations and any type of standalone water treatment plants of the bidder in last three Financial Years
N= Stipulated period of execution of contract in years (to be kept as one year).

B= Liability of present works in hand during the contract period.

4.2.5. Financial stability The bidder(s) shall not have applied for Corporate Debt Restructuring (CDR) or facing recovery proceedings from financial institutions or facing winding up proceedings or not under BIFR in the last three financial years and up to the date of bid submission. All the bidders shall submit an affidavit to this effect alongwith certificate from the bidder's Chartered Accountant. The bidder shall have to further demonstrate that it continue to meet above requirement by submitting additional affidavit before opening of financial bid. Failure to comply with this requirement shall result in disqualification of the bidder(s).

General notes:

- i. The average annual turnover shall be based on audited balance sheets of immediate preceding last 3 financial years. In case, tenders are to be received earlier than the time prescribed for submission of audited balance sheets under Company's Act for immediate last FY, the period of 3 years shall be shifted to previous FYs.
- ii. The turnover of previous years and cost of executed project/schemes/works (Capital and O&M) shall be given additional weight age @ 10% per year to bring the same at current price level to account for price escalation.
- iii. The certificate of credit limit issued by bank shall be of period within 3 months from date of opening of pre-qualification bid.
- iv. Turnover of the bidder for *manufacturing/ providing, installation, commissioning and O&M of SPV operated installations* and any type of standalone water treatment plants shall be as per certificate of Chartered Accountant based on

audited balance sheets.

- V. All the bidders shall submit a notarised affidavit on Rs 500/- non judicial stamp paper for financial stability along with certificate from the bidder's Chartered Accountant. . The bidder shall have to further demonstrate that it continue to meet above requirement by submitting additional affidavit before opening of financial bids.

4.3 EXPERIENCE CRITERIA

The bidder should have experience of the following works during last 7 years up to the date of submission of tenders

- 4.3.1 Execution & Maintenance of SPV installation Execution, successful commissioning and successful completion of AMC or comprehensive maintenance for at least 1 year of one similar work costing not less than **Rs. 408.35 Lacs** (=15% of estimated cost of work)

or

Execution, successful commissioning and successful completion of AMC or comprehensive maintenance for at least 1 year of one or more similar work(s) of solar energy based SPBW of total installed capacity of **79.63 Kw.** (= 1/3rd of total kW of SPV operated pumps in tender).

or

Execution, successful commissioning and successful completion of AMC or comprehensive maintenance for at least 1 year of **88 Nos.** (=1/3rd of total number of SPV installation taken in tender) of similar work(s) of solar energy based SPBW each of installed capacity not less than 900 Wp

Note- "Similar work means the work that involves providing, installation & commissioning of SPV panels and solar energy operated pumps".

- 4.3.2 Execution & Maintenance of treatment plant Execution, successful commissioning and successful completion of comprehensive maintenance for at least 1 year of one or more work(s) of any type of standalone water treatment plant having total installed capacity of **87667 LPH** (=1/3rd of total capacity de-fluoridation plants taken in tender)

Note: The required total capacity of standalone water treatment plant shall be calculated as 1/3rd of filtration capacity of DFUs i.e. if 1000 DFUs are to be provided, each capable of discharging 600lt/hr, then the required total capacity of standalone water treatment plant shall be $(600 \times 1000) \times 1/3 = 2 \text{ lac lt/hr}$.

Note: The bidder shall submit work experience certificate along with copy of work order for the work awarded by state govt./ central govt. or their undertakings and autonomous bodies. The work experience certificate issued by an officer not below the rank of Executive Engineer or equivalent shall only be considered.

Note:

- a. Electronically received tenders will be opened online on the scheduled date and time mentioned above by tender opening committee in the office of Additional Chief Engineer, Public Health Engineering Department, Region II-Jodhpur Rajasthan. **No physical submission of the tender will be accepted.**
- b. An earnest money shall be deposited through Banker's Cheque or Demand Draft of Nationalized/ Scheduled Bank in the name of Additional Chief Engineer, Public Health Engineering Department, Region II-Jodhpur up to the time and date of opening of prequalification bid as mentioned above. Tenders uploaded /received without earnest money shall be out rightly rejected.
- c. The tender should be accompanied with GST registration certificate from the concerned department, without which the tenders may not be entertained.
- d. The tender for works shall remain open for acceptance for the period of 90 days from the date of opening of pre-qualification/ technical bid.
- e. If any tenderer withdraws his tender prior to expiry of validity period or mutually extended period or makes modification in the rates, terms and conditions of the tender within the said

validity period, which are not acceptable to the department, or fails to commence the work in the specified period/ fails to execute the agreement, the department shall, without any prejudice to any other right of remedy, be at liberty to forfeit the total amount of earnest money given in any form absolutely. If any contractor, who having submitted a tender does not execute the agreement, doesn't start the work or does not complete the work and work has to be put to re-tendering, he shall stand debarred from participating in such re-tendering in addition to forfeiture the earnest money/ Security Deposit and other action under agreement. If there is strong justification of believing that the tenderer or his authorized representative has been guilty of mal-practices such as submission of forged documents, influencing individually or politically, his offer will be liable to rejection and in such case his earnest money shall be forfeited.

- f. All tenders, in which any of the prescribed conditions are not fulfilled or which have been vitiated by errors in calculation, totaling or discrepancies in figures or words or other discrepancies, will be liable to rejection.
- g. Enlisted contractors in PHED Rajasthan will be required to pay earnest money at the rate of 0.5% of the estimated cost of work put to tender, in case of work for which they are authorized to tender under rules for enlistment of contractors, but the amount to the extent of full earnest money shall be liable to be forfeited in the event of circumstances explained at serial no. "e" above.
- h. Conditional tenders shall not be accepted and will be rejected summarily forthwith.
- i. The department will not be responsible for any delay on account of late submission of tender/ hanging of the website/ unavailability of the internet connectivity.
- j. The acceptance of the tender will rest with the competent authority who does not bind itself to accept the lowest tender, and reserves the authority to reject any or all the tenders received without assigning any reason.
- k. No refund of tender fee is claimable for tenders not accepted or forms not submitted.
- l. The work may be split up between two or more contractors or accepted in part and not in entirety if considered expedient by the competent authority.
- m. The required quantity of the SPV installations given herein above is tentative as estimated presently and not guaranteed by the department and can be changed in due course/ at the time of award of work.**

All other conditions shall prevail as detailed out in the tender document (in the respective sections/volumes).

SAVE WATER - SAVE LIFE

**Addl. Chief Engineer
PHED, Rajasthan, II-Jodhpur**

INSTRUCTION TO TENDERES (ITT)

A. INTRODUCTION

1	General Information	1.1	<p>With a view to provide potable drinking water in fluoride affected, far flung rural areas having no electricity/ erratic power supply, Government of Rajasthan has decided to install Solar Energy based Bore Wells not only to avoid dependence on conventional electricity but also to facilitate availability of potable water supply especially in areas having deeper water table not suited to convenient operation of hand pumps. It is proposed to provide Solar Photovoltaic (SPV) water Pump sets along with de-fluoridation units at bore well based schemes for low demand area in villages/ habitations as per list given by department, where fluoride is higher than desirable limits as per IS 10500:2012. The work is required to be executed in various districts of the State as mentioned below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Pkg No.</th> <th style="text-align: center;">Region</th> <th style="text-align: center;">District</th> <th style="text-align: center;">No of DFU in Distrct</th> <th style="text-align: center;">No of DFU in pkg.</th> <th style="text-align: center;">Estimated cost (Rs. in Lacs)</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">1</td> <td rowspan="2" style="text-align: center;">Jodhpur-II</td> <td style="text-align: center;">Sirohi</td> <td style="text-align: center;">262</td> <td rowspan="2" style="text-align: center;">263</td> <td rowspan="2" style="text-align: center;">2722.30</td> </tr> <tr> <td style="text-align: center;">Pali</td> <td style="text-align: center;">1</td> </tr> <tr> <td rowspan="5" style="text-align: center;">2</td> <td rowspan="5" style="text-align: center;">Udaipur</td> <td style="text-align: center;">Banswara</td> <td style="text-align: center;">76</td> <td rowspan="5" style="text-align: center;">193</td> <td rowspan="5" style="text-align: center;">1954.04</td> </tr> <tr> <td style="text-align: center;">Pratapgarh</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">Dungarpur</td> <td style="text-align: center;">64</td> </tr> <tr> <td style="text-align: center;">Rajsamand</td> <td style="text-align: center;">43</td> </tr> <tr> <td style="text-align: center;">Udaipur</td> <td style="text-align: center;">7</td> </tr> <tr> <td rowspan="3" style="text-align: center;">3</td> <td rowspan="3" style="text-align: center;">Jaipur-II</td> <td style="text-align: center;">Jaipur</td> <td style="text-align: center;">61</td> <td rowspan="3" style="text-align: center;">76</td> <td rowspan="3" style="text-align: center;">920.64</td> </tr> <tr> <td style="text-align: center;">Karauli</td> <td style="text-align: center;">14</td> </tr> <tr> <td style="text-align: center;">Sawai Madhopur</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Ajmer</td> <td style="text-align: center;">Nagaur</td> <td style="text-align: center;">95</td> <td style="text-align: center;">95</td> <td style="text-align: center;">1358.20</td> </tr> </tbody> </table> <p>A tentative list of villages/ habitations is given in Annexure-I of Volume-II. Tentative raw water fluoride contents for each habitation/ village are also mentioned in the list given. However, bidder has to analyze the water samples from its own testing laboratory before designing/ installation of the treatment system. The fluoride contents of output water obtained from plant shall be within acceptable limit as per IS 10500 in any case. Other contents of water shall also not be adversely affected. The department will provide required land in habitation/ village and bore well as per plant requirement. The work shall include operation and maintenance of the installations for an initial period of 7 years after which this period can be extended further up to next 3.5 years on mutual consent of both parties on existing terms, conditions and rates.</p> <p>Before taking up entire work, the bidder shall complete and commission one plant as a model plant as per directions of Additional Chief Engineer concerned and after approval of the model by Additional Chief Engineer, work of other plants under the contract shall be executed strictly as per the quality of approved model.</p>	Pkg No.	Region	District	No of DFU in Distrct	No of DFU in pkg.	Estimated cost (Rs. in Lacs)	1	Jodhpur-II	Sirohi	262	263	2722.30	Pali	1	2	Udaipur	Banswara	76	193	1954.04	Pratapgarh	3	Dungarpur	64	Rajsamand	43	Udaipur	7	3	Jaipur-II	Jaipur	61	76	920.64	Karauli	14	Sawai Madhopur	1	4	Ajmer	Nagaur	95	95	1358.20
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		1.2	<p>Executing Agency The Executing Agency of this project is PHED Rajasthan through or his representative authorized for execution of work in the project.</p>																																												
		1.3	<p>Type of contract The form of this contract is Rate Contract since the number of Solar Energy based Bore Wells to be installed may increase/ decrease during the course of execution and location may changed depending</p>																																												

		upon quality of water
	1.4	All works, proposed for execution under the contract, are specified in Volume-II of the tender document under the headline "Scope of Work and Technical Specifications".
	1.5	The Tenderer shall read the specification and study the scope of work carefully.
	1.6	The Tenderer is required to carefully study all instructions, forms, terms, conditions and other details in the tender documents. Failure to upload complete and legible information as required in the tender documents or submission of a tender not substantially responsive as per requirements of the tender document in every respect will be at the Tenderer(s) risk and may result in rejection of its tender.
	1.7	The Tenderer shall sign a declaration under the Official Secrets Act for maintaining secrecy of the tender documents, drawing or other records connected with the work given to him form given below. DECLARATION "I/We hereby declare that I/We shall treat the tender documents, drawings and other records, connected with the work, as secret confidential documents and shall not communicate information derived there from to any person other than a person to whom. I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the same". Failure to observe the secrecy of the tenders will render tenders of the Tenderers, liable to summary rejection.
	1.8	The site of execution of the work will be made available as soon as the work is awarded. In case, it is not possible for the department to make the entire site available on the award of the work, the Tenderer shall arrange his working program accordingly. No claim, whatsoever, for not giving the site in full on award of the work or for giving the site gradually in parts will be tenable. The Tenderer may satisfy himself regarding site, availability of land and accessibility of the sites etc.
	1.9	Tenderer shall submit only unconditional tenders. Conditional tenders are liable to be rejected summarily. The tender documents show already the specific terms and conditions on which tenders are required by the Department, hence all tenders should be in strict conformity with the tender documents and should be filled in, digitally signed. Incomplete tender is liable to be rejected. The terms and conditions of the tender document are firm; as such conditional tenders are liable to be rejected.
	1.10	The contractor shall comply with the provisions of the Apprenticeship Act, 1961, and the rules and orders issued, there under, from time to time. If he fails to do so, his failure will be a breach of the contract and the original sanctioning authority at its discretion may cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of violations made by him of the provisions of any Act/Rule/Order.
	1.11	The tender should be accompanied with GST Registration and Sales/VAT tax clearance certificates from the concerned departmental authorities, without which the tenders may not be entertained. Sales/VAT Tax clearance Certificate valid up to 31.07.2017 or thereafter shall be submitted along with the pre-qualification envelope.
	1.12	If it is found that the tender is not submitted in proper manner, and unreasonable rates or amounts, it would be open for the competent authority not to consider the tender, forfeit the amount of earnest money and/or de-list the contractor.
2. Address for	2.1	All communication in reference to this tender must be made to the

	communication		Additional Chief Engineer, PHED Region II-Jodhpur Rajasthan (Phone: 0291-2651700, Fax: 0291-2651734, e-mail: ace2jodhpur@gmail.com)
3.	Period of Completion	3.1	The allocated work of design, supply, installation, testing and commissioning of all Solar Energy based bore wells with de-fluoridation unit is to be completely finished to the satisfaction of Engineer-in-charge within 12 months from the 10 th day of the date of written work order(s) to commence the work at given sites and thereafter its operation and maintenance for 7 Years (extendable further up to 3 years & 6 months on mutual consent basis). The department at its sole discretion can withdraw the work from the contractor, at any time after giving 15 days notice.
		3.2	Definitions
		3.2.1	Clause Unless otherwise mentioned, the reference to "clause" made in any section of the document it shall mean referenced clause of that section.
		3.2.2	Bid & Tender or Bidder & Tenderer The word 'Bid' & 'Tender' or word 'Bidder' & 'Tenderer' used in the tender document be treated as synonymous

B. PRE-QUALIFICATION REQUIREMENTS

4. PRE-QUALIFICATION REQUIREMENTS	
(a) ELIGIBLE BIDDERS	
<p>The bidder must be one of the following entities to be eligible to participate:-</p> <ul style="list-style-type: none"> A channel partner of MNRE (possessing valid empanelment with MNRE as on date of submission of bid) having rating of 2E or above and must be either an indigenous manufacturer of SPV modules or manufacturer of submersible pump set or system integrator to be eligible to participate. The bidder shall submit list/ any other supporting document of empanelment in MNRE in required rating. The bidder shall also submit a declaration of being either an indigenous manufacturer of SPV modules or a manufacturer of submersible pump set or a system integrator. <p>Note1. Empanelment by MNRE for accreditation valid up to 31.12.2015 shall also be considered valid for above purpose provided the bidder has applied for renewal of empanelment for 2016-17 and the documentary evidence along with an affidavit for the same is submitted.</p> <p>Note2. The departments of State Government/ PSUs/ undertakings of the Central Government dealing in manufacturing of SPV modules may be considered eligible on submission of relevant order/ circulars issued by MNRE exempting them to have any rating.</p> <ul style="list-style-type: none"> Consortium of any one of the entities mentioned above with any civil contractor registered with CPWD, Postal, Telecom, Railways, MES, Other State governments/ Central government undertakings/ Organizations and having experience of standalone water treatment plants/RO Plants. <p>Consortium of more than two entities shall not be permissible. In case of consortium, consent of both the entities for forming a consortium shall be submitted on legal documents along with bid, without which the bid will be rejected (Joint Bidding Agreement Format 1.3 attached). Submission of bid (and award of contract, if any) shall be in the name of Lead member only. However, neither the lead member nor the other member of Consortium shall be allowed to exit from the consortium at any stage. For prequalification, the lead member shall be required to fulfill any one of experience criteria of eligibility (i.e. either clause 4.3.1 or clause 4.3.2 of ITT, Vol-I) individually, while all other criteria of eligibility may be fulfilled either individually or jointly by the members of consortium.</p> <p>The bidders who are black listed in any state would not be eligible to bid in PHED Rajasthan tender.</p>	
(b) PRE-QUALIFICATION CRITERIA	
4.1	TECHNICAL CRITERIA

4.1.1	Capability	The bidder shall possess a latest satisfactory test report of complete SPV water pumping system having pump capacity of minimum 1.32 Kw issued by MNRE or MNRE accredited test centers issued on or after 01.01.2014. The test report shall include satisfactory report of SPV modules, submersible pump-motor and protection system (against dry run, short circuit & reverse polarity).
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4.1.3	ISO certification	The bidder should possess ISO 9001-2008.
4.2	FINANCIAL CRITERIA	
4.2.1	Average annual turnover	Average annual turnover during the period of last 3 years should not be less than Rs. 2722.30 Lacs for manufacturing/ providing, installation, commissioning and O&M of SPV operated installations and any type of standalone water treatment plants.
4.2.2	Net Worth	Net worth of the bidder as on the last date of previous financial year (of which audited balance sheet is available) shall not be less than Rs. 1361.15 Lacs.
4.2.3	Credit Limit	Credit Limit (Fund based and non fund based) available with the bidder shall not be less than Rs. 2450.07 Lacs.

4.2.4	Bidding Capacity	Bidding Capacity of the bidder calculated as below on the date of NIT shall not be less than Rs. 2722.30 Lacs. Bidding Capacity = 2 x A x N - B Where: A= Maximum annual turnover manufacturing/ providing, installation, commissioning and O&M of SPV operated installations and any type of standalone water treatment plants of the bidder in last three Financial Years N= Stipulated period of execution of contract in years (to be kept as one year). B= Liability of present works in hand during the contract period.
4.2.5.	Financial stability	The bidder(s) shall not have applied for Corporate Debt Restructuring (CDR) or facing recovery proceedings from financial institutions or facing winding up proceedings or not under BIFR in the last three financial years and up to the date of bid submission. All the bidders shall submit an affidavit to this effect along with certificate from the bidder's Chartered Accountant. The bidder shall have to further demonstrate that it continue to meet above requirement by submitting additional affidavit before opening of financial bid. Failure to comply with this requirement shall result in disqualification of the bidder(s).
<p>General notes:</p> <ul style="list-style-type: none"> i. The average annual turnover shall be based on audited balance sheets of immediate preceding last 3 financial years. In case, tenders are to be received earlier than the time prescribed for submission of audited balance sheets under Company's Act for immediate last FY, the period of 3 years shall be shifted to previous FYs. ii. The turnover of previous years and cost of executed project/schemes/works (Capital and O&M) shall be given additional weight age @ 10% per year to bring the same at current price level to account for price escalation. iii. The certificate of credit limit issued by bank shall be of period within 3 months from date of opening of pre-qualification bid. iv. Turnover of the bidder for <i>manufacturing/ providing, installation, commissioning and O&M of SPV operated installations</i> and any type of standalone water treatment plants shall be as per certificate of Chartered Accountant based on audited balance sheets. v. All the bidders shall submit a notarised affidavit on Rs 500/- non judicial stamp paper for financial stability along with certificate from the bidder's Chartered Accountant. . The bidder shall have to further demonstrate that it continue to meet above requirement by submitting additional affidavit before opening of financial bids. 		
4.3	EXPERIENCE CRITERIA	
The bidder should have experience of the following works during last 7 years up to the date of submission of tenders		
4.3.1	Execution & Maintenance of SPV installation	<p>Execution, successful commissioning and successful completion of AMC or comprehensive maintenance for at least 1 year of one similar work costing not less than Rs. 408.35 Lacs.</p> <p style="text-align: center;">or</p> <p>Execution, successful commissioning and successful completion of AMC or comprehensive maintenance for at least 1 year of one or more similar work(s) of solar energy based SPBW of total installed capacity of 79.63 Kw.</p> <p style="text-align: center;">or</p> <p>Execution, successful commissioning and successful completion of AMC or comprehensive maintenance for at least 1 year of 88 Nos. of similar work(s) of solar energy based SPBW each of installed capacity not less than 900</p>

		Wp Note- "Similar work means the work that involves providing, installation & commissioning of SPV panels and solar energy operated pumps".
4.3.2	Execution & Maintenance of treatment plant	Execution, successful commissioning and successful completion of comprehensive maintenance for at least 1 year of one or more work(s) of any type of standalone water treatment plant having total installed capacity of 87667 LPH Note: The required total capacity of standalone water treatment plant shall be calculated as 1/3 rd of filtration capacity of DFUs i.e. if 1000 DFUs are to be provided, each capable of discharging 600lt/hr, then the required total capacity of standalone water treatment plant shall be (600*1000)*1/3 = 2 lac lt/hr.
	Note: The bidder shall submit work experience certificate along with copy of work order for the work awarded by state govt./ central govt. or their undertakings and autonomous bodies. The work experience certificate issued by an officer not below the rank of Executive Engineer or equivalent shall only be considered.	

(C) TENDER DOCUMENT

5.	Content of Tender Document	5.1	The facilities required, tendering procedures, contract terms and technical requirements are prescribed in the tender documents. The tender document include the following sections, and addendum's issued if any till the date of submission of the tender: Volume-I Notice Inviting tender Instruction to Tenderers Pre-Qualification Schedules Conditions of contract General conditions of contract Special conditions of contract Part 'A' & 'B' Volume-II Scope of work & Technical specifications, Annexures Volume-III Schedule of prices (BOQ).
6.	Cost of Tendering	6.1	The Tenderer shall bear all costs associated with the preparation and submission of its tender, and the Department will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the tendering process.
		6.2	It shall be obligatory on the successful tenderer to pay stamp charges on the contract for preparation of contract agreement, as ruling on date of execution of the contract.
7.	Site Visit Before Tendering	7.1	The Tenderer and any of its personnel or agents will be granted permission by the Department to enter upon its premises and lands for purpose of such site visits, but the tenderer and its personnel will be responsible for death or personal injury, loss of or damage to property and any other loss, damage ,costs and expenses incurred as a result of the site visits
	Tenderer to inform himself fully	7.2	The tenderer will be deemed to have satisfied himself as to all the conditions and circumstances affecting the contract price (e.g. as to the general circumstance at the site(s) of the work, the general labour position at the site, the availability of construction material, water, electricity, the transport conditions, the climatic and meteorological conditions) and to have fixed his prices according to

		<p>his own view about these. The proposed plants are to be installed on the existing/new tube wells/ sources/reservoirs as per work assigned.</p> <p>The department ,will not be responsible for the personnel of the tenderer and for all acts in relation with site inspection</p> <p><i>No claims except as otherwise expressly provided will afterwards be accepted on account of conditions/ approach to the given site(s) for installation of Solar Energy based bore wells with de-fluoridation unit. The tenderer shall be responsible for any misunderstanding or incorrect information however obtained except the information given in writing by the department.</i></p>
<p>Omissions, Errors and clarification; Pre tender meeting</p> <p>Pre bid Meeting</p>	7.2	<p>Tenderers shall carefully examine the scope of work and specifications and fully inform themselves as to the conditions and matters which may in any way affect the work or the cost thereof. Should a Tenderer find discrepancies or omissions in the documents or should he be in doubt as to their meaning he should notify the Deptt. in writing not later than one week after or present his request in written form during the pre-tender meeting. The department will respond to any request which is made prior to or during the pre-tender conference.</p> <p>Any resulting interpretation or modification of the tender documents shall be issued online to all tenderers as an addendum, which will become a part of the tender documents. The tenderers shall acknowledge in writing the receipt of each addendum.</p> <p>No claims except as otherwise expressly provided will afterwards be accepted due to non-understanding or misinterpretation of the tender documents and addendums issued.</p>
	7.4	<p>The tenderers designated representative (having authority letter) is invited to attend a pre-tender meeting, which will take place at the venue and time notified in NIT.</p>
	7.3	<p>In an effort to bring all terms and conditions and specifications of works on a common platform, before the submission of pre-qualification and financial bids, and for any explanation that is desired in reference to the document mentioned in ITT clause-5, a pre-tender meeting shall be held. The tenderers designated representative (having authority letter) is invited to attend a pre-tender meeting which will take place at the venue and time as mentioned in NIT. The tenderers are invited to participate in the pre-tender meeting at the date and time mentioned in NIT. They may acquaint themselves with the different conditions of installation site(s) prior to this meeting. The purpose of this meeting is to clarify issues raised at that stage which requires clarification in reference to the execution of work. The tenderers are requested to analyze the terms and conditions, specifications, design, drawings, quotation sheets etc of the document. The deviations thought necessary, along with clarifications required must be pointed out.</p>
	7.4	<p>Tenderer is requested, to submit all queries in writing or by fax, to reach the department not later than five days before the pre bid meeting or give the clarifications desired in pre-bid meeting in writing.</p>
	7.5	<p>Any modification of the tender documents listed in ITT Sub- Clause-5, which may become necessary as a result of the pre- tender conference, shall be made by the department exclusively through online issuance of addendum pursuant to ITT clause-8 and not the minutes of the pre-tender meeting.</p>
	8.1	<p>At any time prior to the deadline for submission of tenders, the department may, for any reason, whether at its own initiative, or in</p>
8. Amendment of Tendering		

	Documents		response to a clarification requested by a prospective Tenderer, amend the tender documents.
		8.2	The amendment will be notified online to all bidders and it shall be binding on them.. It will be assumed that the information contained therein has been taken into account by the Tenderer in its tender.
		8.3	In order to provide prospective Tenderers reasonable time to take the amendment into account, in preparing their tender, the Department may, at its discretion, extend the deadline for the submission of tenders, in which case, the department will notify on line to bidders of the extended deadline, for submission of tenders.

(D) PREPARATION OF TENDERS

9.	Language of Tender	9.1	The tender prepared by the Tenderer and all correspondence and documents related to the tender exchanged by the Tenderer and the Department shall be written either in Hindi or English provided that any printed literature furnished by the Tenderer may be written in another language, as long as such literature is accompanied by a translation of its pertinent passages in the language mentioned herein, in which case for purposes of interpretation of the tender, the translation shall govern.
10.	Alteration of Designed components not acceptable	10.1	No principal deviation and exceptions are allowed, in the specifications and in the basic requirements of the total scheme (including those affected due to addenda) all alternative for materials should be suggested/raised in codes of standards etc. in the proposal for change in material proposed in tender document. Tenderers, who propose any alteration in the basic requirement, as specified in Volume-II and its addendum, if any, or which contain any other conditions of any sort, will be liable to rejection.
		10.2	Inclusion of additional equipment, civil work or other plant and material which in the tenderers opinion is required to satisfy the scope of work will not constitute a deviation.
	Makes and origin of the equipment	10.3	It is expected that the tenderer will quote with a view to supply equipment of best makes and conforming to highest standard. Tenderer has to consider for his financial offer, only makes of reputed manufacturers of equipments corresponding to the state of art technology and to the latest Indian or International standards.
		10.3.1	Tenderer shall offer rates as per the makes/specification given of the equipment/material in the tender document or of any superior make if makes are not prescribed of the items, conforming to prescribed specifications indicated in the volume-II "Scope of Work & Technical Specifications". The tenderer shall quote only one price for each item mentioned in Schedule of prices volume-III, irrespective of the finally selected make.
		10.3.2	Whichever equipment/material is proposed in the tender or considered by the Tenderer for the financial offer, the equipment to be finally provided in case of award shall correspond to the specifications of the tender documents and shall be subjected to the approval of Engineer-in-charge.
		10.3.3	In case, the tenderer proposes to use any imported equipment/ part of equipment/material he shall indicate clearly and shall be responsible for arranging import license etc. for the same. All expenses to be incurred by the contractor in connection with such import including customs duty etc. as applicable shall be included in the prices quoted. However if provisions permit, the department shall assist to arrange certificates for exemption from custom duty and the bidder should account for all such exemption while quoting the cost. However the department shall not be liable to

			pay any compensation in case such provisions are withdrawn subsequently.
11.	Tender Form and Schedule of price	11.1	The tenderer will complete the Schedule of Price furnished in the tender documents as indicated therein. The terms and conditions for payments shall be in accordance with the provisions of the conditions of contract(s) in volume-I and II of tender document referred in ITT clause 5.1
12.	Tender Prices	12.1	The contract will be for the complete work or part thereof as described in clause 1.3, based on the Schedule of Prices submitted in volume-III. The prices quoted shall remain firm and fixed and no price variation shall be admissible.
		12.2	The tenderer will quote his rates only in one language i.e. either in Hindi or English. Rates should be quoted in figures as well as in words and in case the rates so quoted differ, the lower of the two shall be treated as the rate quoted by the Tenderer.
		12.3	The tenderer will quote his prices for the items given in prescribed format of Volume III of the tender document as per the specifications given for installation and for the material, IEC, HRD and other direct and indirect costs to be incurred during period.
		12.4	Items not specifically mentioned in the description of the items given in volume III, but which are required to be executed for the satisfactory completion of the complete system, as specified in scope of work, shall not be separately paid for by the department when executed and shall deemed to have been covered under rate quoted for specified items in his Schedule of Prices.
		12.5	Any benefit accrued on account of any modification in existing provision of GST regarding exemption in GST for water supply scheme projects due to any subsequent notification (applicable at the time of execution) , will have to be passed on to the department by the contractor.
		12.6	The contractor will satisfy himself regarding the availability of the material required for execution within the time frame prescribed for the work and if desired will take into account the cost of superior material to be used as its replacement. No time extension or additional cost shall be allowed on this account.
		12.7	The prices and amounts quoted by the Tenderer shall include all costs including labour, materials, construction, plant and equipment, transport charges, testing any other expenses like GST, Octroi, Excise Duty, Custom Duty, Income Tax, Sales Tax, VAT, Turnover Tax, Service Tax, Professional Tax or any other duties, levies, taxes or charges whatsoever to the State or Central Department or to the Local Bodies on the components or the completed works or the operation and maintenance work and for satisfactory performance of the Tenderers obligations under this contract. to fulfill the obligations towards any ITT clause of the tender document referred in ITT clause 5.1
		12.8	For all imported equipment(s) or components, the Tenderer under this contract must provide a copy of the duties/taxes paid for the record of the department.
13.	Tender Currency	13.1	All prices shall be quoted in the Indian Rupee. The department will not arrange any foreign currencies for import of any type of material/spares etc.
14.	Earnest Money	14.1	An amount of Earnest money as mentioned in NIT must accompany the tender which should be payable to Additional Chief Engineer, PHED, Region II-Jodhpur in form of Demand Draft of Nationalized/Scheduled Banks for amount up to Rs. 10.00 lacs and remaining in form of Bank Guarantee of any of the Nationalized/Scheduled Bank in the prescribed form (Annexure 2)
		14.2	Class "AA" Tenderers enlisted in PHED, will be required to pay

			Earnest Money @ ½ % of estimated cost of work, in case of work for which they are authorized to tender under Rules for enlistment of Tenderers, but the amount to the extent of full Earnest money shall be liable to be forfeited in the event of circumstances explained in ITT Clause 14.6 below
		14.3	The format of Bank Guarantee for earnest money shall be in accordance with the form of Earnest Money included as Annexure-2 to ITT in Volume-I of the tender documents. The Bank Guarantee submitted for earnest money must be valid for six (6) months, from the date of its submission.
		14.4	The receipt of an Accountant, Cashier or any other official, not authorized to receive such amount, will not be considered as an acknowledgment of payment to the Additional Chief Engineer PHED Region II-Jodhpur or other duly authorized Engineer.
		14.5	The Earnest money, lodged by the successful tenderer, shall be treated as the performance guarantee for operation & maintenance period of the plant.
		14.6	<p>The Earnest money may be forfeited:</p> <ul style="list-style-type: none"> a) If the Tenderer withdraws its tender during the period of tender validity. b) If the Tenderer fails within the specified time limit to sign the Contract Agreement, in accordance with ITT clause-27. c) If the Tenderer reduces the rates or modifies his offer voluntarily after opening of the Financial tenders/ negotiations, his offer shall stand cancelled automatically, his earnest money shall be forfeited and action for debarring him from business shall be taken as per enlistment rules. d) If a non-tenderer offers lower rates after opening of tenders, action for debarring him from business shall be taken as per enlistment rules. e) For any other act of the tenderer detailed herein, for forfeiture of Earnest Money.
		14.7	In lieu of bid security (Earnest Money deposit), a bid securing declaration shall be taken from Departments of the State Government and Undertakings, Corporations, Autonomous bodies, Registered Societies, Cooperative Societies which are owned or controlled or managed by the State Government and Government Undertakings of the Central Government. A bid securing declaration shall necessarily accompany the bid.
		14.8	Performance security (security deposit) shall be solicited from all successful bidders except the Departments of the State Government and undertakings, corporations, autonomous bodies, registered societies, co-operative societies which are owned or controlled or managed by the State Government and undertakings of the Central Government. However, a performance security (security deposit) declaration shall be taken from them.
15.	Period of Validity of tender	15.1	The tenders for the works shall remain open for acceptance for the period of 90 days from the date of opening of the Pre-Qualification tender. A tender valid for a shorter period shall be rejected by the Department as being non-responsive. If any tenderer withdraws his tender prior to expiry of said validity period or mutually extended period or make modification in the rates, terms and conditions of the tender within the said period, which are not acceptable to the department, or fails to commence the work in the specified period/fails to execute the agreement, the department shall, without prejudice to any other right or remedy, be at liberty to forfeit the amount of earnest money given in any form absolutely. If any Tenderer, who having submitted a tender does not execute the agreement or start the work or does not

		complete the work and the work has to be put to re-tendering, he shall stand debarred from participating in such re-tendering in addition to forfeiture of Earnest Money/ Security deposit and other action under agreement.
	15.2	In exceptional circumstances, the Department may seek the Tenderer's consent to an extension of the tender validity period. The request and responses thereto shall be made in writing or by fax. If a Tenderer accepts to prolong the period of validity, the instruments for Earnest Money shall also be suitably extended.

(E) SUBMISSION OF TENDERS

16. Format and Signing of tender	16.1	Bidder shall submit their offer on line in electronic format both for technical and financial proposal and all documents should be digitally signed. Bidder shall procure digital certificate as per IT act. In case of a partnership firm, bid must be digitally signed separately by each partner, thereof, or in the event of the absence of any partner, it must be digitally signed on his behalf, by a person holding power of attorney, authorizing him to do so, such power of attorney will be submitted with the tender and it must disclose that the firm is duly registered under the Indian Partnership Act, by submitting the copy of registration certificate. In case of a company, the duly authorized representative of the company holding a valid power of attorney (Annexure 3) on the date of respective correspondence shall digitally sign the tender.
	16.2	Tender fees, processing fees, EMD in the form of DD should be submitted manually in the office of tendering authority as per date & time mentioned and scanned copy DD should be uploaded along with the technical bid.
	16.3	All omissions in the Schedule of price must be serially numbered and attested by the officer opening the bids, so as to make further dispute impossible on this score
	16.4	The documents listed in ITT a clause, along with addendum's issued till the date of bid submission, shall be filled by the bidder to bind the bidder to contract. A certificate regarding all pages of the bid has been digitally signed should be attached with prequalification bid .
	16.5	The cost of tender document is to be paid in the form of DD payable to Additional Chief Engineer ,PHED, Region II-Jodhpur
	16.6	Bidders who wish to participate in this tender will have to register on https://eproc.rajasthan.gov.in (bidders registered on http://eproc.rajasthan.gov.in before 30.09.2011 needs to register again.). To participate in online tenders, bidders will have to procure Digital Signature Certificate (type II or type III) as per Information technology Act 2000 using which they can sign their electronic bids. Bidders can procure the same from any CCA approved certifying agency, i.e. TCS, Safecrypt, Ncode etc or they may contact e-Procurement cell, Department of IT &C, Government of Rajasthan for further assistance. Bidders who already have a valid Digital Certificate need not procure a new digital certificate. Contact No: 0141-4022688 (Help desk 10 a.m. to 6 p.m. on all working days, email:-eproc@rajasthan.gov.in, Address:- e-procurement cell, RISL, Yojna Bhawan, Tilak Marg, C-Scheme, Jaipur.
	16.7	Before electronic submission of tender, it should be ensured that all the tender papers including conditions of contract are read, understood by the tenderer.
	16.8	The uploaded document of the bid shall contain no alteration, or additions, unless notified. In case the bidder makes addition and/or correction, the provision written in the original document, read with the addendum or corrigendum issued shall prevail.

17	Sealing and Marking of Tenders	17.1	Bidder shall submit their offer only in online electronic format both for technical and financial proposal and all documents should be digitally signed. However, Tender fees, processing fees, EMD in the form of DD and all original papers related to Bank guarantee, power of attorney etc should be submitted manually in the office of tendering authority before date & time of opening of technical bids and their scanned copy should be uploaded alongwith the technical bid..
	Contents of Technical proposal Cover-1 General requirements	17.2	Pre-qualification Bid and Technical Bid should contain following: SCANED COPIES OF: (a) Proof of cost of tender document i.e DD towards tender document cost should be furnished. (b) Proof of processing fee through DD in name of MD, RISL Jaipur (c) Proof of Earnest Money (DD/ DD with bank guarantee). Tenderer who is availing benefit of concessional earnest money shall also enclose a certified copy of valid enlistment order issued by the competent authority of department. The original DDs shall be physically deposited in the office of ACE. PHED concerned as per schedule mentioned in NIT.
	Cover-2 Requirements for Pre Qualification	17.3	SCANED COPIES OF: (a) The name and designation of a person signing shall be clearly indicated. In case of partnership firm / limited company / group of companies, a power of attorney for the person authorized to sign issued by the partners or authorized signatory shall accompany the tender. (b) The tender letter which shall be duly filled in and signed, as per Annexure-1 . (c) An undertaking confirming that 'for modifications/ deviations to conditions of contract / technical specifications no price information is indicated in cover"2" shall be enclosed. Tenders not containing such under taking will not be considered for further evaluation, as per Annexure- 4 . (d) A declaration shall have to be made by the tenderer that he has read, understood and accepted without changes, revisions or conditions, the tender documents and addenda (if any) issued by the department, as per Annexure-5 . (e) A declaration under the official secrets Act for maintaining secrecy of the tender documents, drawing or other records connected with the work given to him as indicated in clause 1.9 of ITT as per Annexure- 6 . (f) Declaration by the Bidder regarding not having conflict of interest etc. Annexure-7 (g) All addendums issued till date of tender
		17.4	SCANED COPIES OF: Pre-qualification Schedules as required in this Vol-I along with supporting documents, consisting of: a. Documents in support of capability of bidder issued by MNRE accredited test centers, technology evaluation certificate for de-fluoridation as per clause 4.1.2 and ISO 9001 certification of bidder as per provisions in clause 4.1.3 (Technical Criteria) b. Document showing annual turnover i.e. Audited Balance Sheets & profit and loss accounts for the year 2012-13, 2013-14 and 2014-15 as per provisions in clause 4.2.1 c. Document showing Net Worth of the firm/company as on 31.03.15 (Certificate of a Chartered Accountant) as per provisions in clause 4.2.2 d. Banker certificate for fund & non-fund based credit limits as on date mentioned in clause 4. of ITT (Financial Criteria) as per

			<p>provisions in clause 4.2.3.</p> <p>e. Calculation sheet for bidding capacity mentioned in clause 4 of ITT (Financial Criteria) as per provisions in clause 4.2.4.</p> <p>f. Notarized affidavit for Financial Stability along with CA certificate for not having applied under CDR or facing recovery/ winding up proceedings or not under BIFR as per provisions in clause 4.2.5.</p> <p>g. Documents in support of experience of bidder for execution & maintenance of SPV installations (either of 15% cost or one third of total pump Kw or one third of total SPV installations) as per provisions in clause 4.3.1 (Experience Criteria)</p> <p>h. Documents in support of experience of bidder for execution & maintenance of standalone water treatment plants of one third of cumulative capacity of DFUs taken in tender as per provisions in clause 4.3.2 (Experience Criteria)</p> <p>i. A valid document of being manufacturer of SPV module/ manufacturer of submersible pump sets or system integrator and a channel partner of MNRE in rating 2E or above as per provisions in clause 4(a).</p> <p>j. A legal document for consortium (Joint Bidding Agreement as per format 1.3 attached) if bidding as consortia with enlisted contractor (along with copy of valid enlistment) as per provisions in clause 4(a)</p> <p>k. Latest Sales tax clearance certificate</p> <p>l. In lieu of bid security (Earnest Money deposit), a Bid securing declaration shall be attached by Departments' of the State Government and Undertakings, Corporations, Autonomous bodies, Registered Societies, Cooperative Societies which are owned or controlled or managed by the State Government and Government Undertakings of the Central Government.</p>
		17.5	<p>The pre-qualification information has to be provided very carefully since it will be a basis for the qualification of firms. Only relevant and to-the-point information shall be indicated. Tenderers must not supply information not requested in the tender documents nor make any comments.</p> <p>Failure to provide any information may lead to the rejection of the offer.</p>
	Cover-3	17.6	<p>Financial Bid/Price Bid This shall contain only the price bid.</p>
18.	Deadline for submission of Tenders	18.1	<p>The online tender shall be submitted in the time stamped electronic tender box separately for the Technical and Pre-qualification and Price bid digitally signed by the Authorized signatory holding on https://eproc.rajasthan.gov.in up to the scheduled date and time for submission prescribed by department or extended date thereof for online submission.</p>
19.	Late Tenders	19.1	<p>The system does not permit electronic submission of tenders after the due time and date.</p>

(F) TENDER OPENING AND EVALUATION

20.	Opening of Tenders by Department	20.1	<p>The Additional Chief Engineer, PHED, Region II-Jodhpur or other duly authorized Committee will open the tenders online in presence of Tenderer (s) or their authorized representative(s) who may choose to be present at the time of tender opening. The tenders shall be opened in two stages. In first stage the pre-qualification bid shall be opened and evaluated. The financial part shall be opened of responsive tenders pre-qualified by competent authority, at a later date, which will be informed online to all responsive and pre-qualified tenderers.</p>
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		20.2	In first stage, Cover‘1’ of the tenders, as per clause 17.2 will be opened. The tenderer’s name, the status of deposition of earnest money, will be announced by the Tender Opening Committee at the opening.
21.	Preliminary Examination of Tenders	21.1	The contents of Cover ‘2’ of the individual tenders will be downloaded summarily in order to access their formal conformity and agreement with the instructions and guidance to the tenderers and the completeness. Any tender not confirming to any of these requirements may be disqualified forthwith at the discretion of department.
		Confidential Treatment	21.2
	Substantial Tender	21.3	Notwithstanding the preliminary examination, the department will determine the substantial tenderer. Substantial tenders are those, which meet the following requirements. <ul style="list-style-type: none"> • Earnest money in the required format from a nationalized/scheduled bank is enclosed. • Responsive to all requirements of the tender documents and the instructions to tenderers • No Clarification and substantiation required to access the quality of the offer • No deviations and reservations affecting the scope and quality of the work, limiting the rights of the department or the tenderers obligations, or whose rectification would affect the competitive position of the other substantial tenderer.
		21.4	If a tenderer is not substantially responsive it will be rejected by the department and will not be used for further evaluation. The financial offers of insubstantial tenderer will not be opened. The department’s determination of a tender’s responsiveness is to be based on the contents of the tender itself without recourse to extrinsic evidence.
		21.5	It is expressly stated that the information contained in Cover “1” & “2” of the tender will be used to define whether a tender is substantial or not. The tenderers are, therefore, advised to submit complete tender only.
22.	Evaluation for Pre-qualification	22.1	The department will carry out a detailed evaluation of the tenders previously determined to be substantially responsive in order to determine whether the firm is qualified in accordance with the requirements set forth in the tender documents at clause 4. In order to reach such a determination, the department will examine the information provided in the schedules and the submitted supporting documents, on the basis of information supplied by the tenderers.
		22.2	The bidder qualified will be informed online by the department in due course of time.
		22.3	The department reserves the right not to consider any deviation that in the sole discretion of the department is found unacceptable. The department shall require such deviations to be withdrawn, for the unaccepted deviations. The evaluation subsequently will be made on the rates quoted for such items in offer.
		22.4	The Additional Chief Engineer, PHED, Region II-Jodhpur or other duly authorized Engineer reserves the right to ask for submission of the source of procurement for the materials for which the tenderer is quoted his rates before the tender can be considered for acceptance.

			If the tenderer, who is called upon to do so, does not submit the source of procurement, department shall be at liberty to forfeit the earnest money of such tenderer absolutely.
		22.5	The department may also ask the pre-qualified bidder in this stage to come and negotiate with the given technological considerations, methodology, execution plant etc. as given in the tenders and ask for the revisions in the above schedules. Any negotiations in this regard shall not be an excuse for making a revised financial offer. Having received such negotiated offers for the execution of the work, the department shall inform all pre-qualified bidders regarding the date of opening of the financial bids.
23.	Financial Evaluation	23.1	The original financial offer or the revised financial offer, as the case may be, of the pre-qualified tenderers whose tenders are determined responsive will be opened at a date and time as informed online. The technology given in the schedules or that negotiated shall only be used while execution of work.
		23.2	The Additional Chief Engineer, PHED, Region, II-Jodhpur or other duly authorized committee will open the tenders in the presence of any Tenderer(s) or their authorized representatives who choose to be present at the time of opening of financial tenders, and will enter the rate/amount of all tenders in the register of Opening of Tenders.
		23.3	Provided that a Financial Bid is substantially responsive, the department will correct arithmetical errors during evaluation of Financial Bids on the following basis: I. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the department there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected; II. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and III. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (i) and (ii) above.
		23.4	Total cost of work based on unit rates quoted by bidders and quantities mentioned in BOQ (price bid) shall form the basis for determining lowest bidder for the purpose of evaluation of tender. However, work order shall be placed based on unit rates quoted by the bidder for quantities actually required during execution.

(G) AWARD OF TENDER

24.	Contract award Criteria	24.1	Subject to ITT clause 23, the Department will online award the work normally to the lowest responsive bidder(s). However the acceptance of the tender will rest with the competent authority who does not bind itself to accept the lowest tender, and reserves the right to accept or reject any or all the tenders received without assigning any reason.
		24.2	Rate contract may be entered with more than one bidder by the department as parallel rate contracts in the order of their standing in final evaluation by giving them counter offer of prices of the lowest or most advantageous bidder in order to secure prompt execution of works, if the quantity of the subject matter is beyond the capacity of the lowest bidder.
		24.3	The Earnest Money of the successful bidder shall not be refunded. Earnest money in such cases shall be adjusted towards performance guarantee for operation & maintenance period of the plant to be given

			after the issue of work order.
		24.4	The work order(s) shall be placed within the period of rate contract period. The department at its sole discretion can award 50% excess work as given in scope of work of this tender, as per rules for which completion period shall be increased proportionately.
25.	Departments Right to Accept Any Tender and to Reject Any or all Tenders	25.1	The acceptance of the tender will rest with the department who does not bind itself to accept the lowest tender and reserves right to reject any or all of tenders received without assigning any reason.
		25.2	The department's right to accept or reject any or all tenders at any time prior to award of contract, will not incur any liability, to the affected tenderers, of the grounds for the department's action.
26.	Notification of Rate contract	26.1	<p>Prior to the expiry of the period of tender validity, the department will notify the successful tenderer online that its tender has been accepted. The notification of award will constitute the formation of the rate contract, for all legal purposes. The rate contract period shall be of 12 months duration from the date of notification of award for the purpose of placement of detailed work order(s). The rate contract period may, however, be extended on mutual consent basis.</p> <p>The concerning Additional Chief Engineer or other officer(s) as authorized by the Chief Engineer (Rural) shall issue detailed work orders) for execution and sign the agreement with the successful bidder.</p> <p>The quantity of the units given in the scope of work are the tentative as estimated presently by the department and can be changed in due course, as such the quantities as stated in the tender document are not guaranteed.</p>
27.	Signing the Contract Agreement	27.1	<p>Within Fifteen days from award of work by department, the successful tenderer shall sign the contract agreement.</p> <p>The following, duly filled in and signed documents, shall form the contract agreement:</p> <ul style="list-style-type: none"> A- Agreement (format placed at Annexure- 8) B- Letter of award and any pre award correspondence between department and the tenderer. C- Tender documents (bearing stamp of the firm and initials of the authorized signatory for this tender on behalf of the firm) Contained in: <ul style="list-style-type: none"> Vol.-I: Conditions of contract, Pre-qualification Schedules. Vol.-II: Scope of Work and Technical Specification, Annexures I to VI (including IEC material & Drawings) Vol.-III: Schedule of Prices (including Addenda issued if any) D- The tender offer
		27.2	On acceptance of the tender, the name of the accredited representative(s) of the tenderer (with a photograph and signature attested) who would be responsible for taking instructions from the department / engineer in charge, shall be communicated to the Engineer in charge.
		27.3	After acceptance of the tender, the tenderer or all partners (in the case of partnership firm) or the authorized representative of the firm with a valid power of attorney will append photographs and signatures duly attested, at the time of execution of agreement.
		27.4	Receipt for payments, made on account of a work when executed, by a firm must also be signed by the several partners, except where the contractors are described in their tender as a firm, in which case the receipt must be signed in the name of the firm by one of the partner or by some other person having authority to give effectual receipts for the firm.

		27.5	Sales tax or any other tax on materials, or income tax in respect of the contract shall be governed by provisions given in the conditions of contract. Deduction of income tax at source will be made as per provisions of the income tax Act, in force from time to time.
		27.6	If any Tenderer, who having submitted a tender does not execute the agreement or does not start the work or does not complete the work and the work has to be put to re-tendering, he shall stand debarred from participating in such re-tendering in addition to forfeiture of Earnest Money/Security Deposit and other action under agreement..
28.	Corrupt or Fraudulent Practices	28.1	The department defines, for the purposes of this provision, the terms set forth below as follows: i- 'Corrupt practice' means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution: and ii- 'Fraudulent practice' means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the department and includes collusive practice among tenderers (prior to or after tender submission) designed to establish tender prices at artificial non competitive levels and to deprive the benefits of free and open competition.
		28.2	Any efforts by a tenderer to influence the Department in the department's tender evaluation, tender comparison or contract award decisions may result in rejection of the tenderer's tender.
		28.3	The department will reject a proposal for award if it determines that the tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.
29.	Documents sanctity	29.1	All documents /certificates submitted by the tenderer on line, shall be considered by the department at the time of the prequalification and technical evaluation. If at any point of time on verification of the documents/certificates submitted by the bidder found to be false/fraud/fake/bogus/counterfeit etc. the contract shall be liable to be rejected and necessary action shall be taken against the contractor/firm as per rule/law in force.
30.	Code Integrity of	30.1	Any person participating in the procurement process shall - (a) not offer any bribe, reward or gift or any material benefit either directly or indirectly in exchange for an unfair advantage in procurement process or to otherwise influence the procurement process; (b) not misrepresent or omit that misleads or attempts to mislead so as to obtain a financial or other benefit or avoid an obligation; (c) not indulge in any collusion, Bid rigging or anticompetitive behavior to impair the transparency, fairness and progress of the procurement process; (d) not misuse any information shared between the procuring Entity and the Bidders with an intent to gain unfair advantage in the procurement process (e) not indulge in any coercion including impairing or harming or threatening to do the same, directly or indirectly, to any party or to its property to influence the procurement process; (f) not obstruct any investigation or audit of a procurement process; (g) disclose conflict of interest, if any; and (h) disclose any previous transgressions with any Entity in India or any other country during the last three years or any debarment by any other procuring entity.
31	Conflict Interest of	30.2	The Bidder participating in a bidding process must not have a Conflict of Interest

			<p>I. A conflict of interest is considered to be a situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations.</p> <p>II. A Bidder may be considered to be in conflict of interest with one or more parties in this bidding process if, including but not limited to:</p> <ul style="list-style-type: none">a. have controlling partners/shareholders in common; orb. receive or have received any direct or indirect subsidy from any of them; orc. have the same legal representative for purposes of this Bid; ord. have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Procuring Entity regarding this bidding process; ore. the Bidder participates in more than one Bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the Bidder is involved. However, this does not limit the inclusion of the same subcontractor, not otherwise participating as a Bidder, in more than one Bid; orf. the Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Goods and Services that are the subject of the Bid; org. Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as engineer-in-charge/consultant for the contract.
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Additional Chief Engineer
PHED, Region, II-Jodhpur
for and on behalf of the Governor of Rajasthan

TENDER LETTER

To,
Additional Chief Engineer
PHED, Region, II-Jodhpur

Subject: Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)

Reference: NIT No. 07/2018-19 Dated 04.06.2018

Dear Sir,

1. Having carefully examined all parts of the tender documents and the addenda (if any) for the execution of the above mentioned works, having all requisite information affecting this tender, having visited the site being aware of all conditions and difficulties likely to affect the execution of the contract, we, the under signed, hereby offer to execute the awarded job on lump sum basis as described in the tender documents and to hand over the whole of the said works in conformity with the drawings, conditions of contract, technical conditions and scope of work, for the sum indicated in the financial offer and such offer sum as may be ascertained in accordance with the contract.
2. We declare that we have read and understood and that we accept all clauses, conditions, descriptions, drawings of the tender documents volume I to volume III, and subsequent addenda (if any) without any change, reservations and conditions. If any change, reservation or condition has been made in our tender we herewith withdraws it.
3. We undertake, if our tender is accepted, to commence the work within 10 days of the work order and to complete the work in the stipulated time for completion.
4. If our tender is accepted we will provide security deposit in the required form for the sums as stipulated in the tender documents.
5. Unless and until the formal agreement is prepared and signed, this tender, together with your written acceptance thereof shall constitute a binding contract between us.
6. We agree to abide by this tender for the period of 90 days from the date of opening of the pre qualification bids and it shall remain binding upon us and may be accepted by you at any time before the expiry of that period, and not to make any modifications in its terms and conditions which are not acceptable to you.
7. Together with the tender we submit the earnest money of Rs ⁱ as ⁱⁱ Dated this.....day2016 ⁱⁱⁱ in the capacity of ^{iv}duly authorized to sign the tender for and on behalf of ^v

Name:
Address:
Telephone:
Mobile:
Tele fax
Telex
Email:

Signature of the authorized representative:

- i) Amount of earnest money
- ii) Indicate the form in which it is provided
- iii) Signature of the authorized representative of the firm
- iv) Designation
- v) Name of tenderer

Annexure:- 2

(Clause 14.1)

RPWA-87 [Rule 335 & 594 (iii)]

**FORM OF BANK GUARENTEE BOND FOR EARNEST MONEY
IN EXCESS OF RS TEN LAC**

To,
The Governor of the state of Rajasthan
Through Additional Chief Engineer, PHED, Region, II-Jodhpur

Whereas the Governor of the state of Rajasthan through The Additional Chief Engineer, PHED Region, II-Jodhpur (here in after called "the department") has called the tender for "Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)" earnest money is to be deposited along with the tender, and whereas , the rules of the state department permit deposit of earnest money up to Rs 10 lacs in cash, and the balance in the form of bank guarantee.

- 1- In consideration of the Governor of state of Rajasthan having made such a stipulation in rule 595 (iii) (a) of the public works financial and accounts rules and M/s (name of contractor) are desirous of depositing earnest money in excess of Rs 10 lacs i.e. Rs (Rupee only) (excess over Rs 10 lacs) in the form of bank guarantee as earnest money in order to participate in the tender for work above mentioned as per said rules, and will be so permitted on production of a bank guarantee for Rs (Rupee only), we (indicate name of bank), here in after referred to as the 'bank' at the request of M/s contractor(s), do hereby undertake to pay to the department an amount not exceeding Rs (Rupee only) on demand.
- 2- We (indicate the name of bank), do hereby undertake to pay Rs only) the amounts due and payable under this guarantee without any demur or delay, merely on a demand from the department. Any such demand made on the bank by the department shall be conclusive and payable by the bank under this guarantee. The bank guarantee shall be completely at the disposal of the department and we (indicate the name of bank), bound ourselves with all directions given by department regarding this bank guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs (Rupeeonly)
- 3- We (indicate the name of bank), under take to pay the department any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or tribunal or arbitrator etc relating thereto, our liability under these presents being absolute, unequivocal and unconditional.
- 4- We (indicate the name of bank) further agree with department that the department shall have the fullest liberty without our consent and without affecting in any manner our obligations, here under to extend the date of receipt of such tenders for the work as aforesaid or to vary any other terms and conditions of the notice inviting tenders or the tender, extend the validity of tenders or time for completion of works etc. we shall not be relieved from our liability by reason of any such variation or extension or for any forbearance, act or omission on the part of the department or any indulgence by the department, to the said contractor(s) or by any such matter or thing whatsoever which would but for this provision, have the effect of so relieving us
- 5- The liability of us (indicate the name of bank), under this agreement will not be discharged due to the change in the constitution of the bank or the contractor(s)
- 6- We (indicate the name of bank), lastly undertake not to revoke this guarantee except with the previous consent of the department in writing.

- 7- This guarantee shall remain valid and in full effect, until it is decided to be discharged by the department. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs (Rupee only)
- 8- It shall not be necessary for the state department to proceed against the contractor before proceeding against the bank and the guarantee herein contained shall be enforceable against the bank notwithstanding any security which the state department may have obtained or obtain from the contractor.
- 9- The bank guarantee shall be payable at the head quarters of the division, or the nearest district head quarters. If the last date of expiry of the bank guarantee happens to be a holiday of the bank, the bank guarantee shall expire on the close of the next working day.

Dated.....day offor and on behalf of the bank (indicate the bank)

Signature and Designation

The above guarantee is accepted by the department of the state of Rajasthan for and on behalf of the Governor of state of Rajasthan

Signature

Power of attorney of the Representative of a Firm

A- Power of attorney for authorized representative

M/s....., hereby, authorize the following representative to sign and submit the tender document, negotiate terms and conditions of the contract, to deal with the PHED, to issue and receive correspondence related to all matters of the tender for the following work:-

Name of work- Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)

We undertake the responsibility arising out of any act of the representative appointed hereby. We do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

For Partnership Firm

S. no.	Name of all partner	Signature of partner with seal
1		
2		
3		
4	Name and designation of person authorized	
5	Attested signature of the authorized representative	

For limited Company

Name and designation of the person authorized	
Company	
Address	
Telephone no	
Fax no	
Telex no	
Authorized by (name & designation)	
Attested signature of the authorized representative	
Name and designation of person attesting the signature	

To be prepared on non-judicial stamp paper of Rs 100/- duly attested by notary.

(Signature with Seal of Company/ Firm)

Annexure:- 4
(Clause 17.3(c))

Undertaking by the Tenderer

I / we undertake and confirm that “for modifications/ deviations to conditions of contract / technical specifications no prices information is indicated in cover-1 and 2

I / We understand that if this undertaking is found incorrect, our tender may not be considered for evaluation for future for financial evaluation, for which I / We shall be liable for all consequences and / or damages.

Signature With seal
Full name
Designation
Address
(Authorized representative)

Annexure:- 5
(Clause 17.3(d))

Declaration

I / We the under signed, hereby certify that I / We have read, understood all pages, all the terms and conditions given in the tender documents, including those in the addenda issued by the department and the same are acceptable to us without any deviations. I/We certify that all pages of this tender document be assumed signed by me/us.

If this declaration is found incorrect then without prejudice to any other action that may be taken, my / our security may be forfeited in full and the tender, if any to the extent accepted may be cancelled.

Signature With seal
Full name
Designation
Address
(Authorized representative)

Annexure:- 6
(Clause 17.3(e))

Declaration – Under the official Secrets Act

“I/We hereby declare that I / We shall treat the tender documents, drawings and other records, connected with the work, as secret confidential documents and shall not communicate information derived there from to any person other than a person to whom I/We am / are authorized to communicate the same or use the information in any manner prejudicial to the safety of the same”.

I/We understand that failure to observe the secrecy of the tenders will render the tender, liable to summary rejection.

Signature With seal
Full name
Designation
Address
(Authorized representative)

Annexure:-7
(Clause 17.3(f) & 30.2)

**(as per Rajasthan Transparency in
public procurement rule, 2013)**

Declaration by the Bidder

In relation to my /our Bid submitted to Additional Chief Engineer, PHED, **Region II**-Jodhpur for Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I) in response to the Notice Inviting Bid No/2018-19 date06.2018, I/we hereby declare under Section 7 of Rajasthan Transparency Procurement Act, 2012, that:

1. I/we possess the necessary professional, technical, financial and managerial resources and competence required by the Bidding Document issued by the department;
2. I/we have fulfilled my/our obligation to pay such of the taxes payable to the Union and the State Government or any local authority as specified in the Bidding Document;
3. I/we are not insolvent, in receivership, bankrupt or being wound up, not have my/our affairs administered by a court or a judicial officer, not have my/our business activities suspended and not the subject of legal proceedings for any of the foregoing reasons;
4. I/we do not have, and our directors and officers not have, been convicted of any criminal offence related to my/our professional conduct or the making of false statements or misrepresentations as to my/our qualifications to enter into a procurement contract within a period of three years preceding the commencement of this procurement process, or not have been otherwise disqualified pursuant to debarment proceedings;
5. I/we do not have a conflict of interest as specified in the Act, Rules and the Bidding Document, which materially affects fair competition;

Signature of bidder:

Name:

Designation:

Address:

Place:

Date:

Annexure:- 8
(Clause 27)

Form of agreement

This agreement made on the day of 2016 between the (herein after called "PHED") on behalf of the Governor of Rajasthan of the one part and (herein after called "contractor") of the other part.

WHEREAS the PHED is desirous for execution of work of Designing, providing, installation and commissioning of 263 Nos.Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in districtSirohi and Pali (Region Jodhpur-II/I) WHEREAS the PHED has accepted a tender of the contractor for the execution, completion and maintenance of such work

NOW THIS AGREEMENT WITNESSES as follows:

- 1- In this agreement words and expressions shall have the same meanings as are respectively assigned to them in the conditions of the contract herein after referred to.
- 2- The following documents shall be deemed to form and be read and constructed as part of this agreement, viz :
 - a) Form of agreement
 - b) Letter of award and any pre award correspondence between department and the tenderer
 - c) Tender documents contained in :
 - Vol-I: conditions of contract, pre qualification schedules
 - Vol-II: Scope of work and Technical specification, Annexures
 - Vol-III: Schedule of prices
 - All addenda issued
 - d) The tender offer
- 3- The work will be executed strictly according to specifications and drawings relating to the work as indicated in the "Notice Inviting Tender". The schedule of items of work to be carried out will be as per approved "Notice Inviting Tender". The material to be issued from Departmental Stores for use on work will be as shown in the approved "Notice Inviting Tender".
- 4- All correspondence and modifications of tendered offer and acceptance letter will form part of this Agreement.
- 5- In considerations of the payments to be made by the Government to the contractor in respect of completed work, or item of work, the contractor hereby covenants with the government to execute the work in conformity in all respects with the provisions of this Agreement.
- 6- The Government hereby covenants to pay the contractor, in consideration of execution of works, the price in the manner as specified in this Agreement.

IN WITNESS thereof the parties to these present have here to set and subscribed their respective hands the day, month and year first above written.

SIGNED for and on behalf of PHED

Witness

SIGNED for and on behalf of the contractor

Authorized Representative

Witness

Annexure:- 9

RPWA 88 A [Rules 338 & 595 (iii) (c)]

Model Form of Bank Guarantee Bond for making up full security deposit

To,

The Governor of the state of Rajasthan
Through

Whereas the Governor of the state of Rajasthan through (here in after called the Department) having entered into an agreement no Dated..... with M/s..... (Hereinafter called the contractor) for execution of work of Designing, providing, installation and commissioning of Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I) under which the contractor(s) M/shave applied to furnish Bank Guarantee to make up the full Security Deposit

- 1- In consideration of the Governor of state of Rajasthan having made such a stipulation in agreement. We ----- (indicate name of bank), herein after referred to as the "Bank" at the request of M/s -----contractor(s), do hereby undertake to pay to the department an amount not exceeding Rs ----- (Rupee ----- only) on demand.
- 2- We ----- (indicate the name of bank), do hereby under take to pay Rs ----- only) under this guarantee without any demur or delay, merely on a demand from the department. Any such demand made on the bank by the department shall be conclusive and payable by the bank under this guarantee. The bank guarantee shall be completely at the disposal of the department and We ----- (indicate the name of bank), bound ourselves with all the directions given by department regarding this bank guarantee. However our liability under this guarantee shall be restricted to an amount not exceeding Rs - ----- (Rupee -----only).
- 3- We -----(indicate the name of bank),under take to pay to the department any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or tribunal or arbitrator etc relating thereto, our liability under these presents being absolute, unequivocal and unconditional.
- 4- We -----(indicate the name of bank) further agree that the guarantee herein contain shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue enforceable till all the dues of the department under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till the department certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee.
- 5- We -----(indicate the name of bank) further agree with the department that the department shall have the fullest liberty without our consent and without affecting in any manner our obligations, hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the department against the said contractor(s) and to forbear pr enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor(s) or for any forbearance act of omission of the part of the department or any indulgence by the department to the said contractor or by any such matter or thing whatsoever which would but for this provision, have effect of so relieving us.
- 6- The liability of us ----- (indicate the name of bank), under this guarantee will not be discharged due to the change in the constitution of the bank or the contractor(s).
- 7- We ----- (indicate the name of bank) lastly undertake not to revoke this guarantee except with the previous consent of the department in writing.

- 8- This Performance guarantee shall remain valid and in full effect, until it is decided to be discharged by the department. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs----- (Rupee -----only).
- 9- It shall not be necessary for the state department to proceed against the contractor before proceeding against the bank and the guarantee herein contained shall be enforceable against the bank notwithstanding any security which the state department may have obtained or obtain from the contractor.
- 10- The bank guarantee shall be payable at the head quarters of the division, or the nearest district head quarters. If the last date of expiry of the bank guarantee happens to be a holiday of the bank, the bank guarantee shall expire on the close of the next working day.

Dated-----day of -----

For and on behalf of the bank (indicate the bank)

Signature and Designation

The above guarantee is accepted by the department of the state of Rajasthan

For and on behalf of the Governor of state of Rajasthan

Signature

Note: Guarantee to be made on stamp paper purchased by the bank only.

Annexure:- 10:
Grievance Redressal during Procurement
Grievance Redressal during Procurement
(as per Rajasthan Transparency in public procurement rule, 2013)

The designation and address of the First Appellate Authority is Chief Engineer (R), PHED, Jaipur
The designation and address of the Second Appellate Authority is Pr. Secretary, PHED, Rajasthan, Jaipur.

(1) Filing an appeal

If any Bidder or prospective bidder is aggrieved that any decision, action or omission of the Procuring Entity is in contravention to the provisions of the Act or the Rules or the Guidelines issued there under, he may file an appeal to First Appellate Authority, as specified in the Bidding Document within a period of ten days from the date of such decision or action, omission, as the case may be, clearly giving the specific ground or grounds on which he feels aggrieved: Provided that after the declaration of a Bidder as successful the appeal may be filed only by a Bidder who has participated in procurement proceedings:

Provided further that in case a Procuring Entity evaluates the Technical Bids before the opening of the Financial Bids, an appeal related to the matter of Financial Bids may be filed only by a Bidder whose Technical Bid is found to be acceptable.

(2) The officer to whom an appeal is filed under para (1) shall deal with the appeal as expeditiously as possible and shall endeavour to dispose it of within thirty days from the date of the appeal.

(3) If the officer designated under para (1) fails to dispose of the appeal filed within the period specified in para (2), or if the Bidder or prospective bidder or the Procuring Entity is aggrieved by the order passed by the First Appellate Authority, the Bidder or prospective bidder or the Procuring Entity, as the case may be, may file a second appeal to Second Appellate Authority specified in the Bidding Document in this behalf within fifteen days from the expiry of the period specified in para (2) or of the date of receipt of the order passed by the First Appellate Authority, as the case may be.

(4) Appeal not to lie in certain cases

No appeal shall lie against any decision of the Procuring Entity relating to the following matters, namely:-

- (a) determination of need of procurement;
- (b) provisions limiting participation of Bidders in the Bid process;
- (c) the decision of whether or not to enter into negotiations;
- (d) cancellation of a procurement process;
- (e) applicability of the provisions of confidentiality.

(5) Form of Appeal

(a) An appeal under para (1) or (3) above shall be in the annexed Form along with as many copies as there are respondents in the appeal.

(b) Every appeal shall be accompanied by an order appealed against, if any, affidavit verifying the facts stated in the appeal and proof of payment of fee.

(c) Every appeal may be presented to First Appellate Authority or Second Appellate Authority, as the case may be, in person or through registered post or authorized representative.

(6) Fee for filing appeal

(a) Fee for first appeal shall be rupees two thousand five hundred and for second appeal shall be rupees ten thousand, which shall be non-refundable.

(b) The fee shall be paid in the form of bank demand draft or banker's cheque of a Scheduled Bank in India payable in the name of Appellate Authority concerned.

(7) Procedure for disposal of appeal

(a) The First Appellate Authority or Second Appellate Authority, as the case may be, upon filing of appeal shall issue notice accompanied by copy of appeal, affidavit and documents, if any, to the respondents and fix date of hearing.

- (b) On the date fixed for hearing, the First Appellate Authority or Second Appellate Authority, as the case may be, shall –
 - (i) hear all the parties to appeal present before him; and
 - (ii) Peruse or inspect documents, relevant records or copies thereof relating to the matter.
- (c) After hearing the parties, perusal or inspection of documents and relevant records or copies thereof relating to the matter, the Appellate Authority concerned shall pass an order in writing and provide the copy of order to the parties to appeal free of cost.
- (d) The order passed under sub-clause (c) above shall also be placed on the State Public Procurement Portal.

MEMORANDUM OF APPEAL UNDER THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012

Appeal No of
Before the (First/ Second Appellate Authority)

1. Particulars of appellant:
 - (i) Name of the appellant:
 - (ii) Official address, if any:
 - (iii) Residential address
2. Name and address of the respondent(s)
 - (i)
 - (ii)
 - (iii)
3. Number and date of the order appealed against and name and designation of the officer/ authority who passed the order (enclose copy), or a statement of a decision, action or omission of the Procuring Entity in contravention to the provisions of the Act by which the appellant is aggrieved:
4. If the Appellant proposes to be represented by a representative, the name and postal address of the representative:
5. Number of affidavits and documents enclosed with the appeal:
6. Grounds of appeal:.....
.....
.....
..... (Supported by an affidavit)
7. Prayer :
.....
.....
.....

Place:

Date :

Appellant's Signature

PRE QUALIFICATION SCHEDULES

PREAMBLE TO SCHEDULES

Tenderers are required to provide complete information asked in the schedules. No schedule or item of schedule is to be left blank. In case, a particular schedule or item in schedule is not applicable, the same should be clearly indicated. The information provided in the schedules shall be used for pre qualification evaluation of the tenders to assess the suitability and conformity of the firm/ offer. However, it is clarified that, whatever technical particulars are proposed or considered by the tenderer for his financial offer, all the equipment to be finally provided, in case of award, shall correspond to the specifications of the tender documents and shall be subject to the approval of Engineer In charge as stipulated in clause no 9 of special conditions of contract part A in Vol –I of the tender documents. No claim for additional payments shall be entertained during the course of the approval process or thereafter on this account.

It is expected that the tenderer will quote with a view to supply equipment of best makes and confirming to the highest standards. Tenderer has to consider for his financial offer, makes specified in the document. For items not covered by the list of equipment for which makes are specified or if the specifications are not specified in the tender document, only makes of reputed manufacturers of equipment corresponding to the state of art technology and / or to the latest Indian standards shall be supplied after approval of Engineer in Charge.

Information provided by the tenderer in the schedules is for preliminary assessment of the offer. However, these details are subject to approval of the Engineer in charge based upon the detailed drawings/design/data sheets/specifications to be submitted by the tenderer in conformity with the tender documents.

Company Seal

Signature of authorized representative

1- (a) Statement having read the tender documents

We declare that we have read and understood and that we accept all clauses, conditions, descriptions, Drawings of the tender documents and subsequent addenda (if any) without any change, reservations and conditions

Tender documents purchased from PHED

Section	Part	Total pages*
Volume - I	Notice of invitation to tenderers (NIT)	
	Instructions and guidance to tenderers, schedules	
	Pre- qualification schedules	
	General conditions of contract	
	Special conditions of contract- part A	
	Special conditions of contract- part B	
Volume –II	Scope of work & specifications, Annexures Tender drawings	
Volume – III	Schedule of prices	

Addenda issued by PHED*

Addendum no	Dated

- TO BE FILLED IN BY THE TENDERER

Company Seal

Signature of authorized representative

(b) Information to be supplied by the Bidder

1	Bidder's legal name	
2	Address	
3	Telephone No.	
	a) Office	
	b) Residence	
	c) Factory	
	d) Fax	
	e) Email	
4	Authorized representative name & contact Number	
5. In case of Private Limited Co.		
Whether article of association and Memorandum enclosed or not		Enclosed at Page No..... Not enclosed/Not applicable
List of present directors along with their current & Permanent address enclosed or not		Enclosed at page No..... Not enclosed/Not applicable
6 In case of Partnership firm		
Whether copy of partnership deed in case of partnership firm along with their address enclosed or not		Enclosed at Page No..... Not enclosed/Not applicable
7 In case of Consortium		
Consortium Partner's legal name		
	Address	
	Telephone No.	
	a) Office	
	b) Residence	
	c) Factory	
	d) Fax	
	e) Email	
	Certificate of registration/ incorporation and memorandum of association or constitution of the consortium named above	Enclosed at Page No..... Not enclosed/Not applicable
8 Bid Security (EMD)		
Amount Deposited		
Form of Deposit (mention No. & Date)		

Company Seal

Signature of authorized representative

SCHEDULE 1- FOR PRE-QUALIFICATION OF TENDRER

ELIGIBLE BIDDER (Pre Qualification Criteria as in Clause 4 of ITT)

4 (a)	Eligible bidder	Participated as (tick <input checked="" type="checkbox"/> any one of following) <input type="checkbox"/> Channel partner of MNRE alone <input type="checkbox"/> Consortium (clause 4a)
	Channel Partner	List/ document(No./ date) of being channel partner of MNRE having rating of attached at page No..... Declaration of being (<i>indigenous manufacturer of SPV modules/ manufacturer of submersible pump set/ system integrator</i>) given below/ attached separately at page No.... <p style="text-align: center;"><u>Declaration</u></p> It is certified that I/ We(Name of channel partner) am/ are a and empanelled presently with MNRE in rating <p style="text-align: right;">Signature & seal of Channel partner</p>
	Consortium	Joint bidding agreement attached in prescribed format 1.3 at p...../ Not Applicable

TECHNICAL CRITERIA (Pre Qualification Criteria as in Clause 4.1 of ITT)

4.1.1	Capability	Test report of complete SPV water pumping system having pump capacity ofKw issued on dated by..... (Name of agency) attached at page No.....
4.1.2	Technology evaluation certification	(a) Technology proposed to be used for de-fluoridation (b) Certificate dated from(name of Govt. organization) issued by (name of authority not below the rank of Executive Engineer) for satisfactory performance of the technology offered for de-fluoridation for community drinking water supply attached at p..... (c) The test report dated from(name of lab.) for non-toxicity and potability of treated water attached at p..... (d) Declaration dated issued by(name of the manufacturer of media) for non-use of animal, fish, oyster or any living organism in media and its non-toxicity, usability for de-fluoridation of drinking water and fluoride uptake capacity indicating reference of national or international standard/ patent and name of bidder to whom the manufacturer shall be supplying the media attached at p.....
4.1.3	ISO certification	ISO 9001-2008 certificate of manufacture issued by valid till..... enclosed at page No

FINANCIAL CRITERIA (Pre Qualification Criteria as in Clause 4.2 of ITT)

1. Average Annual Turn Over

SNo.	Year	Total Annual Turnover (Rs. in Lacs)	Annual Turnover for Manufacturing, Providing, installation, commissioning and O&M of SPV operated installation and any type of standalone water treatment plants (Rs. in Lacs)
1	2014-15		
2	2015-16		
3	2016-17		

2. Net Worth

SNo.	Year	Net worth as on last date of FY (Rs. in Lacs)
1	2016-17	

3. Credit Limit

SNo.	Particular	to be filled
1	Name of Bank	
2.	Date of certificate	
3.	Credit Limit (Fund based and non fund based) Rs. in Lacs	

4. Bidding Capacity

SNo.	Particular		to be filled
1	Maximum Annual Turn Over for Manufacturing, Providing, installation, commissioning and O&M of SPV operated installation and any type of standalone water treatment plants in last 3 Years (2014-15, 2015-16, 2016-17) Rs in Lacs	A	
2.	Liability of present works in hand during the contract period (Rs in Lacs) as per Format 1.1	B	
3.	Bidding capacity $2 \times A \times 1 - B$ (Rs in Lacs)		

5. Financial Stability

SNo.	Particular	to be filled
1	Notarised affidavit on Rs. 500/- non judicial stamp for financial stability as per requirement of clause 4.2.5 in Format 1.2	Attached at p.....
2	Certificate of bidders Chartered accountant for financial stability as per requirement of clause 4.2.5	Attached at p.....
3	Additional affidavit to further demonstrate that the firm continues to meet requirement of financial stability before opening of the financial bid	to be submitted at the time of opening of financial bid

Note:

- (1) Scanned copy of supporting documents for above details shall be enclosed.
- (2) Turnover of the bidder for *Manufacturing, Providing, installation, commissioning and O&M of SPV operated installation and any type of standalone water treatment plants* shall be as per certificate of **Chartered Accountant based on audited balance sheets**, of immediate preceding last 3 financial years, which shall be enclosed. In case, tenders are to be received

earlier than the time prescribed for submission of audited balance sheets under Company's Act for immediate last FY, the period of 3 years shall be shifted to previous FYs.

Company Seal

Signature of authorized representative

Format 1.1
(Clause 4.2.4)

AFFIDAVIT FOR WORKS IN HAND

This is to certify that the status of the present works in hand as on date of submission of bid for *Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I) to be executed in next 12 months are as under:*

(Amount Rs in Lacs)

S No	Brief description of work			Stipulated date of start	Stipulated date of completion	Time left for execution as on date (in months)	Cost of awarded work	Cost of work executed as on date	Balance Cost of un executed work as on date	Remaining cost of work to be executed in next 12 months on proportional basis
	WO No./ dt.	Autho -rity	No. of SPV installations							
1	2a	2b	2c	3	4	5	6	7	8=6-7	9

Note: The total of column 9 shall be used as "B" for calculation of bidding capacity.

This is certified that the information submitted above is true in all respect and can be used for calculation of the bidding capacity as per the formula given in ITT .This is also certified that there is no any other order(s) under execution that shall materially affect our bidding capacity.

Company Seal

Signature of authorized representative

To be prepared on non-judicial stamp paper of Rs 100/- duly attested by notary.

Format 1.2
(Clause 4.2.5)

AFFIDAVIT FOR FINANCIAL STABILITY

I/We, having my/ our registered office at, submitting my/ our Bid for the work of "....." certify that my/ our firm have not applied for Corporate Debt Restructuring (CDR) or facing recovery proceedings from financial institutions or facing winding up proceedings or under BIFR in last 3 financial year (from to) and up to date of bid submission.

Signature of the Authorised Signatory to the bidder

Name of the Authorised Signatory to the bidder

Name and address of the bidder

Date:-

Note: To demonstrate their financial stability, the bidder shall submit an affidavit in the above format on Rs. 500/- non judicial stamp paper along with the certificate from the Bidder's Auditor/ Chartered accountant.
The bidder shall have to further demonstrate that it continues to meet the above requirement by submitting additional affidavit before opening of financial bids.

FORMAT 1.3
(Clause 4a)

JOINT BIDDING AGREEMENT

(To be executed on Stamp paper of appropriate value)

THIS JOINT BIDDING AGREEMENT is entered into on this theday of 20.....

AMONGST

*1 Limited, a company incorporated under the Companies Act, 1956/2013 and having its registered office at (herein after referred to as the "First Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

*2. Limited, a company incorporated under the Companies Act, 1956/2013 and having its registered office at (herein after referred to as the "Second Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)

The above mentioned parties of the FIRST, SECOND, PART are collectively referred to as the "Parties" and each is individually referred to as a "Party"

WHEREAS,

(A) THE PUBLIC HEALTH ENGINEERING DEPARTMENT, RAJASTHAN (herein after referred to as the "Authority" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) has invited following tender(s) for *Providing, Installation & commissioning of Solar Energy based Bore Wells with De-fluoridation units including operation and maintenance for a period of Seven years after installation in various fluoride affected villages of Rajasthan.*

(a) NIT No..... dated (Region)

(b) NIT No.....dated (Region)

.....

(B) The Parties are interested in jointly bidding for the aforesaid tender(s) as members of a Consortium and in accordance with the terms and conditions of the tender document and other bid documents in respect of the work, and

(C) It is a necessary condition under the tender document that the members of the Consortium shall enter into a Joint Bidding Agreement and furnish a copy thereof with the Application.

NOW IT IS HEREBY AGREED as follows:

1. Consortium

1.1 The Parties do hereby irrevocably constitute a consortium (the "Consortium") for the purposes of jointly participating in the Bidding Process for the Tender.

1.2 The Parties hereby undertake to participate in the Bidding Process only through this Consortium and not individually and/ or through any other consortium constituted for this/these Tender(s), either directly or indirectly or through any of their Associates.

2. Covenants

2.1 The Parties hereby undertake that in the event the Consortium is declared the selected Bidder and awarded the Tender, the Lead member of consortium on behalf of consortium will enter into Agreement with the Authority for performing all its obligations as the Bidder in terms of the contract Agreement for the Project.

* NGO/bidders (other than company) may suitably modify language.

3. Lead Partner

3.1 Party of the First Part shall be the Lead member of the Consortium and shall have the power of attorney from Second Part for conducting all business for and on behalf of the Consortium during the Bidding Process and there after till the end of contract period as per tender condition.

4. Joint and Several Liabilities

4.1 The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms of the tender and the contract Agreement, till the end of contract period as per tender condition.

5. Representation of the Parties

5.1 Each Party represents to the other Party as of the date of this Agreement that:

- a) Such Party is duly organized, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement;
- b) The execution, delivery and performance by such Party of this Agreement has been authorized by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/ power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member provided to parties forming this Agreement, and will not, to the best of its knowledge:
 - i. require any consent or approval not already obtained;
 - ii. violate any Applicable Law presently in effect and having applicability to it;
 - iii. violate the memorandum and articles of association, by-laws or other applicable organisational documents thereof;
 - iv. violate any clearance, permit, concession, grant, license or other governmental authorisation, approval, judgement, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or
 - v. create or impose any liens, mortgages, pledges, claims, security interests, charges or encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement;
- c) This Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and
- d) there is no litigation pending or, to the best of such Party's knowledge, threatened to which it or any of its Associates is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfillment of its obligations under this Agreement.

6. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until the end of contract period as per tender condition in case the Project is awarded to the Consortium. However, in case the Consortium is either not pre-qualified for the Project or does not get selected for award of the Project, the Agreement will stand terminated in case the Applicant is not pre-qualified or upon return of the Bid Security by the Authority to the Bidder, as the case may be.

7. Miscellaneous

7.1 This Joint Bidding Agreement shall be governed by laws of India.

7.2 The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the Authority.

(Name of authorized
Signatory of Party I)

(Name of authorized
Signatory of Party II)

(Seal & Signature)

(Seal & Signature)

Date
Place

Date
Place

SCHEDULE-2: EXPERIENCE OF TENDRER

2.1 WORKS OF SOLAR PHOTO VOLTAIC PLANTS SPECIFIED IN PRE-QUALIFICATION CRITERIA (CLAUSE 4.3.1 OF ITT)

SN	Name of the work	Work order details			Actual date and amount of work completed & commissioned		Details of SPV Installations completed & commissioned (involving work of SPV panels and solar energy operated pumps)			Details of O&M experience of SPV plants	
		No./ date	work order amount (Rs in lacs)	Name of authority/ department issuing work order	date	Amount (Rs. in Lacs)	No of Solar installations	Capacity of each SPV panel (Kw)	Capacity of each pump (Kw)	O&M period provided in contract (months)	O&M period completed as on date (months)

2.2 WORKS OF WATER TREATMENT PLANTS SPECIFIED IN PRE QUALIFICATION CRITERIA (CLAUSE 4.3.2 OF ITT)

SN	Name of the work	Work order details			Actual date of completion & commissioning of work	Details of standalone water treatment plant(s) completed and commissioned		Details of O&M of water treatment plants	
		No./ date	work order amount (Rs in lacs)	Name of authority/ department issuing work order		Type	Total capacity of WTP (LPH)	O&M period provided in contract (months)	O&M period completed as on date (months)

NOTE:

1. Client Certificate towards satisfactory completion of work from Competent Authority (Engineer In charge, not below the rank of Executive Engineer) should be attached in respect of each work in *Format 2.1* along with copy of work order.

Company Seal

Signature of authorized representative

Model Format-2.1
(clause 4.3.1)

To whomsoever it may concern

Certified that M/s..... have successfully completed and commissioned the work of Solar Photo Voltaic panels and solar energy operated pumps (SPV installations) as awarded vide work order number.....dated.....costing Rs.....Lacs as per following details:-

a	Name of work					
b	Stipulated date of start of work					
c	Stipulated date of completion of work					
d	Actual date of completion of entire work#					
e	Total period of comprehensive maintenance of SPV installation included in contract (months)					
f	Quantity (No.) of SPV installation ordered					
g	Quantity (No.) of SPV installation completed & commissioned out of quantity (f) above					
h	Cost of completed work (Rs. in Lacs)					
i	Quantity (No.) of SPV installation maintained for at least two years out of quantity (g) above					
j	Break up of quantity (i) above of SPV installations completed, commissioned & maintained for at least two years					
	Quantity (No.)	Capacity of SPV panels at each installation (Wp)	Capacity of each pump in SPV installation (kW)	Total capacity of pumps installed (kW)	Date of completion	O&M period completed as on date (months)

Date:-
Place:-

**Signature & Seal of Competent Authority with seal
(Not below the rank of Executive Engineer)**

Note: # If entire work is not completed, write "under progress"

Model Format-2.2
(clause 4.3.2)

To whomsoever it may concern

Certified that M/s..... have successfully completed and commissioned the work of construction of standalone water treatment plants (WTP) as awarded vide work order number.....dated.....costing Rs.....Lacs as per following details:-

a	Name of work				
b	Type of standalone water treatment plants (WTP)				
c	Stipulated date of start of work				
d	Stipulated date of completion of entire work#				
e	Total period of comprehensive maintenance of WTP included in contract (months)				
f	Quantity (No.) of WTP ordered				
g	Quantity (No.) of WTP completed & commissioned				
h	Cost of completed work (Rs. in Lacs)				
i	Quantity (No.) of WTP maintained for at least two years out of quantity (g) above				
j	Break up of quantity (i) above of WTP completed, commissioned & maintained for at least two years				
	Quantity (No.)	Capacity of each plant (LPH)	Total installed capacity (LPH)	Date of completion	O&M period completed as on date (months)

Date:-
Place:-

**Signature & Seal of Competent Authority with seal
(Not below the rank of Executive Engineer)**

Note: # If entire work is not completed, write "under progress"

SCHEDULE-3: UNDERTAKING REGARDING NO DEVIATIONS

Undertaking in respect of the Tender for Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)

As per NIT No. **07/2018-19** dated 04.06.2018

I/We hereby agree to all terms and conditions, scope of work, specifications. We undertake that the contents of the submitted tenders, the write-up given, the designs attached herein and the figures/components shown in the drawings submitted with the tender, do not provide any deviations from the terms and conditions, scope of work and specifications.

I/We also agree to provide the equipment/material as specified in the tender document without any additional cost for completion of the work.

I/We understand that the Department may ask for necessary changes in the given execution schedule, methodology, organizational setup or the execution schedule so as to achieve the objective of the work, after due negotiations prior to opening of the financial bids. I/We understand that if the changes required by the department for these schedules are not accepted by us our financial offer shall not be considered. I/We understand that the department without assigning any reason may also open the financial bids even without any clarifications regarding the given schedule. I/We understand that having negotiated for these schedules or by acceptance of the schedules given by us shall not relieve us from the responsibilities of the contractor as given in the tender document if the work is awarded to us.

Company Seal
Tenderer's Authorized Signature

TENDER FOR WORKS

I / We hereby tender for the execution of Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I) for the Governor of the state of Rajasthan of the work specified in such memorandum at lump sum amount of Rs ----- (in figures) Rs----- (in words) specified in the schedule attached in tender document. I / We have visited the site of work and am / are fully aware of all the difficulties and conditions likely to affect carrying out the work. I / We have fully acquainted myself / ourselves about the conditions in regarding to accessibility of site and quarries / kilns, nature and the extent of ground, working conditions including stacking of materials, installation of tools and plants, conditions effecting accommodation and movement of labour etc. required for the satisfactory execution of contract.

Memorandum

- a) General description : Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)
of work
- b) Estimated cost : Rs 2722.30Lacs
- c) Earnest money : Rs 54.45 lacs as mentioned in NIT and Rs 13.61 @1/4th of as mentioned in NIT for contractors registered in PHED
- d) Security Deposit :
- (i) "The security deposit @ 10 % of the gross amount of running bill shall be deducted from each running bill and shall be refunded as per rules on completion of the contract as per terms and conditions. However the amount of security deposit deducted from running bills shall not be converted into any mode of securities bank guarantee, FDR etc. The earnest money deposited shall however be adjusted while deducting security deposit from first running bill of contractor. There will be no maximum limit of security deposit. However, a contractor may elect to deposit of full amount of 10% security deposit in the shape of bank guarantee or any acceptable form of security before or at the time of executing agreement. In that case earnest money may be refunded only after deposition of full 10% as above. How, in case during execution cost of works exceeds as shown at the time of depositing 10% as above, balance security deposit shall be deducted from the "Running Account Bills".
- (ii) Bank guarantee shall in all cases be payable at the head quarter of the division or the nearest district head quarters.
- (e) Time allowed for the completion of the work (to be reckoned from the 10th day after the date of written order to commence the work is as per tender document. I/We hereby agree to abide by and fulfill in the terms and provisions of the conditions of the contract annexed hereto and of the detailed notice for technical and financial bids, or in default thereof, to forfeit and pay to the Governor of Rajasthan or his successors in office, the sum of money mentioned in the said conditions.

A sum of Rslacs is forwarded herewith in the form of cash, bank draft, bankers cheque as Earnest money. This amount of earnest money shall absolutely be forfeited to the Governor of Rajasthan or his successors in office without prejudice to any other right or remedies of Governor of Rajasthan or his office, should I/We fail to commence the work specified in the above memorandum.

Signature of witness
Witness's address & occupation

Signature of Contractor
Address of contractor

Date

The above tender is hereby accepted by me on behalf of the Governor of Rajasthan

Dated the

SIGNED for and on behalf of PHED

“Copy of appendix XI of PWF&AR, Govt. of Rajasthan effective from 01.07.99 and subsequent amendments up to date. In case of any typographical error or omission or alteration the original version of the same shall be valid.”

GENERAL CONDITIONS OF CONTRACT

Clause 1: Security Deposit

“The security deposit @ 10% of the gross amount of the running bill shall be deducted from each running bill and shall be refunded as per rules on completion of the contract as per terms and conditions. The earnest money deposited shall however be adjusted while deducting security deposit from the first running bill of the contractor. There will be no maximum limit of security deposit.

A contractor may, however, elect to furnish bank guarantee or any acceptable form of security for an amount equal to the full amount of security deposit @ 10% of the work order before or at the time of executing the agreement. In that case earnest money may be refunded only after furnishing of the bank guarantee as above. During the execution of the work or after completion of the work also a contractor may replace the security deposit by furnishing bank guarantee for an equal amount. However, during execution of the work if cost of work exceeds as shown at the time of furnishing bank guarantee, balance security deposit shall be deducted from the Running Account Bills.”

All compensation or other sums of money payable by the Contractor to Government under the terms of his contract may be deducted from or paid by the sale of a sufficient part of his Security Deposit, or from interest arising there from, or from any sums, which may be due or may become due to the Contractor by the Government on any account whatsoever, and in the event of his Security Deposit being reduced by reason of any such deduction or sale as aforesaid, the Contractor shall within ten days thereafter, make good in cash or Bank Guarantee of Nationalised/ Scheduled bank, as aforesaid, any sum or sums which may have been deducted from or raised by sale of his Security Deposit or any part thereof.

In case of Bank Guarantee of any Nationalised/ Scheduled Bank is furnished by the Contractor to the Government, as part of the Security Deposit and the bank goes into liquidation or, for any reason is unable to make payment against the said Bank Guarantee, the loss caused thereby shall fall on the Contractor and the Contractor shall forthwith, on demand, furnish additional security to the Government to make good the deficit.

The liability or obligation of the bank under the Guarantee Bond shall not be affected or suspended by any dispute between the Engineer-in-Charge and the Contractor, and the payment, under the Guarantee Bond by the bank to the Government shall not wait till disputes are decided. The bank shall pay the amount under the Guarantee, without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the Contractor. The demand, so made, shall be conclusive as regards to amount due and payable by the bank, under the guarantee limited to the amount specified in the Guarantee Bond. The guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

The Bank Guarantee shall remain valid up to the specified date unless extended on demand by the Engineer-in-Charge which shall include the period of completion of the contract and the defect removal period as per terms of the Agreement. Bank's liability shall stand automatically discharged unless a claim in writing is lodged with the Bank within the period stated in the Bank Guarantee including the extended period. After satisfactory completion of the contract and clearance of all dues by the Contractor, the Chief Engineer or duly authorised Engineer will discharge the Bank Guarantee after expiry of the original or the extended period, as the case may be. In case the date of expiry of the Bank Guarantee is a holiday, it will be deemed to expire on the close of the next working day.

Government is not concerned with any interest accruing to the Contractor on any form of Security (primary or collateral) lodged by him with the bank or any sums payable to sureties obtained by the Bank as counter guarantee to secure its own position. These will be the matters between the Bank and the Contractor.

Clause 2: Compensation for delay

The time allowed for carrying out the work as entered in the tender, shall be strictly observed by the Contractor and shall be reckoned from the 10th day after the date of written order to commence the work is given to the Contractor. If the Contractor does not commence the work within the period specified in the work order, he shall stand liable for the forfeiture of the amount of Earnest Money and Security Deposit. Besides, appropriate action may be taken by the Engineer-in-Charge/ competent authority to debar him from taking part in future tenders for a specified period or black list him. The work shall, throughout the stipulated period of completion of the contract, be proceeded with all due diligence, time being essence of the contract, on the part of the Contractor. To ensure good progress

during the execution of work, the contractor shall be bound, in all cases in which the time allowed for any work exceeds one month (save for special jobs), to complete 1/8th of the whole of the work before 1/4th of the whole time allowed under the contract has elapsed, 3/8th of the work before 1/2 of such time has elapsed and 3/4th of work before 3/4th of such time has elapsed. If the contractor fails to complete the work in accordance with this time schedule in terms of cost in money, and the delay in execution of work is attributable to the contractor, the contractor shall be liable to pay compensation to the Government at every time span as below: -

A.	Time Span of full stipulated period	1/4 th	1/2 th	3/4 th	Full
		(.....days)	(.....days)	(.....days)	(.....days)
B.	Work to be completed in terms of money	1/8 th	3/8 th	3/4 th	Full
		(Rs.)	(Rs.)	(Rs.)	(Rs.)
C.	Compensation payable by the contractor for delay attributable to contractor at the stage of :	2.5 % of the scheduled work	5 % of the scheduled work	7.5 % of the scheduled work	10 % of the scheduled work
		Remained unexecuted on the last day of (1/4 th) time span	Remained unexecuted on the last day of (1/2) time span	Remained unexecuted on the last day of (3/4 th) time span	Remained unexecuted on the last day of contracted full period

Note: In case delayed period over a particular span is split up and is jointly attributable to Government and contractor, the competent authority may reduce the compensation in proportion of delay attributable to Government over entire delayed period over that span after clubbing up the split delays attributable to Government and this reduced compensation would be applicable over the entire delayed period without paying any escalation.

Following illustrations is given:-

(i) First time span is 6 months, delay is of 30 days which is split over as under:-

5 days (attributable to Government) + 5 days (attributable to contractor) + 5 days (attributable to Government) + 5 days (attributable to contractor) + 5 days (attributable to Government) + 5 days (attributable to contractor)

Total delay is thus clubbed to 15 days (attributable to Government) and 15 days (attributable to contractor).

The normal compensation of 30 days as per clause 2 of agreement is 2.5% which can be reduced as $2.5 \times 15 / 30 = 1.25\%$ over 30 days without any escalation by competent authority.

Note: The compensation, levied as above, shall be recoverable from the Running Account Bill to be paid immediately after the concerned time span. Total compensation for delays shall not exceed 10 percent of the total value of the work.

The contractor shall, further, be bound to carry out the work in accordance with the date and quantity entered in the progress statement attached to the tender.

In case the delay in execution of work is attributable to the contractor, the span wise compensation, as laid down in this clause shall be mandatory. However, in case the slow progress in one time span is covered up within original stipulated period, then the amount of such compensation levied earlier shall be refunded. The Engineer-in-Charge shall review the progress achieved in every time span, and grant stage wise extension in case of slow progress with compensation, if the delay is attributable to contractor, otherwise without compensation. However, if for any special job, a time schedule has been submitted by the Contractor before execution of the agreement, and it is entered in agreement as well as same has been accepted by the Engineer-in-charge, the Contractor shall complete the work within the said time schedule. In the event of the Contractor failing to comply with this condition, he shall be liable to pay compensation as prescribed in forgoing paragraph of this clause provided that the entire amount of compensation to be levied under the provisions of this Clause shall not exceed 10% of the value of the contract. While granting extension in time attributable to the Government, reasons shall be recorded for each delay.

Clause 3: Risk & Cost Clause

The Engineer-in-charge or the Competent Authority defined under rules may, without prejudice to his rights against the Contractor, in respect of any delay or inferior workmanship or otherwise, or any claims for damages in respect of any breaches of the contract and without prejudice to any rights or

remedies under any of the provisions of this Contract or otherwise, and whether the date for completion has or has not elapsed, by notice in writing, absolutely determine the Contract in any of the following cases:

- (i) If the Contractor having been given by the Engineer-in-charge, a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or un-workman like manner shall omit to comply with the requirements of such notice for a period of seven days, thereafter, or if the Contractor shall delay or suspend the execution of the work so that either in the judgment of the Engineer-in-charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion or he has already failed to complete the work by that date,
- (ii) If the Contractor, being a company, shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager, on behalf of a creditor, shall be appointed or if circumstances shall arise, which entitle the court or creditor to appoint a receiver or a manager or which entitle the court to make a winding up order,
- (iii) If the contractor commits breach of any of the terms and conditions of this Contract,
- (iv) If the contractor commits any acts mentioned in, clause 19 thereof.

When the Contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in charge on behalf of the Governor of Rajasthan shall have powers: -

(a) To determine or rescind the contract, as aforesaid (of which determination or rescission notice in writing to the Contractor under the hand of the Engineer-in charge shall be conclusive evidence), upon such determination or rescission, the earnest money, full security deposit of the contract shall be liable to be forfeited and shall be absolutely at the disposal of Government.

(b) To employ labour paid by the Department and to supply materials to carry out the work or any part of the work, debiting the Contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer-in-charge shall be final and conclusive against the contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates, as if it had been carried out by the Contractor under the terms of this Contract. The certificate of the Divisional Officer, as to the value of the work done, shall be final and conclusive evidence against the Contractor provided always that action under the sub-clause shall only be taken after giving notice in writing to the Contractor. Provided that; if the expenses incurred by the Department are less than the amount payable to the Contractor at his agreement rates, the difference shall not be paid to the Contractor.

(c) After giving notice to the contractor to measure up the work of the contractor and to take such part thereof, as shall be unexecuted out of his hands, and to give it to another contractor to complete, in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess, the certificate in writing of the Engineer-in-charge shall be final and conclusive) shall be borne and paid by the original Contractor and may be deducted from any money due to him by Government under this contract or on any other account whatsoever, or from his Earnest Money, Security Deposit, Enlistment Security or the proceeds of sales thereof, or a sufficient part thereof, as the case may be. In the event of any one or more of the above courses being adopted by the Engineer-in-charge, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of contract. And, in case action is taken under any of provisions aforesaid, the Contractor shall not be entitled to recover or be paid, any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-charge has certified, in writing, the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified.

Clause 4: Contractor remains liable to pay compensation, if action not taken under clause 3

(i) In any case in which any of the powers conferred by clause 3 hereof, shall have become exercisable and the same shall have not been exercised, the non-exercise, thereof, shall not constitute waiver of any of the conditions hereof, and such power shall, notwithstanding, be exercisable in the event of any future case of default by the Contractor for which, by any clause or clauses hereof, he is declared liable to pay compensation amounting to the whole of his Security Deposit /Earnest Money/Enlistment security and the liability of the Contractor for past and future compensation shall remain unaffected.

Powers to take possession of, or require removal, sale of Contractor's plant

(ii) In the event of the Engineer-in-Charge putting in force, powers vested in him under the preceding Clause 3 he may, if he so desires, take possession of all or any tools, plants, materials and stores, in or upon the works or the site, thereof or belonging to the contractor or produced by him and intended to be used for the execution of the work or any part thereof, paying or allowing for the same in account, at the contract rates or, in case of these not being applicable, at current market rates, to be certified by the Chief Engineer or duly authorized Engineer (whose certificate thereof, shall be final and conclusive), otherwise the Engineer-in-Charge may, by notice in writing to the contractor or his clerk of the works, foreman or other authorized agent, require him to remove such tools, plant, materials or stores from the premises (within a time to be specified in such notice), and in the event of the contractor failing to comply with any requisition, the Chief Engineer or other duly authorized Engineer may remove them at the contractor's expenses, sell them by auction or private sale on account of the Contractor and at his risk in all respects, and the certificate of the Chief Engineer or other duly authorized Engineer, as to the expense of any such removal, and the amount of the proceeds and expense of any such sale shall be final and conclusive against the Contractor.

Clause 5: Extension of time

If the contractor shall desire an extension of the time for completion of the work on the ground of his having been unavoidably hindered in its execution or on any other grounds, he shall apply, in writing, to the Engineer-in-Charge within 30 days of the date of the hindrance, on account of which he desires such extension as aforesaid, and the Authority Competent to grant extension under the rules/delegations of power or other duly authorized Engineer shall, if in his opinion, (which shall be final) reasonable grounds be shown therefore, authorize such extension of time, if any, as may, in his opinion, be necessary or proper, if the period of completion of contract expires before the expiry of the period of one month provided in this clause, the application for extension shall be made before the expiry of the period stipulated for completion of the contract. The competent authority shall grant such extension at each such occasion within a period of 30 days of receipt of application from contractor and shall not wait for finality of work. Such extensions shall be granted in accordance with provisions under clause (2) of this agreement.

Clause 5 A: Monthly Return of Extra Claims

Contractor has to submit a return every month for any work claimed as extra. The Contractor shall deliver the return in the office of the Executive Engineer and obtain Receipt Number of the Receipt Register of the day on or before 10th day of every month during the continuance of the work covered by this contract, a return showing details of any work claimed as extra by the contractor which value shall be based upon the rates and prices mentioned in the contract or in the Schedule of Rates in force in the District for the time being. The contractor shall be deemed to have waived all claims, not included in such return, and will have no right to enforce any such claims not included, whatsoever be the circumstances.

Clause 6: Final Certificate

On completion of the work, the contractor shall send a registered notice to the Engineer-in-charge, giving the date of completion and sending a copy of it to the officer accepting the contract, on behalf of the Governor and shall request the Engineer-in-charge to give him a certificate of completion, but no such certificate shall be given nor shall the work be considered to be complete until the contractor shall have removed from the site on which the work shall be executed, all scaffolding, surplus materials and rubbish and cleared off the dirt from all wood work, doors, walls, floors, or other parts of any building in, upon or about which the work is to be executed or of which he may have possession for the execution thereof, he had filled up the pits. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding, surplus materials and rubbish and cleaning off dirt and filling of pits on or before the date fixed for completion of the work, the Engineer-in-charge may, at the expense of the contractor, remove such scaffolding, surplus materials, and the rubbish and dispose of the same, as he thinks fit, and clean off such dirt and fill the pits, as aforesaid, and the contractor shall forthwith pay the amount of all expenses, so incurred, and shall have no claim in respect of any such scaffolding or surplus materials, as aforesaid, except for any sum actually realised by the sale thereof. On completion, the work shall be measured by the Engineer-in-charge himself or through his subordinates, whose measurements shall be binding and conclusive against the contractor. Provided that, if subsequent to the taking of measurements by the subordinate, as aforesaid, the Engineer-in-charge had reason to believe that the measurements taken by his subordinates are not correct, the Engineer-in-charge shall have the power to cancel the measurements already taken by his subordinates and acknowledged by the Contractor and to take

measurements again, after giving reasonable notice to the Contractor, and such re-measurements shall be binding on the Contractor.

Within ten/thirty days of the receipt of the notice, Engineer-in-charge shall inspect the work and if there is no visible defects on the face of the work, shall give the Contractor, a certificate of completion. If the Engineer-in-charge finds that the work has been fully completed, it shall be mentioned in the certificate so granted. If, on the other hand, it is found that there are certain visible defects to be removed, the certificate to be granted by Engineer-in-charge shall specifically mention the details of the visible defects along with the estimate of the cost for removing these defects. The final certificate of work shall be given after the visible defects pointed out as above have been removed.

(Delete whichever is not applicable). (Ten days will apply to works at the headquarters of Engineer-in-charge and 30 days for works at other places).

Clause 7: Payment on Intermediate Certificate to be regarded as advance

No payments shall be made for works estimated to cost less than rupees twenty five thousand, till after the whole of the works shall have been completed and a certificate of completion given. But in the case of works estimated to cost more than rupees twenty five thousand, the Contractor shall on submitting the bill therefore, be entitled to receive a monthly payment proportionate to the part, thereof, then approved and passed by the Engineer-in-charge, whose certificate of such approval and passing of sum, so payable, shall be final and conclusive. Running Account Bill shall be paid within 15 days from presentation. But all such intermediate payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed, and shall not preclude the requiring of bad, unsound and imperfect or unskillful work to be removed and taken away and re-constructed or re-erected, or considered as an admission of the due performance of the contract, or any part thereof, in any respect, or the accruing of any claim, nor shall it conclude, determine, or effect in any way the powers of the Engineer-in-charge under these conditions or any of them to the final settlement and adjustment of the accounts or otherwise or in any other way vary or affect the contract. The final bill shall be made/submitted by the Contractor within one month of the date fixed for completion of the work, otherwise the Engineer-in-charge's certificate of the measurement and of the total amount payable for the work accordingly shall be final and binding on all parties.

Clause 7A: Time Limit for Payments of Final Bills

The final bill shall be paid within 3 months on presentation by the contractor after issuance of final completion certificate in accordance with clause 6 of the conditions of contract. If, there shall be any dispute about any item(s) of the work, then the undisputed item(s) only, shall be paid within the said period of 3 months. If a final bill (which contains no disputed item or disputed amount of any item) is not paid within the period of three months from presentation of final bill or 6 months from the date of receipt of registered notice regarding completion of work in accordance with clause 6 of the conditions of the contract, the defects, if any, shall be brought to the notice of the higher authority. The period of 3 months shall commence from the date of rectification of the defects. The higher authority shall ensure that in no case final bill should be left unpaid after 9 months from the receipt of registered notice regarding completion of work. The contractor shall submit a memorandum of the disputed items along with justification in support within 30 days from the disallowance thereof, and if he fails to do so, his claims shall be deemed to have been fully waived and absolutely extinguished.

Clause 8: Bills to be submitted on completion of specified stages of work

In case of lump sum contracts, bills will be submitted by the contractor on completion of various stages of work as specified in the contract document. The claim as far as admissible, authorized or paid, if possible, before expiry of 10 days from the presentation of the bill. The claims for additions and alterations, if any, may also be included in the bills if their measurements have been recorded and checked.

Clause 8A: Contractor to be given time to file objection to the Measurements recorded by the Department

Before taking any measurement of any work, as have been referred to in preceding Clauses 6, 7 & 8, the Engineer-in-charge or a subordinate, deputed by him, shall give reasonable notice to the Contractor. If the Contractor fails to be present at the time of taking measurements after such notice or fails to sign or to record the difference within a week from the date of measurement in the manner required by the Engineer-in-charge, then in any such event, the measurements taken by the Engineer-in-charge or by the subordinates deputed by him, as the case may be, shall be final and binding on the Contractor and the Contractor shall have no right to dispute the same.

Clause 8B: Recovery of Cost of Preparation of the Bill

In case of contractor of class A and AA do not submit the bill within time fixed, the Engineer in Charge may prepare the bill as per the provision of clause 8 of the general conditions of the contract but deduction @ 0.5 % of amount of such a bill shall be made and credited to the general revenue on account of preparation of bill.

Clause 9: Bills to be on printed forms

The Contractor shall submit all bills on the printed forms, to be had on application, at the office of the Engineer-in-charge and the charges in the Bills shall always be entered at the rates specified in the tender or in the case of any extra work ordered in pursuance of these conditions, and not mentioned or provided for in the tender, at the rates hereinafter provided for such work.

Clause 9A: Payments of Contractor's Bills to Banks

Payments due to the Contractor may if so desired by him, be made to his Bank instead of direct to him, provided that the contractor has furnished to the Engineer-in-Charge (i) an authorization in the form of a legally valid document, such as a Power of Attorney conferring authority on the Bank to receive payments, and (ii) his own acceptance of the correctness of the account made out, as being due to him, by Government, or his signature on the bill or other claim preferred against Government before settlement by the Engineer-in-Charge of the account or claim, by payment to the Bank. While the receipt given by such bank shall constitute a full and sufficient discharge for the payment, the Contractor should, whenever possible, present his bill duly receipted and discharged through his Banker. Nothing, herein contained, shall operate to create in favour of the Bank any rights vis-a-vis the Governor.

Clause 10: Stores supplied by Government

If the specification or estimate of the work provides for the use of any special description of material, to be supplied from Engineer-in-charge's stores, or if, it is required that contractor shall use certain stores to be provided by the Engineer-in-charge, specified in the schedule or memorandum hereto annexed, the contractor shall be bound to procure and shall be supplied such materials and stores as are, from time to time, required to be used by him for the purpose of the Contract only, and the value of the full quantity of materials and stores, so supplied, at the rates specified in the said schedule or memorandum, may be set off or which may be deducted from any sum, then due or thereafter become due, to the Contractor under the Contract or otherwise or against or from the Security Deposit or the proceeds of sale, if the same is held in Government securities, the same or sufficient portion thereof being in this case, sold for this purpose. All materials supplied to the contractor, either from Departmental stores or with the assistance of Government, shall remain the absolute property of Government. The Contractor shall be trustee of the Stores/ Materials, so supplied/ procured, and these shall not, on any account, be removed from the site of work and shall be, all times, open to inspection by the Engineer-in Charge. Any such material, unused and in perfectly good condition at the time of completion or determination or rescinding of the contract, shall be returned to the Divisional officer's Stores, if, by a notice in writing under his hand, he shall so require, and if on service of such notice, the contractor fails to return the materials, so required, he shall be liable to pay the price of such materials in accordance with provision of clause 10 B *ibid*. But the contractor shall not be entitled to return any such materials, unless with such consent, and shall have no claim for compensation on account of any such materials, so supplied to him as aforesaid being unused by him, or for any wastage in or damage to any such materials. For the stores returned by the contractor, he shall be paid for, at the price originally charged excluding storage charges, in case of materials supplied from departmental stores and actual cost including freight, cartage, taxes etc., paid by the Contractor, in case of supplies received with the assistance of Government, which, however, should in no case exceed market rate prevailing at the time the materials are taken back. The decision of the Engineer-in-charge, as to the price of the stores returned, keeping in view its condition etc., shall be final and conclusive. In the event of breach of the aforesaid condition, the Contractor shall, in addition to throwing himself open to account for contravention of the terms of the license or permit and/or for criminal breach of trust, pay to the Government, all advantages or profits resulting, or which in the usual course, would result to him by reason of such breach. Provided that the Contractor shall, in no case be entitled to any compensation or damage on account of any delay in supply, or non-supply thereof, all or any such materials and stores.

Clause 10A: Rejection of materials procured by the Contractor

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion, are not in accordance with the specifications and, in case of default, the Engineer-in-Charge shall be at liberty to employ other person(s) to remove the same without being answerable or accountable for any loss of damage, that may happen or arise to such materials to be

substituted thereof, and in case of default, Engineer-in-Charge may cause the same to be supplied and all costs, which may attend such removal and substitution, are to be borne by the Contractor.

Clause 10B: Penal rate in case of excess consumption

The Contractor shall also be charged for the materials consumed in excess of the requirements calculated on the basis of standard consumption approved by the department, at double of the issue rate including storage and supervision charges or market rate, whichever is higher. A Material Supply and Consumption Statement, in prescribed Form RPWA 35A shall be submitted with every Running Account Bill, distinguishing material supplied by the Government and material procured by the Contractor himself. The recovery for such material shall be made from Running Account Bill next after the consumption and shall not be deferred. Certificate of such nature shall be given in each Running Account Bill.

Clause 10 C: Hire of Plant and Machinery

Special Plant and Machinery, required for execution of the work, may be issued to the Contractor, if available, on the rates of hire charges and other terms and conditions as per departmental Rules, as per Schedule annexed to these conditions. Rates of such Plant & Machinery shall be got revised periodically so as to bring them at par with market rate.

Clause 11: Works to be executed in accordance with specifications, Drawings, Orders etc.

The Contractor shall execute the whole and every part of the work in the most substantial and satisfactory manner and both as regards materials and otherwise in every respect, in strict accordance with the Specifications. The Contractor shall also conform exactly fully and faithfully to the designs, drawings (either designed by department or designed by contractor and approved by Engineer-in-charge during additional execution) and instructions in writing relating to the work signed by the Engineer-in-charge and lodged in his office and to which the Contractor shall be entitled to have access at such office or on the site of the work for the purpose of inspection during office hours and the Contractor shall, if he so require, be entitled, at his own expense, to make or cause to be made copies of specifications and of all such designs, drawings and instructions, as aforesaid. A certificate of executing works as per approved design, specifications etc. shall be given on each Running Account Bill.

The specifications of work, material, methodology of execution, drawings and designs shall be signed by the Contractor and Engineer-in-charge while executing agreement and shall form part of agreement.

Clause 12:

The Engineer-in-charge shall have power to make any alterations, omissions or additions to or substitutions for the original specifications, drawings, designs and instructions, that may appear to him to be necessary during the progress of the work and the contractor shall carry out the work in accordance with any instructions which may be given to him in writing signed by the Engineer-in-charge and such alterations, omission, additions or substitutions shall not invalidate the contract and any altered, additional or substituted work, which the contractor may be directed to do in the manner above specified as part of the work, shall be carried out by the contractor on the same conditions in all respects on which he agreed to do the main work. The time for the completion of the work shall be extended in the proportion that the altered, additional or substituted work bears to the original contract work, and the certificate of the Engineer-in-charge shall be conclusive as to such proportion. The rates for such additional, altered or substituted work under this clause shall be worked out in accordance with the following provisions in their respective order:

- (i) If the rates for the additional, altered or substituted work are specified in the contract for the work, the contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract for the work.
- (ii) If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the such rates will be derived from the rates for a similar class of work as are specified in the contract for the work.
- (iii) If the rates for the altered, additional or substituted work cannot be determined in the manner specified in the sub-clauses (i) to (ii) above, then the rates for such composite work item shall be worked out on the basis of the concerned Schedule of Rates of the District/area specified above minus/plus the percentage which the total tendered amount bears to the estimated cost of the entire work put to tender. Provided always that if the rate for a particular part or parts of the item is not in the Schedule of Rates, the rate for such part or parts will be determined by the Engineer-in-Charge on the basis of the prevailing market rates when the work was done.

- (iv) If the rates for the altered, additional or substituted work item cannot be determined in the manner specified in sub-clauses (i) to (iii) above, then the contractor shall within 7 days of the date of receipt of order to carry out the work, inform the Engineer-in-Charge of the rate which it is his intention to charge for such class of work supported by analysis of the rate or rates claimed and the Engineer-in-Charge shall determine the rate or rates on the basis of prevailing market rates, and pay the contractor accordingly. However, the Engineer-in-Charge, by notice in writing, will be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner, as he may consider advisable. But under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates on items falling under the clause.
- (v) Except in case of items relating to foundations, provisions contained in sub-clauses(i) to (iv) above shall not apply to contract or substituted items as individually exceed the percentage set out in the tender documents under clause 12.A.

For the purpose of operation of clause 12 (v) the following works shall be treated as work relating to foundations:-

- (a) For buildings, compound wall plinth level or 1.2 meters (4 ft.) above ground level whichever is lower, excluding items above flooring and D.P.C. but including base concrete below the floors.
- (b) For abutments, piers, retaining wall of culverts and bridges, walls of water reservoir and the bed of floor level.
- (c) For retaining walls, where floor levels is not determinate 1.2 meters above the average ground level or bed level.
- (d) For roads, all items of excavation and filling including treatment of sub base and soling work.
- (e) For water supply lines, sewer lines underground storm water drains and similar work, all items of work below ground level except items of pipe work for proper masonry work.
- (f) For open storm water drains, all items of work except lining of drains.
- (g) Any other items of similar nature which Engineer-in-Charge may decide relating to foundation.

The rate of any such work, except the items relating to foundations, which is in excess of the deviation limit, shall be determined in accordance with the provisions contained in Clause 12A.

Clause 12A:

The quantum of additional work for each item shall not exceed 50% of the original quantity given in the agreement and the total value of additional work shall not exceed 20% of the total contract value, unless otherwise mutually agreed by the Engineer-in-charge and the Contractor. This limit shall not be applicable on items relating to foundation work which shall be executed as per original rates or provision of clause 12 (i) to (iv).

In case of contract substituted items or additional items, which results in exceeding the deviation limit laid down in this clause except items relating to foundation work, which the contractor is required to do under clause 12 above, the contractor shall within 7 days from the receipt of order, claim revision of the rate supported by proper analysis in respect of such items for quantities in excess of the deviation limit notwithstanding the fact that the rates for such items exist in the tender for the main work or can be derived in accordance with the provision of sub clause (ii) of clause 12 and the Engineer-in-Charge, may revise their rates having regard to the prevailing market rates and the contractor shall be paid in accordance with the rates so fixed. The Engineer-in-Charge shall, however, be at liberty to cancel his order to carry out such increased quantities of work by giving notice in writing to the contractor and arrange to carry it out in such manner as he may consider advisable. But under no circumstances, the contractor shall suspend the work on the plea of non-settlement of rates of items failing under this Clause.

All the provisions of the preceding paragraph shall equally apply to the decrease in rates of items for quantities in excess of the deviation limit notwithstanding the fact that the rates for such items exist in the tender for the main work or can be derived in accordance with the provisions of sub-clause(ii) of the preceding clause 12 and the Engineer-in-Charge may revise such rates having regard to the prevailing market rates unless otherwise mutually agreed by the Engineer-in-Charge and the Contractor..

Clause 13: No compensation for alteration in or restriction of work to be carried out.

If, at any time after the commencement of the work the Government shall, for any reason, whatsoever, not require the whole work, thereof, as specified in the tender, to be carried out, the Engineer-in-charge shall give notice, in writing, of the fact to the Contractor, who shall have no claim

to any payments or compensation, whatsoever, on account of any profit or advantage, which he might have derived from the execution of the work in full but which he did not derive in consequence of the full amount of the work not having been carried out. Neither, shall he have any claim for compensation by reason of alterations having been made in the original specifications, drawings, and design, and instructions, which shall involve any curtailment of the work, as originally contemplated. Provided, that the Contractor shall be paid the charges for the cartage only, of materials actually brought to the site of the work by him for bonafide use and rendered surplus as a result of the abandonment or curtailment of the work or any portion thereof, and taken them back by the Contractor, provided however, that the Engineer-in-charge shall have, in all such cases, the option of taking over all or any such materials at their purchase price or at local market rates whichever may be less. In the case of such stores, having been issued from Government Stores, charges recovered, including storage charges shall be refunded after taking into consideration any deduction for claim on account of any deterioration or damage while in the custody of the contractor, and in this respect the decision of the Engineer-in-charge shall be final.

Clause 14: Action and compensation payable in case of bad work

If, it shall appear to the Chief Engineer or any authorised authority or the Engineer-in-charge or his subordinates in-charge of the work, or to the committee of the retired officers appointed by the State Government for the purpose that any work has been executed with unsound, imperfect or unskillful workmanship, or with material of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted, or otherwise not in accordance with contract, the Contractor shall on demand in writing from the Engineer-in-charge, specifying the work/materials or articles complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, will rectify or remove and reconstruct the work, so specified, in whole or in part, as the case may be, remove the materials or articles, so specified, and provide other proper and suitable materials or articles at his own cost, and in the event of his failing to do so, within a period to be specified by the Engineer-in- Charge in his demand as aforesaid, then the Contractor shall be liable to pay compensation at the rate of one percent, on the tendered amount of work for every week not exceeding ten percent, while his failure to do so shall continue, and in the case of any such failure, the Engineer-in-Charge may rectify or remove and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be, at the risk and expense, in all respects of the contractor.

Clause 15: Work to be open to inspection: Contractor or his responsible Agent to be present

All work, under or in course of execution or executed in pursuance of the contract shall, at all times, be opened to inspection and supervision of the Engineer-in-charge and his superior officers e.g. Superintending Engineer, Additional Chief Engineer, Chief Technical Engineer, Chief Engineer, and his subordinates and any other authorised agency of the Government and the contractor shall, at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer-in-charge or his subordinate and any other authorised agency of Government or committee of retired officers/officers appointed by the State Government for the purpose to visit the works shall have been given to the Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for the purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor himself.

Clause 16: Notice to be given before any work is covered up

The Contractor shall give not less than 7 days notice, in writing, to the Engineer-in-charge or his subordinate-in-Charge of the work, before covering up or otherwise placing beyond the reach of measurement, any work in order that the same may be measured, and correct dimensions thereof, be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Engineer-in- Charge of the work, and if, any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at the Contractor's expense or in default, thereof, no payment or allowance shall be made for such work, or for the materials with which the same was executed.

Clause 17: Contractor liable for damage done and for imperfections

If the Contractor or his work people or servants shall break, deface, injure or destroy any part of a building, in which they may be working or any building, road, fence, enclosure, or cultivated ground contiguous to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work, while in progress, from any cause, whatsoever, or any imperfections

become apparent in it, within a period specified in clause 37, after a certificate, final or otherwise of its completion, shall have been given by the Engineer-in-charge, may cause the same to be made good by other workmen and deduct the expense (of which the certificate of the Engineer-in-charge shall be final) from any sums that may be then, or at any time thereafter, may become due to the Contractor, or from his security deposit, or the proceeds of sale thereof, or of a sufficient portion thereof.

Clause 18: Contractor to supply plant, ladders, scaffolding etc.

The Contractor shall arrange and supply, at his own cost, all material (except such special materials, if any, as may, in accordance with the contract, be supplied from the Engineer-in-charge's stores), plants, tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary works requisite or proper for the proper execution of the work, whether original, altered, or substituted, and whether included in the specification or other documents, forming part of the Contract, or referred to in these conditions, or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer in- Charge, as to any matter as to which, under these conditions, he is entitled to be satisfied or which he is entitled to require, together with carriage thereof, to and from the work. The Contractor shall also arrange and supply, without charge, the requisite number of persons with the means and materials, necessary for the purpose of setting out work and counting, weighting and assisting in the measurement or examination at any time and from time to time of the work, or materials. Failing his so doing, the same may be provided by the Engineer-in-charge, at the expense of the Contractor, and the expenses may be deducted from any money due to the Contractor under the Contract, or from his Security Deposit or the proceeds of sale thereof, or a sufficient portion thereof. The Contractor shall also provide all necessary fencing and lights required to protect the public from accident and shall be bound to bear the expenses of defence of every suit, action or other proceeding at law, that may be brought by any person for injury sustained owing to neglect of the above precautions, and to pay any damages and costs which may be awarded in any such suit, action proceeding to any such person or which may, with the consent of the Contractor, be paid to compromise any claim by any such person.

Clause 19: Work not to be sub-let, Contract may be rescinded and Security Deposit and Performance Forfeited for sub-letting, bribing or if Contractor becomes insolvent.

The Contractor shall not be assigned or sublet without the written approval of the Chief Engineer, and if the contractor shall assign or sublet his contract or attempt so to do, or become insolvent, or commence any insolvency proceedings or mark any composition with his creditors, or attempt so to do, or if any bribe, gratuity, gift, loan, requisite reward or advantage, pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the Contractor or any of his servants or agents to any public officer or person, in the employ of Government, in any way, relating to his office or employment, or if, any such officer or person shall become, in any way, directly or indirectly, interested in the contract, the Chief Engineer may, thereupon, by notice, in writing, rescind the contract and Security Deposit of the Contractor shall, thereupon, stand forfeited and be absolutely at the disposal of Government and the same consequences shall ensue as, if the contract had been rescinded under Clause 3 hereof, and in addition the Contractor shall not be entitled to recover or be paid for any work therefore, actually performed under the Contract.

Clause 20: Sums payable by way of compensation to be considered as reasonable compensation without reference to actual loss

All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Government without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

Clause 21: Changes in constitution of firm

Where the Contractor is a partnership firm, the previous approval, in writing, of the Engineer-in-charge shall be obtained before any change is made in the constitution of the firm. Where the Contractor is an individual or a Hindu undivided family business concern, such approval, as aforesaid, shall likewise be obtained before the Contractor enters into any partnership agreement there under the partnership firm would have the right to carry out the work thereby undertaken by the Contractor. If, previous approval, as aforesaid, is not obtained, the Contract shall be deemed to have been assigned in contravention of Clause 19 hereof, and the same action may be taken, and the same consequences shall ensue, as provided in the said clause 19.

Clause 22: Work to be under direction of Engineer-in-charge

All the works, to be executed under the contract, shall be executed under the direction and subject to the approval, in all respect, of the Engineer-in-charge of the Government of Rajasthan for the time

being, who shall be entitled to direct, at what point or points, and in what manner, they are to be commenced, and from time to time, carried on.

Clause 23: Standing Committee for Settlement of Disputes

If any question, difference or objection, whatsoever shall arise in any way, in connection with or arising out of this instrument, or the meaning of operation of any part thereof, or the rights, duties or liabilities of either party then, save in so far, as the decision of any such matter, as herein before provided for, and been so decided, every such matter constituting a total claim of Rs. 50,000/- or above, whether its decision has been otherwise provided for and whether it has been finally decided accordingly, or whether the Contract should be terminated or has been rightly terminated, and as regards the rights or obligations of the parties, as the result of such termination, shall be referred for decision to the empowered Standing Committee, which would consist of the followings:-

- (i) Administrative Secretary concerned.
- (ii) Finance Secretary or his nominee, not below the rank of Deputy Secretary
- (iii) Law Secretary or his nominee, not below the rank of Joint Legal Remembrancer.
- (iv) Chief Engineer cum Additional Secretary of he concerned department
- (v) Chief Engineer /Additional Chief Engineer concerned (Member-Secretary).

The Engineer-in-charge, on receipt of application along with non-refundable prescribed fee, (the fee would be two percent of the amount in dispute, not exceeding Rs. one Lac) from the Contractor, shall refer the disputes to the committee, within a period of three month from the date of receipt of application.

Procedure and Application for referring cases for settlement by the Standing Committee shall be, as given in Form RPWA 90.

Clause 23A: Contractor to indemnify for infringement of Patent or design

Contractor shall fully indemnify the Governor of Rajasthan against any action, claim or proceeding, relating to infringement or use of any patent or design, or any alleged patent or design, rights, and shall pay any royalties, which may be payable in respect of any article or part thereof, included in the contract, in the event of any claims made under or action brought against Government. In respect of any such matters, as aforesaid, the Contractor shall be, immediately, noticed thereof, and the Contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation, that may arise there from provided that the Contractor shall not be liable to indemnify the Governor of Rajasthan, if the infringement of the patent or design or any alleged patent or design, right is the direct result of an order passed by the Engineer-in-Charge in this behalf.

Clause 24: Imported Store articles to be obtained from Government

The contractor shall obtain from the stores of the Engineer-in-charge, all imported store articles which may be required for the work or any part thereof, or in making up articles required thereof, or in connection therewith, unless he has obtained permission, in writing, from the Engineer-in-charge, to obtain such stores and articles from else-where. The value of such stores and articles, as may be supplied to the Contractor by the Engineer-in-charge, will be debited to the Contractor, in his account, at the rates shown in the schedule attached to the contract, and if they are not entered in the schedule, they will be debited at cost price, which for the purposes of this contract, shall include the cost of carriage and all other expenses, whatsoever, which shall have been incurred in obtaining delivery of the same at the stores aforesaid plus storage charges.

Clause 25: Lump-sums in estimates

When the estimate, on which a tender is made includes lump sums, in respect of parts of the work, the Contractor shall be entitled to payment in respect of the item of work involved, or the part of the work in question at the same rates, as are payable under the contract for such items or if the part of the work in question is not, in the opinion of the Engineer-in-charge, capable of measurement, the Engineer-in-charge may at his discretion pay the lump sum amount entered in the estimate and the certificate in writing of the Engineer-in-charge shall be final and conclusive with regard to any sum or sums payable to him under the provisions of this clause.

Clause 26: Action where no Specification

In case of any Class of work for which there is no such specification as is mentioned in the rule no. 1, such work shall be carried out in accordance with the detailed specification of the department and also in accordance with the instructions and requirement of the Engineer-in-charge.

Clause 27: Definition of work

The expression "works" or "work" where used in these conditions, shall, unless there be something either in subject or context, repugnant to such construction, be constructed and taken to mean the works by or by virtue of the contract contracted to be executed, whether temporary or permanent, and whether original, altered, substituted or additional.

Clause 27A: Definition of Engineer-in-charge

The term "Engineer-in-charge" means the Divisional officer who shall supervise and be in charge of the work and who shall sign the contract on behalf of the Governor.

Clause 28:

It cannot be guaranteed that the work will be started immediately after the tenders have been received. No claims for increase of rate will be entertained, if the orders for starting work are delayed.

Clause 29: Payments at reduced rates on account of items of work not accepted and not completed to be at the discretion of the Engineer-in-charge

The rates for several items of works, estimated to cost more than Rs. 1,000/-, agreed within, will be valid only when the item concerned is accepted as having been completed fully in accordance with the sanctioned specifications. In cases, where the items of work are not accepted, as so completed, the Engineer-in-charge may make payment on account of such items, at such reduced rates, as he may consider reasonable, in the preparation of final or on account bills, and his decision in the matter shall be final and binding.

Clause 29A: Payments at part rates

The rates for several items of works may be paid at part rates provisionally in running bills in proportion to the quantum of items executed at the discretion of Engineer-in-charge. In case of item rates, if the rate quoted for certain items are very high in comparison to the average/overall tendered premium, then the payment at running stages shall not be made more than the average sanctioned premium. The deferred payment, will however be released after successful completion of the work.

Clause 30: Contractor's percentage, whether applied to net or gross amount of bills:

The percentage referred to in the "Tender of works" will be deducted/ added-from/to the gross amount of the bill before deducting the value of any stock issued.

Clause 31: Contractor to adhere to labour laws/regulation

The Contractor shall adhere to the requirements of the Workmen's Compensation Act and Labour Legislation in force from time to time and be responsible for and shall pay any compensation to his workmen which would be payable for injuries under the Workmen's Compensation Act, here-in-after called the said Act. If such compensation is paid by the State as Principal employer under Sub Section (1) of section 12 of the said Act, on behalf of the Contractor, it shall be recoverable by the State from the Contractor under Sub Section (2) of the said section. Such compensation shall be recovered in the manner laid down in clause 1 of the Conditions of Contract.

Clause 32: Withdrawal of work from the Contractor

If the Engineer-in-charge shall at any time and for any reasons, whatever, including inability to maintain prorate progress, think any portion of the work should not be executed or should be withdrawn from the Contractor, he may, by notice in writing to that effect, require the Contractor not to execute the portion of the work specified in the notice, or may withdraw from the Contractor the portion of work, so specified, and the Contractor shall not be entitled to any compensation, by reason of such portion of work having been withdrawn from him. The Engineer-in-charge may supplement the work by engaging another agency to execute such portion of the work at the cost of the original contractor, without prejudice to his rights under clause 2. He shall also be competent to levy compensation for delay in progress. The recovery of excess cost shall be made from next available running bill or any other claim and shall not be deferred.

Clause 33:

The Contract includes clearance, leveling and dressing of the site within a distance of 15 meters of the building on all sides except where the building adjoins another building.

Clause 34: Protect works

The Contractor shall arrange to protect, at his own cost, in an adequate manner, all cut stone work and other work, requiring protection and to maintain such protection, as long as work is in progress. He shall remove and replace this protection, as required by the Engineer-in-Charge, from time to time. Any damage to the work, so protected, no matter how it may be caused, shall be made good by the Contractor free of cost.

All templates, forms, moulds, centering, false works and models, which in the opinion of the Engineer-in-Charge, are necessary for the proper and workman like execution of the work, shall be provided by the Contractor free of cost.

Clause 35: Contractor liable for settlement of claims caused by his delays

If the progress of the work has fallen so much in arrears as to prevent other contractors on the work, from carrying out their part of the work within the stipulated time, he will be liable for the settlement of any claim, put in by any of these contractors for the expenses of keeping their labour unemployed, to the extent considered reasonable by the Engineer-in-Charge.

Clause 36A:

The liability, if any, on account of quarry fees, royalties, Octroi and any other taxes and duties in respect of materials actually consumed on public work, shall be borne by the Contractor.

Clause 36B:

The cost of all water connections, necessary for the execution of work, and the cost of water consumed and hire charges of meters and the cost of electricity consumed in connection with the execution of work, shall be paid by the Contractor, except where otherwise specifically indicated.

Clause 36C: Payment of Sales Tax, and any other Taxes

Royalty or other tax on materials, issued in the process of fulfilling contract, payable to the Government under rules in force, will be paid by the Contractor himself.

Clause 36D:

In respect of goods and materials procured by the Contractor, for use in works under the contract, sales tax will be paid by the Contractor himself. But in respect of all such goods manufactured and supplied by the Contractor and works executed under the contract, the responsibility of payment of sales tax would be that of the Engineer-in-charge.

Clause 37: Refund of Security Deposit

The Security Deposit will be refunded after the expiry of the period, as prescribed below: -

- (a) In case of contracts relating to hiring of trucks and other T&P, transportation including loading, unloading of materials, the amount of **Security Deposit** is refundable along with the final bill.
- (b) **Supplies of material:** As per provisions of G.F. & A.R.
- (c) **Ordinary repairs:** 3 months after completion of the work provided the final bill has been paid.
- (d) **Original works/special repairs/renewal works:** Six months after completion except in case of works, such as building works, bridge works, cross drainage works, Dams, Canals, water supply and sewerage schemes (except where provided otherwise in any specified case) etc., the Security Deposit will be refunded 6 months after completion, or expiry of one full rainy season or after expiry of defect liability period, whichever is later, provided the final bill has been paid.
- (e) In case of PWD original works/ special repairs works costing more than Rs10.00 lacs, partial amount of security deposit will be refunded during the defect liability period @ 10% of PSD amount after lapse of five year of completion and thereafter 10% of original amount of PSD at the end of each subsequent year. The remaining amount of PSD be refunded after the expiry of defect liability period.

Clause 38: Fair Wage Clause

- (a) The Contractor shall pay not less than fair wages/minimum wages to labourers engaged by him on the work as revised from time to time by the Government, but the Government shall not be liable to pay anything extra for it except as stipulated in price escalation clause (clause 45) of the agreement.

Explanation: "Fair Wage" means minimum wages for time or piece work, fixed or revised, by the State Government under Minimum Wages Act, 1948.

- (b) The Contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wages to labourers indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work as if the labourers have been immediately or directly employed by him.
- (c) In respect of all labourers immediately or directly employed on the work, for the purpose of the Contractor's part of this agreement, the Contractor shall comply with or cause to be complied with the Public Works Department Contract's Labour Regulations made, or that may be made by the Government, from time to time, in regard to payment of wages, wages period, deductions from wages, recovery of wages not paid, and unauthorized deductions, maintenance of wages register, wage card, publication or scale of wages and other terms of employment, inspection and submission of periodical returns and other matters of a like nature.
- (d) The Engineer-in-charge shall have right to deduct from the money due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers, by reasons of non-fulfillment of the conditions of the contract, for the benefit of the worker or workers, non-payment of wages or of deductions made there from, which are not justified by the terms of the contract, or as a result of non-observance of the aforesaid regulations.

- (e) Vis-a-Vis the Government of Rajasthan, the Contractor shall be primarily liable for all payments to be made and for the observance of the regulations aforesaid, without prejudice to his right to claim indemnity from his sub-contractors.
- (f) The regulations, aforesaid, shall be deemed to be part of this contract and any breach, thereof, shall be deemed to be breach of the Contract.

Clause 39: Contractor to engage technical staff

The Contractor shall engage the technical staff, as follows, on the contract works:

- (a) For works costing Rs. 100 Lac and above – One Graduate Engineer
- (b) For works costing between Rs. 50 Lac to Rs. 100 Lac - One qualified diploma holder having experience of not less than 3 years.
- (c) For works costing between Rs. 15 Lac and Rs. 50 Lac - One qualified diploma holder

The technical staff should be available at site, whenever required by Engineer-in-charge to take instructions.

Clause 39 A:

The Contractor shall comply with the provisions of the Apprenticeship Act, 1961, and the Rules and Orders issued, there under, from time to time. If he fails to do so, his failure will be a breach of contract. The Contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

Clause 40: Safety code

The Contractor shall follow the safety code(s) of the department and as specified in special conditions of contract.

Clause 41: Near Relatives barred from tendering

The Contractor shall not be permitted to tender for works in Circle, in which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of the Superintending Engineer and Assistant Engineer (both inclusive). He shall also intimate the names of persons, who are working with him in any capacity, or are subsequently employed by him and who are near relatives to any gazetted officer in the Organization/Department. Any breach of this condition by the Contractor would render him liable to be removed from the approved list of contractors of the Department. If such facts is noticed (a) before sanction of tender, his offer shall be declared invalid and earnest money shall be forfeited, (b) after sanction of the tender then the tender sanctioning authority may at his discretion forfeit his earnest money, security deposit and enlistment deposit and work/remaining work may allot to any registered contractor on the same rates as per rules.

Note: By the term "near relative" is meant wife, husband, parents, and grand-parents, children and grand children, brothers and sisters, uncles and cousins and their corresponding in-laws.

Clause 42: Retired Gazetted Officers barred for 2 years

No Engineer of Gazetted rank or other Gazetted officer, employed in Engineering or Administrative duties in an Engineering Department of the Government of Rajasthan, is allowed to work as a Contractor for a period of 2 years of his retirement from Government service without the previous permission of Government of Rajasthan. This contract is liable to be cancelled, if either the Contractor or any of his employees is found, at any time, to be such a person, who had not obtained the permission of Government, as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

Clause 43: Quality Control

The Government shall have right to exercise proper Quality Control measures. The Contractor shall provide all assistance to conduct such tests.

Clause 43 A:

The work (whether fully constructed or not) and all materials, machines, tools and plant, scaffolding, temporary buildings and other things connected therewith, shall be at the risk of the contractor until the work has been delivered to the Engineer-in-charge, and a certificate from him, to the effect, obtained.

Clause 44: Death of Contractor

Without prejudice to any of the rights or remedies under the contractor, if the Contractor dies the legal heirs of the Contractor or the Chief Engineer or duly authorised Engineer shall have the option of terminating the contract without any compensation.

Clause 45: Deleted

Clause 46: Force-Majeure

Neither party shall be liable to each other, for any loss or damage, occasioned by or arising out of acts of God such as unprecedented floods, volcanic eruptions, earthquake or other invasion of nature and other acts.

Clause 47: General Discrepancies and Errors

In case of percentage rate tenders, if there is any typographical or clerical error in the rates shown by Department in the "G" Schedule, the rates as given in the Basic Schedule of Rates of the Department for the area shall be taken as correct.

Clause 48: Post payment Audit & Technical Examination

The Government shall have right to cause an audit and technical examination of the works, and the final bills of the contractor, including all supporting vouchers, abstracts, etc., to be made within 2 years after payment of the final bill, and if, as a result of such audit and technical examination, any sum is found to have been over paid in respect of any work done by the Contractor under the contract, or any work claimed by him to have been done by him under the Contract and found not to have been executed or executed below specifications, the Contractor shall be liable to refund the amount of over payment, and it shall be lawful for Department to recover the same from him in the manner prescribed in Clause 50 or in any other manner legally permissible, and if it is found that the Contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under-payment shall be duly paid by the Government to the Contractor.

Clause 48A: Pre Check or Post Check of Bills

The Government shall have right to provide a system of pre-check of Contractor's bill by a specified Organization, and payment by an Engineer or an Accounts Officer/sr. Accounts Officer/ chief Accounts Officer/ financial Advisor, as the Government may in its absolute discretion prescribe. Any over-payments excess payments detected, as a result of such pre-check or post-check of Contractor's bills, can be recovered from the Contractor's bills, in the manner, herein before provided, and the Contractor will refund such over/excess payments.

Clause 48B: Check Measurements

The department reserves to itself, the right to prescribe a scale of check measurement of work, in general, or specific scale for specific works, or by other special orders (about which the decision of the department shall be final). Checking of measurement by superior officer shall supersede measurements by the subordinate officer, and the former will become the basis of the payment. Any over/excess payments detected, as a result of such check measurement or otherwise at any stage up to the date of completion and the defect removal period specified elsewhere in this contract, shall be recoverable from the Contractor, as any other dues payable to the Government.

Clause 49: Dismantled materials

The Contractor, in course of the work, should understand that all materials e.g. stone, bricks, steel and other materials obtainable in the work by dismantling etc. will be considered as the property of the Government and will be disposed off to the best advantage of the Government, as per directions, of the Engineer-in-charge.

Clause 50: Recovery from Contractors

Whenever any claim against the Contractor for the payment of a sum of money arises out of or under the contract, the Department shall be entitled to recover such sum by appropriating, in part or whole of the Security Deposit, Security Deposit at the time of enlistment of the Contractor. In the event of the security being insufficient, or if no security has been taken, then the balance or the total sum recoverable, as the case may be, shall be deducted from any sum, then due or which at any time, thereafter, may become due to the Contractor, under this or any other contract with the Governor of Rajasthan. Should this sum be not sufficient to cover the full amount recoverable, the Contractor shall pay to the Department on demand the balance remaining dues.

The department shall, further, have the right to effect such recoveries under Public Demand Recovery Act.

Clause 51: Jurisdiction of Court

In the event of any dispute arising between the parties hereto, in respect of any of the matters comprised in this agreement, the same shall be settled by a competent Court having jurisdiction over the place, where agreement is executed and by no other court, after completion of proceedings under Clause 23 of this Contract.

Schedule of Materials to be supplied by the Department

(Referred to in clause 10)

S. No.	Particulars	Qty meters	Rates		Place of Delivery
			Unit	Rupees	
1.					
2	- NIL -				

Schedule of machinery / T&P to be supplied by the department

The following machinery/ T&P shall be supplied by the department, if available, to the contractor, on hire as per "Rules of the department for supply for machinery and T&P to the contractor on hire" (Referred in clause 10 C)

S. No.	Item	Rate	Place of delivery and Return
	- NIL -		

SPECIAL CONDITIONS OF CONTRACT (PART 'A')

1- DEFINITIONS

"Department" means the Public Health Engineering department of the Government of Rajasthan. It is the executing agency of the project. **"Executive Engineer"** means Executive Engineer, PHED, (Rajasthan)

"Materials" means things of all kinds (other than equipment) intended to form or forming part of the permanent works, including the supply of materials to be supplied by the contractor under the contract.

"Equipment" means the apparatus, machinery, articles and things of all kinds to be provided under the contract or intended to form or forming part of the permanent works.

"Contractors documents" means the calculations, drawings, manuals, models, other soft ware, drawings, manuals, models and other documents of the technical nature supplied by the contractor under the contract, as described in sub clause 9.2 (contractors documents)

"Specifications" means the specification according to which the works are to be executed as referred to in the agreement documents and any other specifications agreed thereon.

"Contract rate(s)" means the item rate quoted in the tender/or for which acceptance is given later by the tenderer.

"Contract Period" Means the duration given in clause 3 of instructions of Tenderer irrespective of the number of installations/ supplies given in the work order with reference to those given in the scope of work defined in Volume II of tender document or the proportionate increased time for any extended scope of work as per the terms and conditions of contract.

"Defect Liability period" It shall be up to seven years from the date of issue of physical completion certificate by EIC as per clause 9.2 of SCC Part 'A'

2- COMMUNICATION BETWEEN THE PHED AND THE CONTRACTOR

2.1 Addresses for notices

Notices related with legal and contractual issues shall be addressed to the order placing authority at the designated address. Notices for technical issues shall be addressed to the respective Engineer(s) in charge with copy to respective Additional Chief Engineer PHED Rajasthan/ Superintending Engineer.

Any notice given by the contractor to the Executive Engineer or the Engineer in charge under the terms of the contract shall be sent by post, courier, cable, telex, or fax to or left at the office of the Execution Engineer or the Engineer-in-charge only or the addresses as shall be indicated for this purpose only.

All certificates, notices or instructions to be given to the contractor by the Executive Engineer or the Engineer in charge under the terms of the contract shall be sent by post, courier, cable, telex, or fax to or left at the contractor's principal address or the addresses as the contractor shall indicate for this purpose only.

It shall be essential for the contractor to obtain a receipt of authorized officer otherwise the notice shall be treated as "null and void".

3- CONTRACT

3.1 Type of contract

The works described in this tender document is considered to **be a rate contract**. The contractor(s) shall be responsible for the design, supply-installation-testing & commissioning of SPV panel along with pumping system and de-fluoridation plants at given site within the region and also carrying out IEC activities in each village(s)/habitations where installations are done, monitoring reporting-repair and testing of all installations done/supplied made by them during the contract period including defect liability period as defined in these tender document.

3.2 Priority of contract

The documents forming part of the agreement are to be taken as mutually explanatory documents of one another. In case of discrepancies they shall be explained and adjusted by the Engineer in charge. The priority of the contract documents shall be as follows.

- I- Letter of award
- II- Special conditions of contract part A & part B
- III- Instructions to Bidders
- IV- General conditions of contract
- V- Scope of work and technical specifications
- VI- Drawings
- VII- Schedule of prices

The addenda issued in the tender document in relevant above sections shall be read with the respective sections while giving priority.

3.3 Agreement

Successful tenderers shall execute an agreement in the prescribed form on non judicial stamp paper of **Rs. 5000 or as revised by the government** on the date of agreement, with the any other officer authorized by Chief Engineer, within a period of 10 days of the date of issue of rate contract/letter of acceptance/ work order. The expenses of completing and stamping the agreement shall be paid by contractor. However, where the delay in execution of Agreement is on bonafied grounds, Chief Engineer can condone such delay. The firm shall submit following documents with tender/agreement.

- (i) All pages of the rate contract/letter of acceptance copy including amendment and terms & conditions of the NIT duly signed.
- (ii) Notarized copy of Article of Associations and Memorandum/ Partnership deed (if not provided with tender).
- (iii) In case of partnership firm, notarized copy of registration certificate issue by registrar of firms.
- (iv) Notarized copy of power of attorney to authorized signatory to execute agreement and copy of resolution of directors of board (in case of limited company). Power of Attorney should be signed by all partners in case of partnership firm (if not provided with tender).
- (v) Copy of valid S.T. clearance certificate attested by notary public valid at the time of opening of first envelope (if not provided with tender).
- (vi) Copies of list of fixed assets and balance sheet duly notarized (if not provided with tender) for the latest preceding financial year for which returns have been submitted.

4. AUTHORITIES

4.1 Engineer in charge, representatives

The project shall be implemented by the divisional officer or any other authority given the charge of the work as per the orders of Government. Wherever the words Engineer-in charge are used in this document shall mean the divisional officer or the authority given the charge of the work as per Government orders, which shall appoint Engineer(s) in charge as representative who shall carry out such duties and exercise such authority as may be delegated to them.

The Government may also authorize consultants or institutions as Assistants. Such Assistant shall have no authority to issue any instructions to the contractor in so far as they are necessary and to secure their acceptance of materials, Equipment and workmanship as being in accordance with the contract. Any instruction given by them for those purposes shall be deemed to have been given by the Engineer in charge as the Engineer's representative. However, such decisions shall be submitted for review and approval of Engineer-in-charge.

5- PERIODIC REPORTS AND MEETINGS

5.1 Web based Work progress Monitoring

Regular progress reports shall be prepared by the contractor and submitted to the department. The bidders shall develop web based application for reporting of work progress incorporating all the relevant information, which shall be updated regularly and used for apprising progress from time to time to the department, such as location of site finalized (with GPS coordinates), Bore well availability, civil work completed, structure erected, DFU installed, installation and commissioning of total water pumping system etc. along with photographs of key mile stones.

Reporting shall continue till the contractor has completed all works, which is known to be outstanding at the completion date as stated in clause 9.2 of these conditions.

Besides reporting on web portal, the contractor may be required to furnish its work plan to include the following but shall not be limited to:

- ✓ Proposed locations where the installations are proposed in next month;
- ✓ Manufacture location, percentage progress, and the actual or expected dates of commencement of manufacturing;
- ✓ Inspections, tests and shipment reports;
- ✓ Installation Reports for the work done in last month;
- ✓ Copies of quality assurance documents, test results and certificates of materials;
- ✓ Comparisons of actual and planned progress, with the details of any events or circumstances which may jeopardize the completion in accordance with the contract, and the measures being (or to be) adopted to overcome delays.
- ✓ Details including relevant photographs/recording etc of IEC activities carried out during the relevant period.

The reporting format shall be developed by the contractor in consultation with the Engineer-in-charge (and consultants appointed if any) within 10 days of commencement during the course of execution..

Regular periodic reports may also be required physically during the course of operation & maintenance. In consultation with Executive Engineer, the report format may include following information, as required:

- ✓ Number of installations not visited, with reasons;
- ✓ Number of installations in which field test results was found un-satisfactory and where replacement of media is done.
- ✓ Number of installation in which repairs of civil work was done.
- ✓ Number of complaints received during the month.
- ✓ Number of complaints not attended & rectified in 48 hours and reasons thereto.
- ✓ Other issues related to payment, supply of stores, etc., deemed proper by the contractor to bring to the notice of Engineer in charge
- ✓ Consolidated reports for field tests done during patrolling, test for source water sample done if any, report of replacement of media etc., done in the last month

5.2 Meetings

Meetings shall be held in the office of Executive Engineer or at other places as mutually fixed in advance. The proposed agenda for the meetings shall be exchanged at least one week in advance. It is required that a decision- maker of the contractor is present at the meetings so that binding decisions can be taken about outstanding issues. Generally, the following issues shall be discussed.

- a. Progress of the work, difficulties
- b. Revision of time schedule
- c. Payment issues
- d. Disputes
- e. Claims

6. THE CONTRACTOR

6.1 Contractor's general obligations

The contractor shall be responsible to design, supply, install, test and commission SPV panels, pumping system and de-fluoridation plants, disposal of waste water to suitable waste water disposal system with appropriate arrangements as per the scope of work given in Volume II of the tender document, so as to provide potable water of "OUTPUT PARAMETERS" at the outlet(s) of all installed plants under the contract. The "OUTPUT PARAMETERS" are defined in Special Condition of contract Part "B" of this volume-I.

After the successful commissioning of the plant, the contractor is required to take-up the O&M of the plant as per the scope of work given in Volume-II of the tender document or during the extended period. The work includes IEC activities, monitoring, testing, repairs or replacement, reporting and other activities as detailed in scope of work and as written in the tender document. The contractor is also required to maintain the record of performance and activities

for the installed plants both in paper and electronic formats and provide them to department on paper as well as approved electronic media.

Finally the contractor is required to provide an acceptable system to provide good hygienic conditions around the installed plant and to maintain this system during seven year comprehensive maintenance.

The O&M period for a plant shall start from the date of successful installation of plant and shall continue for seven years and for any extended period, as defined in ITT of this Volume-I. The plants are proposed to be installed in village as per the list. The final location of installation within the village/habitation shall be given by the Engineer-in-charge or his authorized representative, during the contract. The village-wise chemical analysis details as per survey conducted by Department in recent past shall also be provided along with the work orders, but the department owns no responsibility of these data as due to various factors, at the time of execution the chemical analysis of the source finally selected may considerably vary from those figures given in the Annexure.

The contractor shall design a system in consideration to the quality of water in the selected source of installation and general design consideration for the plant given in volume II of the tender document. The design shall be got approved by the Engineer-in-charge, but such approval by the department shall not relieve the contractor from his responsibility regarding performance of the plant as per the parameters given in the tender document. The contractor so as to achieve the objective of providing water of OUTPUT PARAMETER may have to propose additional equipment/material/systems. Unless specified otherwise, no additional payment shall be made on the account of providing the additional equipment/material/system, and it shall be deemed that the cost of such eventuality has been accounted for in the lump sum item rate offered in tenders.

In addition to the above, the contractor is also required to confirm the availability of the material required for the contract in the time schedule given herein after, so as to complete the job within the prescribed time. No time extension shall be provided on this account. If required under such circumstances, the contract after prior approval of department shall be allow to use superior type of material so as to complete the job within the prescribed time. No additional payments shall be made on account of use superior quality material, on this account.

The contractor shall provide the equipment and contractor's documents specified in the contract, and all contractor's personnel, goods, consumables and other things and services, whether of a temporarily or permanent nature, required in and for this execution, completion and remedying of defects during the defect liability period.

The works shall include any work, which is necessary to satisfy the department's requirements, or is implied by the contract, and all works, which (although not mentioned in the contract) are necessary for the completion, or safe and proper operation and maintenance of the works.

The contractor shall provide all facilities required for quality control tests, tests for material, equipment and equipment(s), and/or all other facilities otherwise referred in the conditions of contract(s) and/or otherwise necessary to complete the works with due supervision of Engineer-in-charge. The testing of material, quality control tests, etc. may be got done through recognized labs after approval of Engineer-in-charge.

The contractor shall, whenever required by the department, submit details of the arrangements and methods, which the contractor proposes to adopt for execution of the works, No significant alteration to the arrangements and methods shall be made without having previously been notified to the department.

6.2 Contractor's representative

The contractor shall appoint the Contractor's representative in consultation with the department and shall give them all authority necessary to act on the contractor's behalf under the contract. He shall similarly submit the name and particulars of other persons appointed for the work.

The contractor shall not, without the prior consent of the department, revoke the appointment of the Contractor's representative or appoint a replacement.

The Contractor's representative shall, on behalf of the contractor, receive instructions. The Contractor's representative may delegate any powers, functions, and authority to any person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the department has received prior notice signed by the contractor's representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

6.3 Setting out

The contractor shall set out the works in relation to original points, lines and levels of reference specified in the contract. The contractor shall be responsible for the correct positioning of all parts of the works, and shall rectify any error in the positions, levels, the dimensions or alignment of the works.

6.4 The Safety Procedures

The contractor shall:

- i. Comply with all applicable safety regulations,
- ii. Take care for the safety of all person's entitled to be on the site,
- iii. Choose reasonable efforts to keep the site and work clear of unnecessary obstruction so as to avoid danger to these persons,
- iv. Provide any temporary works (including road ways, foot ways, guards and fences) which may be necessary, because of the execution of works, for the use and protection of the public and of owners and occupy a server adjacent land.

6.5 Quality Assurance

In addition to the provisions of clause 43 of general conditions of contract, the contractor shall institute a quality assurance system to demonstrate compliance with requirements of the contract. The system shall be in accordance with the details stated in the contract and the quality assurance program will be got approved from the competent authority. The departments shall be entitled to audit any aspect of the system.

Details of all producers, if adopted other than those laid down in the tender document, and compliance documents shall be submitted to the departments for information before each design and revocation stage is commenced. When any document of a typical nature is submitted to the department, evidence of the prior approval by the contractor himself shall be apparent on the document itself.

Compliance with the quality assurance system shall not relieve the contractor of any of his duties, obligations or responsibilities under the contract.

6.6 Site Data

The chemical analysis of some of the source within the villages as conducted by the department shall be given in the work order. The department owns no responsibility of the source water quality of the finally selected sites for the installation of the plants.

The contractor shall be responsible for verifying and interpreting all site data. The department shall have no responsibility for accuracy, sufficiency or completeness of such data.

6.7 Un-Foreseeable Difficulties

- (a) The contractor shall be deemed to have obtained all necessary information as to risk, contingencies and other circumstances that may influence or affect the works;
- (b) By signing the contract, the contractor accepts the total responsibility for having sustained all difficulties and costs of successfully completing the work: and
- (c) The contract rates shall not be adjusted to take account of any unforeseen difficulties or costs.

- (d) The compensation for delay shall be applicable as per clause 2 of GCC. The delay in making available raw water bore well after allotment of site shall be considered as delay on part of department.

6.8 Rights Of Way And Facilities

The contractor shall bear all costs and charges for special and/or temporary rights of way, which he may require, including those for access to the site. The contractor shall also obtain, at risk and costs, any additional facilities outside the side which he may require further purposes of the works.

6.9 Avoidance Of Interference

The contractor shall not interfere unnecessarily or improperly with:

- (a) The convenience of the public, or
- (b) In the access to and use and occupation of all roads and other land, irrespective of whether they are public or in the possessor, of the department or others.

The contractor shall indemnify and hold the department harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

6.10 Security Of The Site

Unless otherwise stated in particular conditions:

- a. The contractor shall be responsible for keeping unauthorized persons off the site offices, campus etc. within the scope of work and
- b. Authorized person's shall be limited to the contractor personnel and the department's personnel; and to any other personnel notified to the contractor, by (or on behalf of) the department, and
- c. Providing adequate manpower for the security of the material brought to the site for which payment has been made to the contractor.

6.11 Contractor's Operations On-Site

The contractor shall confine his operations to the site, and to any additional areas which may be obtained by the contractor and agreed by the department as working areas. The contractor shall take all necessary precautions to keep contractor's equipment and contractor personnel within the site and these additional areas, and to keep them off adjacent land.

During the execution of the works, the contractor shall keep the site free from all unnecessary obstruction, and shall store or dispose of any contractor's equipment or surplus materials. The contractor shall clear away and remove from the site any wreckage, rubbish and temporary works which are no the longer required.

7. ORGANIZATION ON THE SITE

7.1 Contractor's Office

The contractor shall have an office (s) near the site (s), and shall during office hours on all working days have a clerk or some other authorized persons always present at such office, upon whom a notice may be served. Service of any notice left with such clerk or authorized persons shall be deemed good, served upon the contractor.

7.2 CONTRACTOR'S STAFF

The contractor shall employ for the execution of work only such persons as are skilled and experienced in all activities required of the works, from reconnaissance, design, manufacturing, execution and testing to commissioning. The Engineer in charge shall be at liberty to object to and require the contractor to remove from the work any person who in the opinion of the Engineer in charge misconducts himself or is incompetent or negligent in the proper performance of his duties, such persons shall not again be employed without permission of the Engineer in charge.

The contractor shall employ labour in sufficient number to maintain the required rate of progress and quality to ensure workmanship of the degrees specified in the contract.

8 Supply of Material

No material shall be supplied by the department.

8.1 Test for water samples

All cost to be incurred for testing of Raw water/Treated Water shall be borne by the contractor. However the cost incurred in testing of samples collected by the department at its own instance and tested in department laboratories shall be the responsibility of the department.

9 Completion Period

9.1 Time for Completion

The whole work, including design, mobilization, manufacturing, transportation, installation & testing, commissioning & trial runs, and demobilization of all Solar Energy based bore wells with de-fluoridation unit and 5000 litre storage tank on galvanized M.S. fabricated structure and required accessories as given in the work order and as detailed in scope of work has to be completed and successfully commissioned within a period of 12 month from the date of work order issued by the department calculated from the commencement date, which is 10 days after the written order to commence the work. However, a time period of minimum one month shall be admissible for completion of individual plant after date of handing over of site or date of raw water source availability, whichever is later.

The O&M period shall commence after the commissioning of the individual unit as mentioned below or after obtaining the individual physical completion certificate as defined below in clause 9.2, whichever is later.

The contractor shall submit a detailed activity-wise time schedule for all installations & other work to be completed under the contract. This schedule shall be periodically updated during the contract. However, this time schedule shall not bear any implications on the provisions of clause 2 of General Conditions of Contract.

9.2 Physical completion

The total work shall be treated as physically completed when all the installation defined in the work order is successfully tested and commissioned and total physical completion certificated is obtained as detailed herein after from Engineer-in-charge.

After successful commissioning of each Solar Energy based bore wells with de-fluoridation unit individual physical completion certificate shall be obtained. To obtain the individual physical completion certificate the contractor has to complete all installation works as given in the scope of work, perform the required test for treated water quality and submit the results to the respective Engineer-in-charge to issue individual physical completion certificate.

After reporting the physical completion of installation(s) to respective Engineer-in-charge and submission of test result(s) for output quality of water, the Engineer-in-charge shall first instruct his authorized representative to collect sample of treated water and shall get the analysis of the sample done from the department/independent labs. After receiving the test results of the treated water sample and having been satisfied regarding the quality of output water, the Engineer-in-charge or his authorized representative shall carry out the commissioning test as described in volume II so as to confirm that the installation and other requirement as per tender conditions are fulfilled, having been satisfied the Engineer in charge, shall issue the individual physical completion certificate for the respective site. Otherwise he shall issue a notice to the contractor giving description of works to be completed.

Certificate for Total physical completion shall be issued when individual physical completion certificate of all the installations are obtained and shall be submitted to and after certificates for completion of all other works described in work order and which are in accordance to the provisions of scope of work are obtained from respective field officers.

With the issuance of the individual physical completion certificate it will be the duty of the contractor to do all activities of the plant as defined in the scope of work.

10. REFUND OF SECURITY DEPOSIT

The security deposit for the work shall be refunded after the expiry of O&M period of seven years for all the installation made by the firm as successfully completed and certificates to this effect are obtained from the field officers as per clause 9.2. In case extension of O&M

period is opted by the department after the expiry of defect liability period, as per the provisions of contract, the refund of the security deposit shall be made after retention of 10% amount of cost of the extended period for which department has given notice regarding willingness of department for carrying out by the contractor. This amount of 10% shall be retained by the department as SD for the work notified to the contractor and shall be refunded in accordance to the provisions given in special conditions of contract Part 'B' of this tender document.

11. OPERATION AND MAINTENANCE MANUALS

Prior to the commencement of the tests on completion, the contractor shall supply to the department provisional operation & maintenance manuals in sufficient detail as specified in Vol II 'Scope of work & Technical Specifications', of the tender document.

The work shall not be considered to be completed for the purposes of completion of works until the department has received final operation & maintenance manuals in such detail.

12. PROGRSS OF WORK

All components of work shall ensure a logical sequence of supply, installation, testing, and commissioning. If any supply of a material is made, not in conformity to the logical sequencing of the work component, no payments will be entitled against such supplies and installations.

There has to be a continuous chain of work to ensure early installation & commissioning of plants for which the materials have been received.

If however, the progress of the work is hampered unavoidably, due to reasons beyond the control of the contractor, payment against supply shall be admissible against submission of appropriate Banks Guarantee of any Scheduled bank. However such circumstances shall be subjected to verification of the reasons, in the progress of the work, not being attributable to the contractor by an officer not below the rank of Superintending Engineer and authorized by the Additional Chief Engineer PHED.

It will be the responsibility of contractor to maintain simultaneous pro-rata progress of work.

13. DOCUMENTS REQUIRED FOR PAYMENT

The contractor shall submit the following documents in duplicate along with the invoice/ bill.

- ✓ Invoice including details of equipment installed or work carried out, value of work carried out and amount claimed.
- ✓ Inspection reports/ test reports of Raw and Product water/ reports certifying completion of activity with acceptable results as per PHED or any other agency representing PHED.
- ✓ Any other such details/documents as may be reasonably specified by the Engineer-in-charge from time to time during execution of the contract.
- ✓ Colour photographs of the work executed during the period for which the invoice has been raised.

14. PAYMENT TERMS

The terms of payment shall be as detailed in clause 19. The installed plants shall be inspected by the Engineer-in-charge for approval of installations. Having obtained acceptable parameters of the treated water as defined in the tender document and being satisfied with the installation done, the department shall release the payments for complete installation in a mode described in clause 19.

The payment during O&M period shall be made on yearly basis. The contractor shall, however, be required to submit monthly bills for claiming payments for O&M for verification Engineering-in charge. The bills for first 11 months shall be of zero value. The verification of monthly bills shall be essential for claiming O&M payment at the end of every year.

15. DEDUCTIONS

15.1 Statutory Deductions

The department is required to make statutory deduction at source from all running bills and final bill as in force through relevant statutes in force from time to time at the rates prescribed therein.

15.2 Other deductions

Any other deductions to recover any reduction in rates or any other departments claims occurred as per the contract or in respect to any other liabilities arising, shall be deducted from subsequent interim payments or final payments or from the securities with the department.

16. TAXES AND DUTIES

The rates quoted must be for delivery anywhere in region of PHED including G.S.T., Entry Tax (if any), packing, forwarding, loading, transportation, insurance, unloading, stacking etc. The provision for excise duty shall be as mentioned in ITT clause 12.5. In case the rates are mentioned anywhere in the tender offer, apart from as prescribed creating any ambiguity, then the lower of the two rates will be considered and tender will be bound to carry out work at those lower rates, if approved by the department.

The prices quoted shall remain fixed and firm. If a tenderer reduces his prices sum to after opening of tender or negotiated bid (if any) his offer shall stand cancelled automatically, his earnest money shall be forfeited and action for debarring him from further business with the department shall be taken.

No material shall be arranged by the department for manufacturing of tendered items.

No foreign exchange will be provided by the department.

All taxes, duties, levies applicable by any act of the government of India and/or State of Rajasthan and/or the local bodies on the company or its personnel, during the period of work in progress shall be of the contractor.

16.1 GST

GST should be inclusive in the quoted prices as mentioned in rates. Increase/decrease in GST shall be on contractor's account. Prescribed declaration for this purpose shall be provided by the consignee(s).

16.2 Entry Tax

In case Rajasthan State Tax on entry of goods into local area is applicable, the rates shall be quoted inclusive of entry tax, increase/decrease in Entry tax shall be on contractor's account.

17. PERFORMANCE GUARANTEE OF EQUIPMENT

The bidder shall guarantee that the performance of each installed Solar Energy based bore wells shall comply with the requirements given in the specification and that the units installed will operate satisfactory at the time of commissioning and thereafter during period and also at that time of handing over, with the desired performance level.

18. DEPARTMENT'S RIGHT TO RECTIFY

The Department retains the right, at the cost of Contractor, to perform any rectification/replacement / remediation of this material or work obligations on default of the Contractor, at contractors cost.

19. PAYMENT SCHEDULE FOR SUPPLY, ERECTION, COMMISSIONING AND O&M

The payment for individual complete installation of Solar Energy based Bore well pumping system with De-fluoridation unit shall be made as under

1.	On providing, installation and commissioning of complete Solar energy based water pumping system with De-fluoridation unit as per scope of work	65%
2.	On successful operation & maintenance of plant	
	i) After end of 1 st year	5%
	ii) After end of 2 nd year	5%
	iii) After end of 3 rd year	5%
	iv) After end of 4 th year	5%
	v) After end of 5 th year	5%
	vi) After end of 6 th year	5%

vii) After end of 7 th year	5%
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20. FORFEITURE OF SECURITY DEPOSIT

Security amount in full or part may be forfeited in the following cases:-

- (a) When any terms and conditions of the contract are breached.
- (b) When the tenderer fails to make complete work/supply satisfactorily.

Irrespective of actual security deposit of the firm, the forfeiture of the security deposit shall be considered @ 10%.

Notice of reasonable time will be given in case of forfeiture of security deposit. The decision of the work order placing authority in this regard shall be final.

21. RECOVERIES

Recoveries of liquidated damages, short supplies, breakage, rejected articles shall ordinary be made from bills. Such amount may also be recovered from any other untied dues & security deposits available with department. In case recovery is not possible, recourse will be taken under Rajasthan PDR Act or any other law in force.

21.1 Any recovery on account of L.D. charges/risk & cost charges in respect of previous rate contracts/ supply orders placed on them by the department, can also be recovered from any sum accrued against this tender after accounting for untied sum or due payment sum lying with department against previous rate contracts/supply orders. Firm shall submit details of pending amount lying with department but decision of the department regarding authenticity of sum payable shall be final.

22.0 REJECTION

22.1 Articles not approved shall be rejected by the department and will have to be replaced by the firm at its own cost within the time limit fixed by the department.

22.2 If, however, due to exigencies of Government work/ interest such replacement either in whole or in part is not considered feasible, the prices of such articles will be reduced suitably. In cases where material has been used & some defects are noticed then the firm can be allowed to rectify/ replace defects in portion of such defective material. The prices fixed by Additional Chief Engineer PHED shall be final.

22.3 The rejected materials must be removed by the firm, within 15 days of the date of intimation of rejection. The official concerned will take reasonable care of such material but in no case shall be responsible for any loss, damage, shortage that may occur while it is in their premises.

22.4 No payment shall be made for defective materials. However, if the payment has been made, then defective material shall be allowed to be removed only after the firm replaces material as per specifications, duly inspected. If the payment has not been made, the firm may be allowed to remove the material, prior replacement Joint inspection of defective material may be carried out as required by the department.

22.5 In case firm wants to take back material to their works for rectification then firm has to deposit payment received against such defective supplies. In case firm has not received any payment then material be returned to firm for rectification, if the firm has deposited required security deposit as per contract.

23. CHANGE IN CONSTITUTION OF FIRM

- (a) Any change in the constitution of the firm/company etc. shall be notified forthwith by the firm in writing to the department within a period of 30 days from the date of its occurrence & such changes shall not relive any new member or the member of the firm at the time of tender from any liability under the contract.
- (b) No new partner/partners shall be accepted in the firm/company by the tenderer in respect of the contract unless he/they agree(s) to abide by all its terms and conditions and deposit with the department on a written agreement to this effect. The firm's receipt of acknowledgement or that of any partner(s) subsequently accepted as above shall bind all of them and will be sufficient to discharge any liability under this contract

24. REPUDIATION OF CONTRACT

The contract for the installation & can be repudiated at any time by the department after giving an opportunity to the contractor of being heard, if the work is not completed or maintained to its satisfaction. The reasons for repudiation shall be recorded by the department.

25. LEGAL PROCEEDINGS

All Legal proceedings, if necessary arises to institute may by any of the parties (Government or contractor) shall have to be lodged in Court situated in Rajasthan and not elsewhere.

26. SUBLETTING OF CONTRACT

The successful firm shall not assign, sublet or transfer the contract on any part thereof to any party. In the event of tenderer contravening this condition, the department shall be entitled to place the contract elsewhere on the firm's cost and risk and the firm shall be liable for any loss or damage which the department may sustain as a consequence of such action.

27. FAILURE OR BREACH OF CONTRACT

In case of breach of the contract, full/part of Performance guarantee & Contract Performance Guarantee (as deemed fit) can be forfeited and the action against defaulting firms may be taken under "Standardized Code" for Black listing, suspension of business, banning of business etc. along with termination of the contract by competent authority without any compensation to the contractor.

28. GENERAL

Schedule of Prices digitally signed shall be deemed to supersede any deviation in conditions given anywhere in the tender document including price bid or forwarding letter.

SPECIAL CONDITIONS OF CONTRACT - PART "B" FOR WORKS

1. PREFACE

Operation and maintenance of the plants shall be done by the contractor from the date of successful commissioning of the plant. .

However, the operation of plants during defect liability period shall be as per the provisions given herein after and all compensations / part rates defined herein after for non- performance or unsatisfactory performance or due to terms and conditions of the contract shall be recovered from the security money & Contract Performance Guarantee any other sum as available with the State Government.

The contractor is bind to operate and maintain the plants as per conditions given herein after and as per scope of work defined in Volume II of tender document.

2. DEFINITIONS

2.1 Commencement of period

Commencement of O&M shall be from the date of Completion of individual installation as per clause 9 or any other date notified after total physical completion as per clause 9.2, of Special Conditions of contract Part 'A' whichever is earlier.

The contractor shall be bound to carry out the O&M maintenance of the installed plants for seven years.

2.2 O & M of contract period

The contract completion period and defect liability period shall be up to the date of expiry of the O & M period as notified by the department.

2.3 Date of issue of taking over Certificate

After the completion period of contract as per clause 2.2 above, provided that the contractor has fulfilled the provision of clause 3.2 of this contract.

2.4 Output parameters of treated water

The treated water from the Solar Energy based bore wells with de-fluoridation unit should be as per BIS standards and none of the prescribed parameters for potable water defined in BIS 10500 should exceed due to the treatment process of the DF Plants, i.e. the additions in any of the constitutes of raw water or any new constituent formed in treatment process should not be a cause for exceeding the prescribed limits for respective constituent prescribed in BIS 10500. Treated/ Out put water should be properly disinfected as per scope of work.

2.5 Output parameters of waste water

The waste water should be disposed by the bidder using appropriate method & technology of waste water disposal as per scope of work and specifications. Waste water should not impose any environmental hazard.

2.6 Good engineering practice

In respect of the contractor, its subcontractors, and all other such third party agents of the contractor, practices, methods, techniques and standards, as changed from time to time, that are generally accepted for use for water treatment processes, and all other facility during construction, development, operations and maintenance, taking into account conditions in India.

2.7 Non performance event

Performance of the plant supplying treated water which does not have the defined output parameters shall form a non-performance event.

2.8 Operation and maintenance completion certificate

As defined in Clause 3.2 of this project.

2.9 Operations and maintenance services

All services which are the responsibility of the Contractor and are required to fulfill the obligation as detailed in "scope of work" given in Vol.II of bid document and/or in the approved operation and maintenance manual and as defined in any other clauses of this contract.

2.10 Facilities

Facilities shall mean the installed units including civil works associated with the Solar Energy based bore wells with de-fluoridation unit established in the contract or any other works done in the contract.

3. EXTENSION & EXPIRY OF CONTRACT

3.1 Extension of operation and maintenance period

The operation & maintenance period can be extended up to three & half years (50% of existing O&M period of 7 years) on mutual consent of both parties on existing terms and conditions. The rate payable for extended period of O&M shall be same as payable for original O&M period i.e. 5% of plant cost per annum.

3.2 Expiry of the operation and maintenance period & removal of the plant by the contractor

- 3.2.1 The responsibility for upkeep of assets built and operated shall entirely be of contractor. The contractor shall repair, maintain and operate the facilities as per the terms and conditions of this contract till 12.00 Noon up to the date of expiry of contract period.
- 3.2.2 Three months prior to the expiry of contract period, the contractor will notify the department about nearing to completion of O&M period and his intentions for removing the installations from site or extending the contract, so that department may convey its decision on continuing with O&M or permit removal of the plant from site.
- 3.2.3 In the event of department permitting contractor to remove the plant or not conveying any decision during three months notice period, the contractor shall take possession of the assets and remove the plant from site at his own cost and shall vacate the government land within 15 days after expiry of O&M period of contract.
- 3.2.4 The scrap/ materials/ machinery of the plant removed from site shall be property of the contractor and cost of the same may be taken in account while quoting the rates in tender.
- 3.2.5 In case of contractor failing to remove the plant as per clause 3.2.3 the department shall be at liberty to take possession of the assets/ plant machinery at site and dispose-off the same in the manner considered appropriate.
- 3.2.6 The certificate for completion of O&M will be issued after contractor has vacated the government land and handed it over to Engineer in charge.

4. MONTHLY REPORTS AND MEETINGS

4.1 Monthly reports

Monthly reports shall be prepared by the contractor and shall be submitted to Engineer-in charge and head office. The first report shall cover the period up to the end of the first calendar month following the commencement date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the month to which it relates.

Reporting shall continue until the date of Expiry of contractor period. Each Report shall include the following but shall not be limited to:

- ✓ Performance report of all installations;
- ✓ Periodical test report of input and output water at the interval of one month.
- ✓ Status of complaints and the average period of attending complaints;
- ✓ Typical problems identified during the contract;
- ✓ Issues raised by the Engineer-in-charge in field regarding performance of plants or contract;
- ✓ Note on IEC activities done during the month;
- ✓ Note on the response of the villagers/beneficiaries for the SPV plant of Government;
- ✓ Any other approved issues.

These reports shall generally be made available through online remote monitoring system to the extent defined under scope of work, vol. II.

4.2 Meetings

Meeting shall be held in the office or at other places as mutually fixed in advance. The contractor shall co-ordinate to take suitable date for meeting. It is required that a decision-maker of the

contractor is present at the meeting so that binding decisions can be taken about outstanding issues. Generally, the following issues shall be discussed:

- > Progress of the work, difficulties
- > Payment issues
- > Disputes
- > Any other item raised by the Chair or by the contractor after the approval of the, Chair

5. OPERATIONS

5.1 Variability of output

The Department shall not consider any variation in the output quality of water except for the conditions during Natural Calamity or where the chemical parameters of input water are considered abnormally high by the Department. In this case the department may ask to shift the installation the contractor shall shift the installed unit at location given by the department for which cost of all required civil works shall be payable by the department as per provisions given in Volume II of Bidding document.

5.2 Personnel

- 5.2.1 The Contractor shall appoint the minimum staff for work defined in scope of work in Volume - II, before the date of issue of Certificate for Total Physical Completion of work under clause 9.2 of special condition of contract part "A". The appointed staff must have the minimum qualification and experience as defined in Volume-II. The names along with the qualifications and experience of the minimum staff to be provided as per the conditions of contract shall be got approved from the Department. Such approval shall not be unreasonably withheld or delayed by the Department. If during the O&M period any personals earlier approved by Department are required to be changed, the bidder shall provide CV's of personals of similar or more experience than that of the person to be replaced for approval of Department. Only after such approvals, the bidder shall appoint the person on job.
- 5.2.2 The Contractor's Representative shall be authorized and empowered to act for and on behalf of the Contractor on all matters relating to the rights and obligations of the Contractor during the O&M Period. In all such matters, the Contractor shall be bound by the written communications, directions, requests and decisions given or made by the Contractor's Representative.
- 5.2.3 The Contractor's Representative will direct and manage the Contractor's resources and have full responsibility for the operation, maintenance and administration of the Facility
- 5.2.4 The Contractor shall identify, interview and hire sufficient number of qualified and trained personnel to perform its obligations during the O&M Period.
- 5.2.5 All Contractor's personnel required at any time during the O&M period will be provided by the Contractor The Department is not liable for personnel in any way and cannot be held responsible in the event of litigation of any sort between the Contractor and members of its staff or their representatives or non performance of obligations due to any strike or other industrial action by the Contractor's workmen (including those of its subcontractors, suppliers etc).
- 5.2.6 The Contractor undertakes to comply with applicable legislation and the code of labour law on matters of health, hygiene and safety, and shall assume responsibility for works required in the event of any change in applicable regulations and shall also require its subcontractors to comply with this clause.
- 5.2.7 If the Contractor fails to provide the minimum personnel responsible for O&M of the Facility as defined in scope of work, given in volume-II, the Basic Service Charge payable for each month may be reduced proportionately to the schedule of deployment of personnel proposed by the contractor or as per the actual expenditure incurred by the Department to fulfill the duties and liabilities of the Contractor under this contract, whichever is more, at Department's discretion.

6 MAINTENANCE, REPAIRS AND REPLACEMENTS AND ADDITIONS TO THE FACILITY

6.1 Maintenance, Repairs and Replacements

6.1.1 The Contractor at its own cost and expense shall maintain and repair the Facility in good working condition, in a neat & orderly way, shall maintain an inventory necessary to performance maintenance required as per the Operation and Maintenance Manual and/or scope of work, and shall maintain the aesthetic quality of the Facility as originally constructed and in accordance with the Technical Specifications, with due allowance for reasonable wear and tear and depreciation. The Contractor shall provide or make provisions for all labour, materials, and equipment which are necessary for the normal operation and maintenance of the units and shall conduct the required predictive and preventive maintenance of the Facility consistent with the Operation and Maintenance Manual and/or scope of work. The Contractor shall maintain all records in accordance with the preventive maintenance plan set forth in the Operations and Maintenance Manual and as defined in scope of work and shall produce monthly copies of the same to department.

6.1.2 Additions/Modifications to the Facility

6.1.2.1 Any additions to the Facility sought by the Department, over and above those required to meet the Contractor's obligations under this Contract, shall be carried out by the Contractor at the expense of the Department or on mutually agreed terms and conditions. Such agreement will cover the costs of maintenance of the additional conditions and facilities also. The Department shall also bear any incremental expenses (along with the percentage fee for the Contractor) required to maintain such additions during the O&M Period. The Department may opt for other sources for construction and maintenance for such additions.

6.2 Department's rights

6.2.1 Inspection

6.2.1.1 The Department may periodically check the operation of the units or designate an organization of its choice at the cost of Department to carry out inspections of the units to satisfy itself that the Contractor is performing its obligations with due diligence.

6.2.1.2 Any assistance on site such as testing of water samples by field test kits, providing records etc. required for such inspection of the Units shall be provided by the Contractor at its own cost.

6.2.1.3 The Department representative can inspect the facility at any moment during the period.

6.2.2 Technical Audit

6.2.2.1 The Department has the right to conduct a technical audit of the unit and any analysis or inspection it deems necessary. Before any such inspection, the Department shall give a prior notice of three days to the Contractor. The contractor shall at the Contractor's sole cost and expense provide all assistance the Department requires to complete these inspections. Such audits may cover all or obligations of the Contractor, including but without limitation to,

- a) Verification of the performance standards and useful life of the individual assets, save for normal wear and tear during the period.
- b) Testing and verification of the water & waste water quality.

6.2.2.2 At the end of each twelve month period, or at the initiative of the Department, a visit shall be organized so that both parties can check the condition of the installations.

6.2.2.3 A report shall be drawn up to record the opinions of both parties. The department reserves the right to call specialized persons or agencies for these visits.

6.2.2.4 These visits shall provide an opportunity for examining maintenance programs and operating procedures and improvement requiring additional investment.

6.3 Other contracts

6.3.1 The Contractor shall not delegate its responsibilities hereunder nor subcontract any part of the services to be provided by him hereunder without the prior written consent of the Department. If the Contractor subcontracts its responsibilities hereunder or subcontracts any part of the services to be provided by him hereunder with the consent of the

Department, the Contractor shall not be relieved from any liability or obligation under this Contract and the Contractor shall continue to be responsible for the act, defaults or negligence of any sub-contractor as fully as if it were the acts, defaults or negligence of the Contractor, its officers, employees or agents.

- 6.3.2 The period of validity of any contractual commitment for provision of services or material or personnel to the Facility or any subcontract entered into by the Contractor with any party shall not and shall not extend beyond the Expiry Date of contract.
- 6.3.3 All such contractual commitments to be entered into by the Contractor should be freely assignable to the Department or to any other contractor, at the discretion of the Contractor.
- 6.3.4 The Contractor cannot create a charge on any assets of the Department or the assets purchased under the Contract.

7. BREAK DOWNS

7.1 Contractor action and liabilities

- 7.1.1 In event of break down, resulting in non performance of unit or non functioning of unit, the contractor shall take such action as may be reasonable and necessary at his cost and expenses, to rectify the defects / repair the facilities at his own cost, so as to commence the supplies at the earliest possible. The contractor must report all such incidences, indicating the cause and contractor's response thereto, to the Department.
- 7.1.2 The contractor shall utilize its personnel and all his resources to take such action may be reasonable and necessary in the event of a break down. The contractor must incur all expenditure and take all measures, which are necessary (in accordance with good engineering practice) in case of break down, affecting the facilities.
- 7.1.3 The contractor shall be liable to pay all type of claims arising and raised attributed to such break down, unless such break down has resulted due to force-majeure.

7.2 Time for rectification of defects:

The plant should not remain under breakdown for more than 48 Hrs. If the downtime period exceeds 48 hrs (for the reasons on the part of contractor) and contractor fails to make plant operational a penalty @ Rs 200/- per day from the date of breakdown shall be deducted from O&M payments. After, considering the action taken by the contractor for rectification of breakdown, the decision of Additional Chief Engineer PHED shall be binding on the contractor.

7.3 Consistent break downs

Notwithstanding to the provision of this clause, in case of consistent "breakdown" resulting in non-functionality of plants or resulting in non-performance of plant for required output parameters will make the contractor liable of an action as per clause 8.1 below. **For this clause, consistent "breakdown" shall be considered those repeated failure of more than 10 % of installations requiring maintenance every month.**

8. TERMINATION

8.1 Contractor's default

The Department shall be entitled to terminate this Contract for the following reasons attributable to the Contractor, unless arising as a result of a Force Majeure Event,

- a) Non performance of material obligations or failure to perform material obligations under this Contract i.e. for not maintaining the desired output parameters of water in more than 10% of plants at a time
- b) Not providing timely repairs resulting in non-functioning of more than 10% of the plants at a time
- c) Not providing the required lab & testing facilities or if it is established that the intentional false reporting is done by the contractor
- d) Repeated non-performance even after giving notices as defined in clause 2.8 above
- e) Repudiation of this Contract by the Contractor or the evidencing of an intention by the Contractor not to be bound by the terms of this Contract.
- f) Reappointment of a provisional liquidator in providing for winding up of the Contractor unless such appointment has been set aside within 45 days.

- g) The Contractor is ordered to be wound up by a court or files a petition for voluntary winding up except for the purpose of amalgamation or reconstruction provided that such amalgamation or reconstruction does not adversely affect the ability of the amalgamated or reconstructed entity to perform its obligations under this Contract, the successor has assumed in writing unconditional responsibility for the performance of the Contractor's obligations and the technical, financial and operating capability of the successor is satisfactory to the Department.
- h) The Contractor abandons the operation of the Facility.
- i) Under conditions expressly mentioned in any Clause of this Conditions of Contract for Operation and Maintenance.

8.2 Consequences of termination by department

If the Department, with reasonable grounds, terminates the contract under clause 8.1 above, the Security Deposit, and any other sums of the contractor with the Department, shall be fortified and action shall be taken against him as per clause 3 of General Conditions of Contract, if deemed appropriate.

9. INDEMNIFICATION

9.1 The Contractor to indemnify the Department against the following:

- (a) The Contractor shall at its own expense make good any physical loss or damage to the units occasioned by it in the course of the performance of its obligations under this Contract if and to the extent such loss or damage is caused by the willful misconduct or failure to follow Good Engineering Practices of the Contractor, any sub-contractor or their respective agents or employees.
- (b) The Contractor shall indemnify, defend and hold harmless the Department and its officers, employees, agents and affiliates against any and all claims of loss, damage and expense of whatever kind and nature, including all related costs and expenses incurred in connection therewith, in respect of personal injury to or death of third parties and in respect of loss of or damage to any third party to the extent that the same arises out of:
 - (i) Any breach by the Contractor of its obligations hereunder,
 - (ii) Any negligent act or omission on the part of the Contractor, its subcontractors or their respective agents or employees, and
 - (iii) Any willful misconduct or breach of statutory duty on the part of the Contractor, its subcontractors or their respective agents and employees.
 - (iv) Any other event where such indemnification has been expressly mentioned in this Conditions of Contract for Operation and Maintenance.
- (c) The Contractor shall indemnify, defend and hold harmless the Department and its, officers, employees, agents and affiliates against any and all claims of loss, damage and expense of whatever kind and nature, including all related costs and expenses incurred in connection therewith in respect of the death or injury to any person employed by the Contractor or its subcontractors in connection with the performance of the Contractor's obligations.

9.2 The Contractor shall indemnify the Department against all losses and claims in respect of;

- (a) Death of or injury to any person, or,
- (b) Loss of or damage to any property (other than the Works).

Which may arise out of / in consequence of the Operation and Maintenance of the Facility and the remedying of any defects there in, and against all claims proceedings, damage costs, charges and expenses what so ever in respect there of or in relation there to, subject the exceptions below

- (i) The permanent use or occupation of land by the Facility, or any part thereof.
- (ii) The right of the Department to execute the Facility, or any part thereof, on under in or through any land.
- (iii) Damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the contract

PUBLIC HEALTH ENGINEERING DEPARTMENT



Designing, providing, installation and commissioning of 263 Nos. Solar Energy based bore well water pumping systems (with De-fluoridation unit of capacity 1000 LPH) including comprehensive operation and maintenance for a period of seven years in various fluoride affected villages/ habitations in district Sirohi and Pali (Region Jodhpur-II/I)

Scope of Work
Specifications
Habitation list &
Drawings

NIT No. 07/2018-19

VOLUME-II

TENDER- DOCUMENT

ADDITIONAL CHIEF ENGINEER
PUBLIC HEALTH ENGINEERING DEPARTMENT
Region, II-Jodhpur

June-2018

1. BACKGROUND

Rajasthan is the largest state in the country having total number of 121648 habitations. With a view to provide potable drinking water in fluoride affected, far flung rural areas having no electricity/ erratic power supply, Government of Rajasthan has decided to install Solar Energy based Bore Wells not only to avoid dependence on conventional electricity but also to facilitate availability of potable water supply especially in areas having deeper water table not suited to convenient operation of hand pumps. It is proposed to provide Solar Photovoltaic (SPV) water Pump sets along with de-fluoridation units at bore well based schemes for low demand area in villages/ habitations as per list given by department, where fluoride is higher than desirable limits as per IS 10500:2012. Tentative list of habitation/ village depicting fluoride contents for each habitation/ village is given in the list (Annexure-I). However, bidder has to analyze the water samples from its own testing laboratory before designing/ installation of the treatment system. The fluoride contents of output water obtained from plant shall be within acceptable limit as per IS 10500 in any case. Other contents of water shall also not be adversely affected. The department will provide required land in habitation/ village and bore well as per plant requirement. The work shall include operation and maintenance of the installations for an initial period of 7 years after which this period can be extended further up to next 3 years & 6 months on mutually agreed terms & conditions or the infrastructure will be removed by the contractor from site.

Before taking up entire work, the bidder shall complete and commission one plant as a model plant as per directions of Additional Chief Engineer concerned and after approval of the model by Additional Chief Engineer, work of other plants under the contract shall be executed strictly as per the quality of approved model. .

2. SCOPE OF WORK FOR BIDDER

The scope of this work starts from designing, economically and efficiently best suited to site conditions including depth of water table and safe yield of bore well, finalizing alignment of SPV Plant, providing and installation of complete Solar power operated water pumping system including de-fluoridation unit and all other components and accessories as per specification, drawing and design and making it operational and keeping operational up to complete O&M period of 7 years. The successful bidder in this tender will be responsible for:-

- a) Carrying out work at locations finalized at the time of award of work. A tentative list of villages where SPV water pumping plants are to be provided is enclosed at Annexure-I. However the list will be finalized at the time of placement of work order.

- b) Designing of Solar Water Pumping Systems for the habitation(s) as per award of work. Providing, installation, Commissioning & Testing of Solar Water Pumping System as per design within stipulated time as mentioned in letter of award of contract including
- M.S. fabricated & galvanized structure to house storage tank & solar panels as well as de-fluoridation units.
 - All civil works of foundation, platform, public stand posts (separately for raw & treated water) and required CC drains and soakage well complete with all appurtenances.
 - Solar photovoltaic panels of adequate capacity as per design over MS structure and/ or on ground as per site requirement and directions of Engineer-in charge
 - HDPE Storage tank of 5000 litre capacity including all necessary inlet/ outlet arrangement, piping, pipe fittings, valve etc.
 - Solar energy operated submersible pumping sets of required capacity as per design with 32mm HDPE riser pipe, cables, steel wire rope with PVC cover, electrical controller/ connections etc.
 - De-fluoridation unit of required output capacity of 1000 LPH and appropriate technology including all necessary inlet/ outlet arrangement, piping, pipe fittings, valve etc.
 - UV unit suitable for disinfection of outflow water from DFU with suitable battery backup for operation throughout the day.
 - One solar street light of 30 watt LED bulb with suitable battery backup installed on top of structure so as to illuminate plant area during night
 - Real time online management and monitoring system for reporting key data/parameters of working of each installation on centralized software.
 - All other necessary works to make the system operational and keeping the same operational during entire period of 7 years O&M.
- c) Structure should be designed keeping in view local site conditions and generalized soil formation. All codes and provisions for RCC design should be followed. The minimum depth of foundation should be 1.50 mtr.
- d) IEC activities like distribution of pamphlets/ posters/ paintings containing departmental promotional Slogan for using fluoride free water and water saving on prime places like gram panchayat bhawan/ office, school/ govt. building/ main choraha as approved by Engineer-in charge
- e) Developing one installation as a reference model for scaling up the work. Before taking up entire work, the bidder shall complete and commission one plant as a model plant as per directions of Additional Chief Engineer concerned and after approval of the model by Additional Chief Engineer, works of other plants under the contract shall be executed strictly as per the quality of works of approved model. The model plant should be completed by bidder and offered for inspection of additional chief engineer within 30 days of allotment of site. The additional chief engineer shall either convey approval or shortcomings in the plant within 7 days thereafter; else the bidder shall be at liberty to take up the work at other sites.
- f) Reporting periodic progress of the work online through web portal incorporating all the relevant information, which shall be updated regularly and used for apprising progress from time to time to the department, such as location of site finalized (with GPS coordinates), Bore well availability, civil work completed, structure erected, DFU installed, installation and commissioning complete system along with photographs of key mile stones.

It should be possible to generate customized reports for ensuring proper monitoring of the progress.

- g) Establishing service centre with at least one office in Region (ACE PHED Region), create a network of service engineer, find and train the operators and keeping adequate servicing personnel and making available all essential spares in the vicinity of the plant so that the plants give the desired performance with least interruption.
- h) Providing offset printed flex sign boards of water proof material affixed on GI sheet (thickness 24 SWG) on three sides surrounding water storage tank section of MS fabricated structure. The design of flex sign board will contain photographs, slogans, departments name and tenderers mobile phone numbers for attending complaints and will be approved by engineer in-charge. A sample flex design is enclosed.
- i) Providing potable water to villagers regularly free of cost at site of SPV plant during and up to end of O&M period
- j) Complete system shall be under comprehensive warranty of contractor for a period of seven years from the date of commissioning against any defects. The operation and maintenance of complete system shall be responsibility of the contractor during this entire period.

3. BASIC REQUIREMENTS FOR DESIGN OF SOLAR SPV WATER PUMPING SYSTEM

The basic requirements for designing of SPV water pumping system shall be based on an average production of 10,000 liters of water in a day of lean season (lean in respect of solar radiations in respective district), pump efficiency of 45% for DC and 35% for AC and system losses of 40% for DC and 55% for AC type water pumping system. The minimum required horse power of the pump and Watt power of SPV panels for DC and AC type solar water pumping system shall be as below:

a. For DC Pumping system

S No	Head in Mtr	Minimum HP of pump	Motor Kwatt	Panel/ Array Kilo watt including system losses	Minimum Wp of Panel/ Array
1	60	0.99	0.74	1.03	1034
2	90	1.48	1.10	1.55	1546
3	120	1.98	1.48	2.07	2068
4	150	2.47	1.84	2.58	2580
5	180	2.96	2.21	3.09	3091
6	210	3.46	2.58	3.61	3614

b. For AC Pumping system

S No	Head in Mtr	Minimum HP of pump	Commercially Available HP	Motor Kwatt	Panel/ Array Kilo watt including system losses	Minimum Wp of Panel/ Array
1	150	3.17	3.50	2.61	4.05	4047
2	180	3.81	4.00	2.98	4.63	4625
3	210	4.44	5.00	3.73	5.78	5782

The contractor shall design the solar water pumping system with above basic requirements, adopting AC or DC pumps capable to produce minimum 10000 liters per day of water against highest head of range for particular item in BOQ. ***For head range up to 120 m, only DC pump will be provided and beyond 120 m, either of AC or DC pump will be provided.*** In case of AC pumps, if the designed HP pump is not available commercially, the nearest available higher HP of the pump shall be taken into consideration. The contractor shall also enclose certified head and discharge curve against said Wp for the proposed Model based on Minimum solar radiation in respective district of Rajasthan state

4. TECHNICAL SPECIFICATIONS OF SPV WATER PUMPING SYSTEM

4.1 GENERAL

A solar photovoltaic (SPV) water pumping system consists of a PV array, a DC / AC submersible motor pump set, electronics, if any, interconnect cables and an "On-Off" switch. PV array is mounted on a suitable structure. Electronics could include Maximum Power Point Tracker (MPPT), Inverter and Controls/ Protections. Storage batteries will not constitute a part of the SPV Water Pumping System except as specified for UV & street light system.

Components and parts used in the SPV water pumping system including the PV modules, pumps, metallic structures, cables, junction box, switch, etc. should conform to the BIS/ IEC/ international specifications duly with MNRE approvals, wherever such specifications are available and applicable.

Solar pumping system includes complete turnkey solution for supply, installation, commissioning and operation & maintenance for 7 years after installation. The solar installation shall consist of solar photovoltaic panels, DC/ AC Submersible pump with controller, inverter, control unit with all electronics including MPPT with DC MCB, and switches, cables, water meter, valves and fittings, inlet, outlet, scour pipeline with stand post and construction of platform and drainage works water level guard, float sensor, earthing, VFD, sediment / silt controller/ filter unit, remote monitoring system etc. in accordance with CE/ IEC/ BIS/ MNRE specification with duly up to date certifications as per MNRE & MoDWS norms/ guidelines and field based quality control and evaluation.

During the period of 7 years operation and maintenance, it shall be whole responsibility of the vendor for smooth functioning as well as operation and maintenance services of the system on day to day basis by providing appropriate support services in terms of material and labour on each location specific. System shall have insurance against natural calamities and theft over the O&M period. The contract shall be inclusive of cost of site visits on part of vendor, packaging, forwarding, spare parts, insurance and taxes & duties FOR Site(s) mentioned in the tender/ award of work. No price escalation will be allowed. It shall be essential to quote rates taking into consideration all these parameters.

4.2 PERFORMANCE SPECIFICATIONS AND REQUIREMENTS (DUTY CYCLE)

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 daily water

output shall be 10000 litres at different total dynamic heads (within the head category specified in BOQ) irrespective of requirement of MNRE®.

® MNRE lays down the requirement of minimum water output from a Solar PV Water Pumping System at different "Total Dynamic Heads" 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) as mentioned below:

A. For D.C. Motor Pump Set with Brushes or Brush Less D.C.(B.L.D.C.):

- (i) 100 liters of water per watt peak of PV array, from a Total Dynamic Head of 10 metres (Suction head, if applicable, minimum of 7 metres) and with the shut off head being at least 12 metres.
- (ii) 50 liters of water per watt peak of PV array, from a Total Dynamic Head of 20 metres (Suction head, if applicable, up to a maximum of 7 metres) and with the shut off head being at least 25 metres.
- (iii) 35 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 metres and the shut off head being at least 45 metres.
- (iv) 21 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 metres and the shut off head being at least 70 metres.
- (v) 14 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 metres and the shut off head being at least 100 metres.
- (vi) 9.5 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 metres and the shut off head being at least 150 metres.

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 Deep well SPV Water Pumping Systems are given as below:-

Description	Model-I	Model-II	Model-III	Model-IV	Model-V	Model-VI	Model-VII
PV array (minimum)	1200 Wp	1800 Wp	3000 Wp	3000 Wp	3000 Wp	4800 Wp	4800 Wp
Motor capacity	1 hp submersible with controller	2 hp submersible with controller	3 hp submersible with controller	3 hp submersible with controller	3 hp submersible with controller	5 hp submersible with controller	5 hp submersible with controller
Shut Off Dynamic Head	45 metres	45 metres	45 metres	75 metres	100 metres	70 metres	100 metres
Water output*	42,000 litres per day from a total head of 30 metres	63,000 litres per day from a total head of 30 metres	105,000 litres per day from a total head of 30 metres	63,000 litres per day from a total head of 50 metres	42,000 litres per day from a total head of 70 metres	100,800 litres per day from a total head of 50 metres	67,200 litres per day from a total head of 70 metres

Description	Model-VIII	Model-IX	Model-X	Model-XI	Model-XII	Model-XIII	Model-XIV
PV array	4800 Wp	6750 Wp	6750 Wp	6750 Wp	9,000 Wp	9,000 Wp	9,000 Wp

<i>(minimum)</i>							
Motor capacity	5 hp submersible with controller	7.5 hp Submersible with controller	7.5 hp Submersible with controller	7.5 hp Submersible with controller	10 hp Submersible with controller	10 hp Submersible with controller	10 hp Submersible with controller
Shut Off Dynamic Head	150metres	70 metres	100 metres	150 metres	70 metres	100 metres	150 metres
Water output*	45,600 litres per day from a total head of 100 metres	141,750 litres per day from a total head of 50 metres	94,500 litres per day from a total head of 70 metres	64,125 litres per day from a total head of 100 metres	189,000litres per day from a total head of 50 metres	126,000 litres per day from a total head of 70 metres	85,500 litres per day from a total head of 100 metres

* 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). For higher or lower head / PV capacity, or in between various models; water output could be decided as specified herein above and on prorata basis.

B. For A.C. Induction Motor Pump Set with a suitable Inverter:-

- (i) 90 liters of water per watt peak of PV array, from a Total Dynamic Head of 10 metres (Suction head, if applicable, minimum of 7 metres) and with the shut off head being at least 12 metres.
- (ii) 45 liters of water per watt peak of PV array, from a Total Dynamic Head of 20 metres (Suction head, if applicable, up to a maximum of 7 metres) and with the shut off head being at least 25 metres.
- (iii) 32 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 metres and the shut off head being at least 45 metres.
- (iv) 19 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 metres and the shut off head being at least 70 metres.
- (v) 13 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 metres and the shut off head being at least 100 metres.
- (vi) 8.5 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 metres and the shut off head being at least 150 metres.

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:-

Description	Model-I	Model-II	Model-III	Model-IV	Model-V	Model-VI	Model-VII
PV array (minimum)	1200 Wp	1800 Wp	3000 Wp	3000 Wp	3000 Wp	4800 Wp	4800 Wp
Motor capacity	1 hp submersible with controller	2 hp submersible with controller	3 hp submersible with controller	3 hp submersible with controller	3 hp submersible with controller	5 hp submersible with controller	5 hp submersible with controller
Shut Off Dynamic	45 metres	45 metres	45 metres	75 metres	100 metres	70 metres	100 metres

Head							
Water output*	38,400 litres per day from a total head of 30 metres	57,600 litres per day from a total head of 30 metres	96,000 litres per day from a total head of 30 metres	57,000 litres per day from a total head of 50 metres	39,000 litres per day from a total head of 70 metres	91,200 litres per day from a total head of 50 metres	62,400 litres per day from a total head of 70 metres

Description	Model-VIII	Model-IX	Model-X	Model-XI	Model-XII	Model-XIII	Model-XIV
PV array (minimum)	4800 Wp	6750 Wp	6750 Wp	6750 Wp	9,000 Wp	9,000 Wp	9,000 Wp
Motor capacity	5 hp submersible with controller	7.5 hp Submersible with controller	7.5 hp Submersible with controller	7.5 hp Submersible with controller	10 hp Submersible with controller	10 hp Submersible with controller	10 hp Submersible with controller
Shut Off Dynamic Head	150metres	70 metres	100 metres	150 metres	70 metres	100 metres	150 metres
Water output*	40,800 litres per day from a total head of 100 metres	128,250 litres per day from a total head of 50 metres	87,750 litres per day from a total head of 70 metres	57,375 litres per day from a total head of 100 metres	171,000 litres per day from a total head of 50 metres	117,000 litres per day from a total head of 70 metres	76,500 litres per day from a total head of 100 metres

* 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). For higher or lower head / PV capacity, or in between various models; water output could be decided as specified herein above and on prorata basis.

4.3 PV ARRAY

The SPV water pumping system should be operated with a PV array capacity in the range of 200 Watts peak to 10000 Watts peak, measured under Standard Test Conditions (STC). Sufficient number of modules in series and parallel could be used to obtain the required PV array power output. The power output of individual PV modules used in the PV array, under STC, should be a minimum of 125 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.

A. SPV MODULES

Indigenously produced SPV module (s) containing mono/ multi crystalline silicon solar cells should be used in the PV array for the SPV Water Pumping systems.

- Modules supplied with the SPV water pumping systems must have quality and necessary certifications as per latest edition of IEC 61215 Edition (II) specifications or equivalent National or International Standards.
- The PV modules must conform to the latest edition of any of the following IEC/ equivalent BIS Standards for PV module design qualification and type approval

Crystalline Silicon Terrestrial PV Modules	IEC 61215 / IS14286
Thin Film Terrestrial PV Modules	IEC 61646/ Equivalent IS (Under Dev.)
Concentrator PV Modules & Assemblies	IEC 62108

- The PV modules must conform to IEC 61730 Part I- requirements for construction & Part II - requirements for testing, for safety qualification or Equivalent IS (Under Dev.)
- The PV modules to be used in a highly corrosive atmosphere (coastal areas, etc.) must qualify Salt Mist Corrosion Testing as per IEC 61701 / IS 61701.
- Solar Module shall be crystalline type & made of transmissivity glass front surface giving high encapsulation gain, employing lamination technology using established polymer (EVA) & tedlar or polyester back sheet & hot butyl rubber edge sealant for module protection & mechanical support.
- All materials used have a proven history of reliable & stable operation in external applications. It shall perform satisfactorily with temperatures between - 10°C and + 85°C & with instant gust up to 200 Km/h from back side of the panel. Mounting structure shall have zinc coating of 120 micron.
- Each module shall have low Iron tempered 3mm thick high transmission toughened glass front for strength & superior light transmission. It shall also have tough Tedlar / Polyester back sheet for environment protection against moisture & provide high voltage electrical insulation.
- The module frame is made of light weight anodized aluminium frame with edge sealant around the laminate, which is electrolytically compatible with the structural material used for mounting the module.
- The efficiency of the PV modules should be minimum 14% and fill factor should be more than 70%.
- There shall be a minimum air gap of 3 ± 0.3 cm between the facing edges of two adjacent modules on all sides
- Panel frame material should be of anodized aluminum.
- Number of modules and array capacity will depend on the rated output of individual modules. The peak power rating of the Solar PV array should not be less than as per rated capacity of PV Module.
- The terminal box on the module should have a provision for "Opening" for replacing the cable, if required.
- There should be a Name Plate fixed inside the module which will give:
 - a) Name of the Manufacturer or Distinctive Logo.
 - b) Model Number
 - c) Serial Number
 - d) Year of Manufacture
 - e) Purchaser's mark "PHED Rajasthan"
- Each offered solar module should have RFID & I-V curve measured with a reputed sun simulator with record of suitable calibration reference, as per guidelines of MNRE.

B. IDENTIFICATION AND TRACEABILITY

Each PV module must use a Radio Frequency identification tag (RFID), which must contain the following information:

- (i) Name of the manufacturer of PV Module
- (ii) Model or Type Number
- (iii) Serial Number
- (iv) Month and year of the manufacture
- (v) I-V curve for the module
- (vi) Peak Wattage of the module at 16.4 volts which may be ensured with electronic characteristics
- (vii) I_m , V_m and FF for the module
- (viii) Unique Serial No. and Model No. of the module
- (ix) Specify whether PV modules are based on without or auto tracking system

The RFID shall be mandatorily placed inside the module laminate to withstand harsh environmental conditions.

A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.

C. MOUNTING STRUCTURES

The PV modules shall be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules, live loads if any and high wind velocities up to 200 km per hour. The support structure used in the pumping system will be hot dip galvanized iron (G.I). of minimum 120 micron. The mounting structure is to be designed according to required number of solar panels as per design and drawing. The structure shall be earthed using GI wire & GI Pipe type earthing kit.

The "Mounting Structure" should have the following features:

- The modules support structure shall be of mild steel, hot dipped galvanized (120 micron) iron for keeping storage tank, DF unit (wherever provided) and holding the PV modules. It shall be as per actual design in consideration of array sizing and of panels in accordance with norms and guidelines in consideration with dead load, live load and wind loads as mentioned above. However, the main four verticals of the structure shall be made of minimum 100X100X6 mm angles, grouted at least 1.50 m below ground level with MS J bolts 20 mm dia in CC1:2:4 having base and top plate (10mm thick 300X300 mm size and duly welded and braced with vertical angle). All other MS members (braces/ laterals/ supports etc.) duly welded/ bolted with main angles shall be of minimum size of 50x50x5 mm angles.
- In case, where there are space constraints and additional solar panel array is required to be installed on a standalone vertical mounting structure of prescribed height, the structure shall be made of hollow MS square section designed in consideration with the designed loads but of minimum size 100 x 100 x 5 mm conforming to IS 4923 or MS pipe 100 mm dia.(heavy class) conforming to IS 1239 with base plate welded at bottom. Mounting structural material shall be ISI marked. MS base plate shall be duly hot dipped galvanized having minimum size of 450 x 450 x 20 mm.

- Mounting structure shall have stiffener welded with the base plate as per design. Foundation shall not be less than 800 x 800 mm in plan with the required depth in M25 RCC.
- Each panel frame structure shall be fabricated on top of MS structure. The structure should be designed in a way to withstand overturning movements due to severe cyclone/ storm with the wind speed of 200 Km/Hr
- Minimum depth of foundation for mounting structure for solar panel should not be less than 1.50 m with due consideration to the design loads and soil bearing capacity.
- Each panel frame structure shall have provision to adjust its angle of inclination to the horizontal between 10 to 40 degrees with a step of 10 degree, so that the inclination can be adjusted at the specified tilt angle whenever required as per location specific needs.
- Each panel frame shall be complete with a weatherproof junction box as per the relevant specifications, where the module terminals shall be interconnected and output taken.
- All nuts and bolts should be made of very good quality and should be corrosion resistant. Nut bolts for fastening of SPV panels to frame shall be anti theft type also.
- The structure should be designed to allow easy replacement and inclusion of any additional module.
- The array structure shall be so designed that it occupies minimum space without sacrificing the output from the SPV panels.
- There shall be a minimum air gap of 3 ± 0.3 cm between the facing edges of two adjacent modules on all sides
- Mounting structure for solar panels shall be provided in shadow free area as per MNRE/ MoDWS guidelines.
- Bottom edge of the array should be at-least 2.5 m above the ground for security reasons and to avoid flooding/ obstructing panels by rain water/ growing vegetation etc.

D. BALANCE OF SYSTEM (BOS) ITEMS/ COMPONENTS

The BOS items/ components of the Solar Pumping systems deployed must conform to the latest edition of IEC/ Equivalent BIS Standards/ MNRE Specification as specified in MNRE guidelines.

BoS item/ component	Applicable IEC/equivalent BIS Standard	
	Standard Description	Standard Number
Power Conditioners/ Inverters*	Efficiency Measurements Environmental Testing	IEC 61683 IEC 60068 2 (1,2,14, 30)
Charge controller/ MPPT units*	Design Qualification Environmental Testing	IEC 62093 IEC 60068 2 (1,2,14, 30)
Cables	General Test and Measuring Methods PVC insulated cables for working Voltages up to and including 1100 V PVC insulated cables for UV resistant for outdoor Installation	IEC 60189 IS 694/ IS 1554 IS/IEC 69947

Switches/ Circuit Breakers/ Connectors	General Requirements Connectors safety	IS/IEC 60947 part I,II,III EN 50521
Junction Boxes/ Enclosures	General Requirements	IP 65 (for outdoor)/ IP 21 (for indoor) IEC 62208
SPV System Design	PV Stand-alone System design verification	IEC 62124
Installation Practices	Electrical installation of buildings Requirements for SPV power supply Systems	IEC 60364-7-712
Corrosion resistance	Salt mist corrosion resistance	IEC 61701

* Must additionally conform to the relevant national/international Electrical Safety Standards.

4.4 ELECTRONICS AND PROTECTIONS

- Maximum Power Point Tracker (MPPT) shall be included to optimally use the solar panel and maximize water discharge. It may be discrete hardware device or a part of firmware of DC controller or Inverter inclusive of VFD as norms of IEC/ MNRE guidelines. Minimum overall Efficiency of MPPT system should be 94%. Degree of MPPT protection shall be of IP 65 & communication of MPPT shall be based on RS 485 / WiFi in case of discrete MPPT. Operating temperature range of MPPT shall be in between -25°C to +60°C.. MPPT shall meet Compliance guidelines of EN 50178; IEC / EN 62109 - 1; IEC 61800 with latest amendments, as applicable.
- Controller for BLDC motor driven pumps, if required be used. The controller must have IP54 protection or must be housed in a cabinet having at least IP 54 protection.
- A Variable Frequency Drive (VFD), a type of motor controller, shall be provided. to enable driving of electric motor by varying the frequency and voltage supplied to provide maximum torque with minimum sunlight radiation. The VFD should take care of electronic characteristics of solar panels and motors so provided.
- Electronics and accessories to be provided in consideration with the requirement remote monitoring system so that required data or details can be transmitted suitably like electro-magnetic flow meters with sensors, water level sensors, auto on/ off switch, float switch, auto-fault detections etc. The system shall support remote monitoring of each solar pumping installation through GPRS based SIM using GSM/CDMA networks.
- Adequate protection should be incorporated against dry operation of motor pump set, and against hails and storms. Full protection against open circuit, accidental short circuit and reverse polarity should be provided. A good reliable on/off switch suitable for DC use is to be provided
- **Lightening:** The SPV pumping systems shall be provided with lightening arrester/ conductors & surge protection device lightning / over voltage/ over current protection separately including DC MCB etc. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it

reaches the PV or other sub system components. The source of over voltage can be lightning, atmospheric disturbances etc.

- **Earthing:** The array structure of the PV yard shall be grounded properly using adequate number of earthing kits. All metal casing or shielding of the pumping system shall be thoroughly grounded to ensure safety of the solar pumping systems. Earthing should not be less than 3 m deep from GL as per IEC 60364, separate for lighting and surge protection
- The junction boxes shall be dust and weatherproof and made of thermo-plastic. The terminals will be connected with copper lugs or bus bar of proper sizes. The j
- Junction boxes will have suitable cable entry points fitted with cables glands. Suitable markings shall be provided on the lugs or bus bar for easy identification and cable ferrules will be fitted at the cable termination points for identification. Each main junction box shall be fitted with appropriate rating blocking diode. The junction boxes shall be of reputed make and of suitable rating with adequate safety factor to inter connect the Solar PV array. The junction boxes shall have suitable arrangement for the followings:
 - Combine groups of modules into independent charging sub-arrays that will be wired into the controller.
 - Arrangement for disconnection for each of the groups.
 - Provide a test point for each sub-group for quick fault location & group array isolation.
- Inverter could be used, if required, to operate the A.C. Pump. The inverter must have IP54 protection or must be housed in a cabinet having at least IP54 protection. Inverter (pure sine wave) shall be in accordance with IEC 61683/ IS 61683, IEC60068-2 (1,2,14,30)/ equivalent BIS standards. It shall have built-in control logic and have necessary control systems as well as appropriate desired protections as per BIS/CE/MNRE/IEC standards. Inverter should consist of DC bus inductor, MOV protection, microprocessor based inverter logic and IGBT inverter section, low voltage driven function with LCD display, inclusive of all accessories etc. complete in all respect. Inverter (preferably, micro inverter) shall be suitable to ensure efficient functioning of A.C. Solar Submersible Pump pumping system and designed to take all connected load. A good reliable AC / DC interface switch shall be provided with the inverter.

4.5 OTHER ACCESSORIES

- Digital display of current & voltage (LCD screen) conforming to IS 13875 on the DC controller or Inverter unit suitable for remote monitoring system.
- Suitable device/ technique for measurement of raw water production designed/ calibrated with sensors for remote monitoring system- This may include calibrated voltage – amp. data in terms of raw water production.
- Electromagnetic Water Flow Meter (min. 25mm size) with suitable arrangement for remote monitoring system for measuring treated water
- Non return valve should be conforming to IS 5312 - 2003 (Part I & II)

- Gate valve should be conforming to IS 778 -1984 (reaffirmed 2005) – class B as per requirement of Outlet pipe diameter.

4.6 TESTING

PV water pumping system must qualify (enclose test reports/ certificate from IEC/NABL accredited laboratory) as per relevant IEC standard. The performance of PV water pumping system shall be tested at STC conditions by any laboratory approved by IEC / MNRE/ accredited by NABL / Solar Energy Centre.

In accordance with MNRE performance specifications, it is mandatory to have testing of system on sample basis from IEC approved/ NABL accredited/ MNRE approved test centres including Solar Energy Centre laboratory and a test report for the same shall be submitted with tender as per PQ requirement. During execution, the same make of Solar Panel, pumps, inverter/ controller for which the test report is submitted with tender shall have to be provided by the contractor. However in case when contractor desires to use different make(s), than the makes as mentioned in test report, test report from MNRE approved test centers have to be obtained again for SPV water pumping system of highest head category to be executed (with different make) against the work order.

The material (of different makes) shall be acceptable only on receipt of satisfactory test report by the Engineer-In-charge. The entire cost of testing shall be borne by the contractor.

4.7 MOTOR PUMP SET

The Solar operated water pumping system shall be designed with AC or DC motor pump set as per site requirement of head and discharge of water to be pumped by the solar system as per clause 3 above with following basic requirements:-

- The solar submersible motor pump sets shall be having BIS for AC pump sets/ CE for DC pump sets as well as MNRE certification in accordance with the required specifications. Accordingly, either CE or IS marking shall be on its body.
- Manufacturer will declare the overall efficiency of the motor-pump set used by them and submit test report from MNRE approved test centre as a proof. The average overall efficiency (over the day) of motor pump set, as tested by MNRE approved test centre should be 35% (for AC pump set) or 45% (for DC pump set) when tested or extrapolated at STC conditions.
- The pump shall be provided with specially designed mechanical/ suitable water tight seals ensuring zero water leakages.
- The pump shall be designed to produce required discharge at designed head as per site specific condition of the field.
- Proper check valve, float switch etc should be provided for proper functioning of the system.

- Pump should be placed at least 3.0 m above from the bottom the tube well or source so that pump does not suck the sand and silt particles during varying conditions of pumping.
- The HDPE riser pipe 32 mm dia (as per IS 4984), electric cables & switches, floating assembly and all other fittings to be installed along with the system shall be in accordance with requirement of BIS/ MNRE/ IEC (having valid and up to date certification) certification.
- Minimum size of submersible cable shall be not less than 3 core x 4.0 sq.mm. It shall conform to IS 694 and IEC 60227, IEC 60502 subject to electronic characteristics of pumping system. Length of cable shall be 10m more than the total designed head of the pump. It shall be ensured that sufficient length of cable is available for inter-connection between the PV array and the motor pump set.
- Pump should be tied up with poly safety rope to ensure the safety of the pump set to avoid accidental disconnection of pump from the riser pipe.
- The following details should be marked indelibly on the motor pump set
 - a. Name of the Manufacturer or Distinctive Logo.
 - b. Model Number
 - c. Serial Number
 - d. Purchaser's mark "PHED Rajasthan"
- The manufacturers of pumps shall ensure and certify that the pump and all external parts of motor used in submersible pump which are in contact with water, are of stainless steel. The pumps used for solar application should have a 7 years warranty so it is essential that the construction of the pump be made using parts which have high durability and do not need replacement or corrode for at least 7 years.
- The bidder/ manufacturer shall submit a declaration regarding selection of PV array that the design of PV array size/PV pumping system has been selected for optimal matching with the selected type of motor pump sets to give the required head and discharge as output performance of the pump set.
- The bore well for installation of motor pump set shall be provided by department. Vendor shall however be responsible for yield test/ flushing of the bore well before installation of the pumping system.
- Sanitization of bore well should be carried out before installation of pump with disinfectants which should not harm the parts of the pumping system.
- It is recommended to provide sand / silt -filters with the pumping system with 10 micron cartridge.

4.7.1 AC SOLAR SUBMERSIBLE PUMPSET

- AC Solar Submersible motor Pump sets models shall be suitable for drinking purposes and made of light weight S.S. grade 304 material compatible with installed controller. It shall be conforming to BIS standards IS 8034-2002 (specification for submersible pumping sets for clear water, cold fresh water) duly amended upto date.

- Rated discharge and head shall be in accordance with IS 8034, para 15.2 guarantee of performance. The pump sets shall be guaranteed for their performance of the nominal volume rate of flow, nominal head, and overall efficiency. The pump set shall be guaranteed at the nominal duty point. The same pump set may also be deemed to have met the guarantee if the users' required duty point lies within the specified tolerance of head (± 4 percent) and discharge (± 7 percent) of the nominal duty point and also meets the non-overloading requirements.
- The pump shall be tested for operating head range. However, it shall not be less than +10 percent and - 25 percent of the rated head. Below 30 m, the limits shall be from + 10 percent to -25 percent or ± 3 m, whichever is less. In the above head range, the motor shall not get overloaded. The criteria for checking non-overloading shall be that maximum current in operating head range shall not exceed the limits specified in Table-1(clause 7.1) of IS 8034: 2002.
- AC Solar Submersible Pumps shall be ISI marked duly approved by MNRE having valid certifications The outside diameter of the pump set should not be more than 96 mm
- The coupling shall be preferably of mesh type grid sleeves coupling of stainless steel non-slip type with matching groove, collar and key way arrangement
- **Pump material**

The material of construction of various components of the pump shall be as under

SN	Item/component	Material of Construction
01	Discharge casing (if provided)	SS-304
02	Suction Casing	SS-304
03	Pump Bowl	SS-304
04	Diffuser	SS-304
05	Pump Shaft	SS-304
06	Impeller for flow / mixed flow	SS-304, Radial
07	Casing wearing (if provided)	SS-304
08	Bearing bush in discharge & Suction	Bronze Grade LTB 2,3 or 4 of IS:318 / NBR

- **Submersible Motor**
 - (a) AC Solar Submersible Motors shall conform to IS 9283-1995 (amended up to date). The motor shall be of continuous duty (type S1) as specified in IS:12824:1989
 - (b) The AC motor stator shall be easily rewirable and winding should be easily accessible to facilitate checking and locating of any fault without disturbing the full winding and to replace defective coils. It should be possible to rewind the motor with readymade pre tested coils.
 - (c) The rotor as well as stator of AC motor should be impregnated under vacuum or air drying and both should be baked repeatedly under controlled conditions to ensure long life of varnish / epoxy and to give a

hard finish to the motor surface. The rotor should be dynamically balanced at high speed.

- (d) All the material components for the motors shall be suitable for application in respect of corrosion resistance and mechanical performance continuously under water. The typical materials to be used for various parts of motor are given as under :

SN	Item	Material of Construction
01	Bearing housing & base	SS-304
02	Motor Shaft	EN 10088-3/1.4542/ASTM A564 TYPE 630 / Chromium steel Gr. 04 Cr 13, or 12 Cr 13 or 20 Cr 13 of IS:1570 (part-5) 1985
03	Bearing Bush	Carbon with resin impregated
04	Rotar laminations	CED/Electrical sheet of IS:648:1994
05	Rotor conductor core	ALUMINIUM / Electro grade copper of IS613:1984
06	Stator laminations	Electrical – shale steel of IS 648:1994
07	Stator winding wire conductor	Electro grade copper of IS 613:1984
08	Stator winding wire Insulation	PVC double coated or with polymer of IS 8783:1976
09	Breather diaphragm	NBR
10	Thrust bearing	SS AISI-420
11	Cable Gland	Nitrile rubber
12	Stator casing	SS-304

The materials indicated are typical. Materials of properties superior as per the properties of materials indicated in manufacturing submersible motor may be used.

- **Inspection and testing**

The testing of pumping sets shall be carried out in accordance with the requirement of IS 8034:2002 as per para 14

- **Protections required**

- Dry run protection
- Over and under voltage protection
- Overload Protection
- Temperature Protection

- Junction Boxes, AC Distribution boxes as per IP 61 specifications and other relevant standards & specifications.
- Enclosure class shall be in accordance with IP 68 and other relevant standards & specifications.
- Installation and safety requirements should be as per IEC 62548 or equivalent BIS standard.

4.7.2 DC SOLAR SUBMERSIBLE PUMPSET

- Submersible DC Pump models shall be of light weight S.S. grade 304 material suitable for drinking water with inbuilt/ installed controller
- The pump set shall be as per following requirements:
 1. Type – Helical /Centrifugal rotor with brush less permanent magnet motor.
 2. Rated rpm – 500 to 3600
 3. Rated Voltage – Range 30 to 300 V or Suitable for the PV array which is used with the pumps
 4. Rated Current – 8.4 to 15 amp (As per Kw of pump set) or Suitable for the PV array which is used with the pumps
 5. Built-in Features
 - a. Dry run protection
 - b. Over and under voltage protection
 - c. Overload Protection
 - d. Miniature Circuit Breaker
 - e. Temperature Protection
 6. Enclosure class shall be in accordance with IP 68.
 7. Junction Boxes, DC Distribution boxes as per IP 61 specifications.
 8. Installation and safety requirements should be as per IEC 62548 or equivalent BIS standard.
 9. Pumps including motor shall have CE conformity certification.

The vendor shall provide following technical details for above mentioned all systems to Engineer-In charge before execution of the works:

SN	Particulars	Details
01	Make of Solar PV Module (Attach IEC certificate) and Origin	
02	Weather Resistant Junction Box (IP65)	
03	Nominal Voltage	
04	Operating Voltage of Solar Module (nom)	
05	Peak Power Voltage (Vmp)	
06	Peak Power Current (Imp)	
07	Open Circuit Voltage (Voc)	
08	Short Circuit current (Isc)	
09	Make of submersible Motor Pump Sets and Origin	
10	Type of submersible Motor Pump Sets (AC/ DC)	
11	Motor Rating (HP)	
12	Total Dynamic Head (m)	
13	Water Output (Ltrs / day)	

4.8 STORAGE TANK AND STRUCTURE

- a. The HDPE storage tank (make **Sintex/ Polycron** or *ISI marked* of any make) shall be conforming to IS 12701:1996. It shall be two/ three Layered PE tank of white/ blue/ black color made from virgin material of food grade quality, suitable for the purpose of storing drinking/ potable water. The capacity of the tank shall be minimum 5000 Liters.
- b. The tank shall be mounted on MS galvanized (120 micron, hot dipped) metallic structures of adequate strength and design, which can withstand dead load of the tank and structure, live load of high wind velocities up to 200 km/ hour. The material of the structure shall be ISI marked.
- c. The depth of foundation for structure shall be minimum 1.50 Mtr BGL or as per actual site conditions/soil strength and prevailing water table in consideration with the IS code.
- d. The height of structure shall be sufficient to provide minimum staging of 4.00 Mtr for storage tank. The de-fluoridation unit will be placed on MS structure at first staging (2m high) on MS sheet 6 mm thick supported with MS channels ISCJ100 both way with structure to sustain its load.
- e. The solar water pumping system should have HDPE riser pipe of dia 32 mm for bore dia of 100 mm and above.
- f. Interconnecting pipes are also to be provided for desired height along with valves, fittings & specials required for inlet, outlet scour and overflow as well as stand post.
- g. The foundation of structure shall be with CC M25 and as per IS 456. All other civil works required for erection of storage tank structure shall be as per local site condition/ soil formation and as per scope of work and drawing.
- h. The storage tank shall be provided with inlet, outlet, overflow and scour pipes of 32 mm, GI as per IS 1239 including GM gate valves for control conforming to IS specifications.
- i. Construction of two stand posts (one for raw & other for treated water supply) at a suitable distance (of 3 - 5 m) from the tank structure shall be part of system including 2 GI public stand posts each with 2 self closing railway type steel taps of size ¾ inch at minimum height of 750 mm (above platform) or as specified by Engineer-In-Charge.
- j. All the related civil works like platform, waste water drainage system, soakage well shall also be constructed as per scope of work and enclosed drawings. The soakage pit /well normally shall be of 0.9 m dia and 10 m deep (but in rocky area EIC can change dimension of soakage pit keeping minimum depth 3.0 mtr and total volume same) with pebbles/ crushed stone of size 10-20 mm at bottom up to 1.0 m height with RCC top cover of M200 as per drawing enclosed.
- k. A suitable galvanized MS staircase of width 0.75 m from ground level to up to storage tank base for maintenance purpose shall be provided duly welded with the mounting structure.

5. DE-FLUORIDATION UNITS

5.1 Objective of the work

The objective of the works is, to provide and install a suitable treatment plant at sources presently having problems due to excessive fluorides so as to provide fluoride within acceptable limit (i.e. ≤ 1.0 ppm). To achieve the object, it is proposed to take following activities:

- i) Provide and install efficient De-Fluoridation units at affected sources,
- ii) Maintain the plants for **seven** years including defect liability with activities as defined herein during O&M period.
- iii) Conduct IEC activities to educate the beneficiaries regarding the ill effects of excessive Fluoride Consumptions and the importance of use of De-Fluoridated water

5.2 Selection of installation site

The plants are only proposed to be installed at sources where Fluoride content is more than 1.5 ppm and other parameters such as TDS is ≤ 2000 ppm, Nitrates ≤ 45 ppm and chlorides are ≤ 1000 ppm and which do not contain any other parameters more than those prescribed for potable water. The selected sites on this basis shall be given to the contractor for installation of De-Fluoridation plant. The contractor shall, be responsible for verifying and interpreting all site data. The department shall have no responsibility for accuracy, sufficiency or completeness of such data. The contractor should therefore get water quality of the samples of actual source tested at his own level before taking up the works.

5.3 Technology for treatment

The technology to be adopted by the contractor for de-fluoridation shall be either based on Bio Media or Activated Alumina or any other type using suitable resins etc. The technology proposed for De-Fluoridation must have been satisfactorily used for public drinking water supply. Animal, fish, oyster or any living organism must not have been used in manufacturing of the media. The technology once offered in tender shall not be allowed to be changed after award of the work/ tender.

The aim is to remove excess fluoride and provide drinking water within permissible limit of fluoride for which contractor is free to offer any latest technology, but in any case, it should be non-toxic and user friendly. The required acceptable limits of fluoride in treated water shall be as per IS 10500: 2012(≤ 1.0 ppm). In addition to this, it shall also be ensured that the pH of treated water remains within prescribed limit (6 to 8) after treatment. The other parameters of raw water shall also not be affected due to treatment.

DFU shall be designed to take care of variable output and water production per hour in a day in a particular season as these plants are to be installed in rural areas attached with solar energy operated water pumping system.

5.4 Design Criteria for DF units

The de fluoridation units shall be designed for providing minimum quantity of treated water at output at the rate of 1000 liter per hour. De-Fluoridation unit should be of continuous flow type. The unit should have a system to take water directly from HDPE storage tank installed on MS fabricated structure and to supply treated water through PSPs.

5.5 Scope of work of DFU

The scope of work under this item includes Design, Supply and Installation, testing & commissioning of De-Fluoridation units attached to Solar Energy Bore Well with 7 years O&M including defect liability. For making the plant successful, it is desired from the contractor that he shall take up well designed intensive IEC, so that the installed units are regularly used by the intended beneficiaries and a willingness among them to own such systems be developed attracting them to use treated water for drinking & kitchen use only and to use raw water for other (bathing, washing etc.) uses.

During the contract, the contractor shall maintain all technical records for evaluating the performance of plants with respect to different chemical parameters and get regular testing of samples of raw and treated water at a minimum interval of one month from departmental chemists. This shall be primary condition for claiming O&M payments. Prior to the installation of de-fluoridation unit the source water shall be tested for suspended material, calcium hardness, test of pH, total hardness, fluoride, sodium chlorides, TDS, MPN/ E. Coli shall be done by the contractor. Immediately after installation of DF units the treated water shall also be tested by the contractor for above parameters at his own cost in his established laboratory. FTK may be used for testing water parameters & report should be submitted to concern AEN. FTK should be approved from AIH&PH/ CSIR/ IITs/ NITs/ BIS/ NABL or SIIR. The chemists of the department shall keep records of test results and also perform testing by departmental laboratories, wherever required.

5.6 Major components of work

The work of installation of De-Fluoridation plants includes, manufacturing of plant & accessories, transportation of plant and accessories to site, completion of civil works at site, commissioning, testing of output water parameters and installation of specials and pipe appurtenances so as to achieve the objective of the project. Engineer-in-charge or his authorized representative shall give the final location of installation. The Major Component of the installation works shall be:

- i) Visit the proposed site of installation and plant the activities required for installation.
- ii) Taking samples of source water at which plant installation is completed for detailed chemical analysis.
- iii) Manufacturing, transportation of material/unit/ accessories up to site for minimum capacity of plant
- iv) Work of excavation, drainage and construction of collecting chamber (to be used as balancing & tank for plant effluent) and seepage trench for disposal of waste.
- v) Making drainage system for maintaining hygienic conditions around the plant.
- vi) Installation & commissioning of the De-Fluoridation units including completion of all civil works, waste treatment & disposal system, installation of pipes and pipe appurtenances for the same, as required at site identified by the Department.
- vii) Testing treated water for Fluoride contamination preferably in peak hours using field test kit & submission of report to Engineer in charge for detailed tests of treated water and final inspection.
- viii) Keeping sufficient stock of stand-by treatment media to replace the media during treatment period, so as to keep the plant functional during all times.

- ix) Maintenance of the installed De-Fluoridation plant up to the date of expiry of O & M period.
- x) Establishment of office(s), Laboratories and regeneration plant(s) in project area having sufficient quantity of test kits and chemicals, spares, tools & tackles of testing facilities.
- xi) Operation and Maintenance of the system with above components up to Expiry of contract
- xii) IEC Activities for promotion of use of De-fluoridated water

All the material used, and the equipment installed shall be as per the specifications defined in the contract and the work shall be executed with good engineering practice.

5.7 Material of Construction of DFU & its Capacity

- 5.7.1 The contractor shall keep DFU on the MS fabricated structure as per drawing enclosed. The contractor shall also enclose the DF unit with suitable MS Jali cage with gate having lock and key arrangements or alternatively with precast CC rings of minimum 50 mm thickness up to full height of DF unit covered with minimum 50 mm thick CC cover at top to avoid pilferages and prevent heating up of media due to sun shine. The container of the DFU shall be made up of food grade, non toxic PVC material. Material shall also be free from ingredients like injurious oils, acids, alkalis, salts, sugar, organic materials, etc. and shall be acceptable by general public. All other material used in the DF plant shall be as per current specifications of the respective material prescribed in Indian standard or in any international standard and good engineering practice. All construction material and the civil work shall be as per PWD specification of the respective work. The material selection shall be as per good engineering practices and the decision of the Engineer in charge in this respect shall be final and binding to the contractor.
- 5.7.2 The capacity of the plants and reservoirs shall be so determined that the treatment media and other accessories such as support media, if any, can house minimum treatment media sufficient to maintain specified flow rate of treated de-fluoridated water for at least 15 days of water demand before need of regeneration of media.
- 5.7.3 The DF unit shall have arrangements for adequate size inlet & outlet water using pipe and valves of minimum 32mm size. All pipes used in the system shall be of GI class B (IS: 1239) /MDPE pipes as per ISO 4427/HDPE pipes of PE80 PN-6 pressure rating as per IS. ISI marked full way valve conforming to IS 778 shall be used.

5.8 Specification of plant & material & testing

The specifications given herein are the minimum specifications prescribed by the department and if the contractor requires to provide de-fluoridation units of higher standards or material of much better specifications, he should submit the proposals for such changes with suitable supporting documents to consideration and approval of Engineer in charge, whose decision in the matter shall be final and binding for the contractor. No changes in the plant dimensions of material specifications should be done without prior permission of Engineer in charge, failing which the contractor shall be liable for all damages for rectification of such defects.

5.9 Treatment media

The specification of treatment media in general shall be as prescribed in relevant IS code/ International standard/ UNICEF/NEERI specifications or it should be patented

media. In case of Activated alumina, media shall be as per IS 9700:1991. However, if no standards are prescribed or if the material with exact specifications prescribed in standards is not available in the market, then the media should be procured from bonafied manufacturers/ suppliers of media having patent of the same. For patented media, the contractor shall ensure regular supplies of media for minimum 7 years of O&M period, as per of scope of work and to ensure this, the contractor **shall give required undertaking.**

In case of activated alumina used as media, the minimum fluoride uptake capacity of the media should be 2300 mg per Kg. The size of particles of media shall be 0.4 to 1.2 mm (Ball Shaped). The treated water from used media shall be preferably free of Alluminium but if present shall not be more than 0.2 mg/Litre. The output yield of treated water (Fluoride <1mg/lit) should be more than 170 Lit/Kg activated Alumina when raw water having alkalinity 420 mg/Lit, pH=7.3 & Fluoride 10.80 mg/Lt. Is passed through it.

The name of the manufacturer supplying media shall be got approved from Engineer in charge. The contractor shall enclose test report of media used for de-fluoridation issued by any of AIH&PH/ CSIR labs/ IITs/ NITs/ BIS/ SIIR/ any NABL accredited lab. The test report shall contain fluoride uptake capacity of fresh media, fluoride uptake capacity of media after 10 regenerations, loss of attrition in each regeneration cycle and any residual of media (e.g. aluminum in case of activated alumina) in treated water, if any.

A. Supporting filter media for activated alumina

If Activated Alumina is used for treatment then, suitable perforated plate made of SS 316 Food Grade Plastic Plates of micro filters made of suitable material may be used for supporting the treatment media. The treatment media may also be supported on river sand and river gravel as per specifications given below, irrespective of the method and material used for media support, the contractor shall be solely responsible for loss of filter media if any or for deterioration in treated water quality due to loss of media.

If natural sand and river gravel is to be used as the supporting media for the Activated Alumina, the source of material shall be got approved in advance from Engineer In charge. The practical size of the supporting media shall be as follows:

S. No.	Material	Size of Sieve through which 100% material is passed	Size of sieve on which 100% m
1.	River Sand	0.80mm	0.60 mm
2.	River Pebbles	6.00mm	1.00mm
3.	River Gravel	20.00mm	6.00mm
4.	River Boulders	40mm	25mm

The above supporting media should be properly washed with acid and water to remove all organic matters and impurities.

5.10 Treatment waste disposal system/ Regeneration of Media

- A. The contractor shall be responsible for safe and secure disposal of used media waste/cleansing water as per prescribed standards/ methods/ guide lines (Indian/ International) to protect the surroundings/ environment. The re-generation of plants media shall be done at a separate site, as required. The general arrangements for the disposal of waste at the re-generation or the plant site shall be got approved by the department during the execution period.

- B. The waste of regeneration plant and general platform drainage shall be connected to the waste chamber with suitable pipe or drain at a level of 0.75 m BGL. The outlet pipe should be taken in the soakage trench which shall be designed for a maximum rate of 52 litre/sqm/day for effluent application as per IS 2470 part 2. The general construction features of the soakage trench shall be as per the provisions given in IS: 2470, part 2. The minimum length of soakage trench shall be 5m from the DFU. The pipes used in drainage system shall be of Glass ware/ HDPE/AC. The treatment of the spent regenerates should be carried out to ensure that the final effluent is free of health hazard. Approval of the process and the material of construction shall be finalized in consideration to the quality and quantity of waste likely to be generated and as per the soil conditions for absorption etc. All material for construction of waste disposal system shall be as per the PWD specifications and shall be as per good engineering practices.
- C. The contractor shall take care of regeneration requirements of media and shall inform to Engineer-In Charge whether the regeneration shall be done at site or at a regeneration center. **In case regeneration is done with acid, regeneration process shall not be allowed at installation site and regeneration centre shall be required.** In case of opting regeneration center by the bidder, no payment shall be released against installed DFUs, till regeneration center is established. Wherever the process requires regeneration, the regeneration centers shall be installed prior to the commencement of the plant installation work.
- D. The safe and secure disposal of used media to protect the surrounding environment as per standards/methods/guidelines (Indian/International) prescribed for the same, is the responsibility of the Contractor.

5.11 Activities required to be done at the time of regeneration of media or replacement of media.

- A. If regeneration is part of the treatment process, the following activities are the minimum requirement at the time of doing re-generation of treatment media or at the time of replacement of media for plants based on Activated Alumina or Bio media.
- i. To take sample of input water to plant for conducting chemical analysis for following parameters, PH, alkalinity, TDS, E-coli, Fluoride.
 - ii. To take samples of treated water & test above parameter
 - iii. Perform the regeneration/replacement of the media as per standard method.
 - iv. Ensuring safe disposal of the treatment effluent as per the approved methodology of disposal.
 - v. Proper washing of the media to ensure un-desired parameters of output water. To ensure that the re-generation/replacement done provides potable water, field test shall be done for pH, alkalinity, sulphate, TDS, E-coli, fluoride and ion concentration and necessary action shall be taken till pH and Fluoride concentration in outlet water is of desired level.
 - vi. The report of completion of re-generation/replacement along with the test reports for the water samples as mentioned above shall be submitted in monthly report.
 - vii. Conducting IEC activities as defined.

- B. For other type of plants based on technology not requiring regeneration all parts of the plant shall be periodically maintained as per good Engineer Practices and the detailed program based on this principal shall be got approved by Engineer-in-charge.

5.12 Commissioning test for installation

The installed units shall be tested for:

- i) Water tightness of the system- Installations with leakage in treatment container, piping works etc. shall be rejected.
- ii) Field tests shall be conducted to ascertain that the treated water quality is as desired in the tender document.

5.13 Rejection of the system or system components

If the performance tests indicate the computed values of performance parameters have deviated from the guaranteed values and the contractor is unable, within 7 days or such extension of time as may be allowed by the Engineer in charge, to remedy such deficiency, then the Engineer in charge shall have the right to reject the system.

5.14 Performance of DFU & its monitoring

During the periods of O&M, the installed plants shall also be monitored for their optimum performance at the level of department/ Gram Panchayat or any other agency authorized by the department. To evaluate the plant performance, field test kits shall be issued by the contractor, at time notified by the department.

During the monitoring by above agencies, reports of non-functioning or non-performance can be made by the respective agency to the respective field office. For receipt of complaint, the contractor shall maintain complain register at each sub division level and after recording the complaint in respective complaint register a specific complaint number (ID) shall have to be provided to each complaint.

The complaint register shall have fields of S.N., Complain ID, Date, Name of person/agency making complain, Brief particulars of complaint, Date & time of attending complaint, Name of attendant attending the complaint, Date & time of rectification of fault and making the plant operational and remarks (for briefly mentioning other relevant facts regarding attending/nature of fault if any/ response given to the complaint).

All complaints received should be attended immediately and rectified within maximum 48 hours of receipt of complaint failing which penal action may be initiated as specified in clause 8.4(c) below.

All field offices and the office of the contractor shall maintain these register and shall produce these registers to any Government officer, Public representative or any monitoring agency authorized by the department.

5.14.1 Monitoring parameters

The contractor shall be responsible for maintaining quality of treated water. However department may also conduct tests for pH, alkalinity, sulphates, TDS, E-coli, fluoride along with relevant parameters, test on alumina, total coliforms etc. on selected sites to confirm the performance of plants by chemists on monthly basis/ or at any interval of time.

5.14.2 Laboratory, Testing Equipment & consumables

The contractor shall have at least one laboratory in region (ACE PHED region) with facility to test fluoride with ion meter and other parameters as specified at clause 5.11.1 above. Minimum one Field Test Kits for Fluoride &

pH measurement and H₂S vial with necessary accessories & consumables shall be supplied for each installation. The makes of equipments and chemicals shall be of best quality available in the market. Following minimum instruments/ equipments/ consumables shall be kept in the field office/ regional laboratory of the contractor for which no extra payment will be made to contractor:

SN	Name of Instrument/ Consumables	Qty.
1	Fluoride measurement through ion meter	1
2	PH meter	1
3	Consumables for all lab & field testing kits for 1 month requirement	1 Lot

5.15 Scope of work of IEC activities for use of DFU treated water

The IEC activities shall be started at least one week prior to installation of the unit and shall be carried out up to minimum one week after installation. The user group shall be selected from the villagers/ occupants of habitations comprising of at least 5 persons per village/ habitations. Preferably the educated persons and/or government employees, reputed persons shall be selected. During this period of 7 days audio/ visual methods of educations such as showing videos etc shall also be used as per directions of Engineer-in-charges. The training program should be designed to include at least the following:

- To educate habitants regarding the ill effect of consuming water with excess Fluorides and its remedies.
- Transfer of skills for tests to determine Fluoride concentration in water.
- Methods of using the plants/ re-generation of treatment media.
- Procedure of treatment of waste and disposal of treated waste & solid waste
- Installation of posters at prominent places of villages/habitation 2 Nos. having size 2' x 3'.
- Providing at least 2 wall paintings having minimum size 4'x8'.
- Conducting village level Video shows minimum 3 times in a village/habitation (only video films approved by department)

Follow up IEC shall be taken up on the regeneration of DF plant during O&M period which shall include training of regeneration to selected/identified residents. Regular meetings with the residents shall be organized, preferably on non-working days.

5.16 Deployment of Minimum Staff

The minimum staff to be deployed by the contractor to carry out the execution and O&M functions of DFUs shall be as follows:

S.No.	Designation	Minimum Qualification	Experience	No. of staff
1.	Project Coordinator	BE/MSc Chemistry	10 years of field work	1
2.	Office Manager	Graduate with A Basic course in computer application	1 year	1
3.	Staff for installation, Field monitoring & Repairs	8 th pass, ITI certified	1 year of field work if fitter.	2

5.17 Scope of Work For O&M Period

Within the frame work of the responsibilities of the contractor given in the objectives, extent of scope of work and terms and conditions of the contract, the contractor shall

carry out the following activities, but these shall not limit requirements of other activities, which otherwise are required as per terms and conditions of contract or to fulfill contractual obligations or are essential as per good engineering practices:-

- A) Keeping the plants operational regularly with specified flow/ quantity of water.
- B) Providing treated water of desired chemical parameters at each de-fluoridation plants.
- C) Taking samples of treated water at peak hours i.e. 9.00am to 11.00am or any other time (may differ from place to place) from plant for detailed chemical analysis and keeping the record of test results. The test results shall also be uploaded on RTOMMS on at least monthly basis.
- D) Providing the minimum specified staff as specified, during operation and maintenance period and additional staff as per requirement during periodic maintenance and in emergencies.
- E) Providing all required consumables required for functioning of plants, lab , stores including **periodic refurbishment of consumables/spares used from the supplied material so as to maintain adequate inventory level in stock at each field office.**
- F) Ensuring regeneration of each unit installed as required from time to time.
- G) Patrolling of the installed plants to check the performance and to do needful repairs of plant. The patrolling program should be so planned that each plant is visited once every month and field testing of the plant treated water is done to establish the requirement of replacement of treatment media.
- H) Emergency maintenance: ensuring repair of plants at any report of non-functional/non-performing plants by department; village beneficiaries; or other agency authorized for conducting performance monitoring of plant, within 48 hours of reporting the fault.
- I) Periodic routine maintenance of civil structures, steel fabrication parts of equipment and disposal of treatment waste to maintain them in good conditions (subjected to normal wear and tear and depreciation
- J) Submission of monthly report as specified.
- K) Co-ordination with other contractors and/or agencies duly authorized by department for supervising/ monitoring the installation of plants/ implementation of IEC activities & the O&M activities taken under the contract.
- L) Maintaining:
 - Complaint Register at plant site (or on RTOMMS) division/ sub-division wise.
 - Records of chemical parameters of all water source at the time of installation of plant
 - Records of chemical parameters of output water after installation and commissioning of plants every month.
 - Record of the periodic site visits done with brief description of observed conditions of plant in format approved by department including the results of field test done at site.
 - Repair history of all plants
 - Maintain record of inventory in stores through a system of inward/issue system.

- Any other details observed/obtained pertaining to performance of plant.

To achieve the above objectives, the contractor shall appoint minimum one person per **25 DFUs** (here in after called the care taker) to look after the day to day maintenance, testing & re-generation requirements so as to ensure treated water quality as per output parameters at all moment of plants functioning. The caretaker shall also be responsible for communication with the contractors office established in the area to ask him for attending plant in case of break-downs. A complaint register shall also be kept with the caretaker to record remarks of the visiting officers/agencies. The caretaker should be given full training for plant operation, minor maintenance, field tests, re-generation technique and disposal methods. Test kit to check the output water parameters with sufficient consumables should be available with the caretaker appointed in the village.

The caretaker should also play an effective role in IEC activities. The mobile number and name of the care taker shall be invariably mentioned on IEC material affixed at plant site/ village/habitation.

5.18 Specification of material used in O&M period

The specification of materials used for repairs shall be the one used in the original work. Specifications for such materials, which were not used during execution shall be got approved by the department, prior to commencement of operation and maintenance period and must be incorporated in the O&M manual. Without being limited by this clause, during O&M period, the contractor shall use appropriate material for repairs even if the material required for such repair is not approved earlier, and no delay in repairs shall be subjected to such limitation. But subsequent to such use of material, the contractor shall submit proposals for the approval of the specifications of such material. The submissions and approval of material shall be done in accordance to the conditions laid down in the special conditions of contract. The approved material will subsequently form a part of the O&M manual.

6. REAL TIME ONLINE MANAGEMENT AND MONITORING SYSTEM (RTOMMS)

Provision for remote monitoring of the installed pumps must be made in the controllers or the inverters either through an integral arrangement or through an externally fitted arrangement.

Real Time Online Management & Monitoring System (RTOMMS) shall consist of Compact Microprocessor based Control Panels with plant operation pre-programmed and all safeties inbuilt. This logical processing unit should have features of automatic sensor data reading and sending remotely.

RTOMMS should come with inbuilt modem to transfer data through SMS/GPRS at programmable pre-defined interval (not more than 30 minutes). The Modem should be configured to suit SIM card of any Telecom Service provider.

The contractor shall provide cloud storage/ data storage under ownership of department on which first hand data captured by sensor of Solar installation shall be received. In addition the first hand data from plant site should also be sent directly from plant site to a SIM number that would be provided by the department after award of work.

The cost of cloud storage is to be borne by the contractor for entire contract period. The web based application software (ERP tool) shall also be provided by contractor (licensed for O&M period) and installed on cloud storage which shall be capable of showing status of all Solar plants (operational/ Non operational). The application shall have features of unique log-in and passwords for different levels (contractor/ department).

At least following parameters captured by sensors/ derived by application should be displayed in tabular form for each individual plant:

- Present status of solar panels producing power or not
- Power – KW generated (at the moment/ cumulative for the day)
- Present status of pump set (on/ off)
- Water flow (pump) (at the moment/ cumulative for the day)
- Total ON time of plant (of pump)
- Solar DFU Operation Hour (of day and cumulative till date)
- Treated water flow (DFU) (at the moment/ cumulative for the day)

The reason of the plant being non-operational should also be captured for the following events/ faults:-

- Storage Tank Full
- Solar Panel – no generation of power/ inadequate power.
- Raw Water Pump dry running/ low current / overload/ pump jam/ high current

The one-time data of location/ name of plant/ population of habitation and periodic data of fluoride ppm/ date of regeneration of DFU media shall be reportable on application by the contractor through his login.

The software should be able to store historical data and analyze data meaningfully and represent it in graphical and numerical form to facilitate decision making by field officers. It shall have provision to generate automatically daily/ monthly /periodic reports of all plant data as desired (to be finalized by department at the time award/during execution of work). The data available on cloud storage shall be in JSON (Java Script Object Notation) format so that data of different contractors may be integrated with departmental application to be developed in future.

7. THIRD PARTY INSPECTION & QUALITY CONTROL MONITORS

7.1 Pre-dispatch Inspection

Primarily the material supplied/ works executed shall be inspected by Executive Engineer in-charge at site of the plants during execution. However, pre-dispatch inspection of SPV panels and pumps may also be carried out by Executive Engineer in-charge or any departmental representative (authorized by ACE or CE) at the factory of the manufacture at departmental expenses. The contractor shall, however, facilitate such departmental inspection as and when required.

7.2 Third Party Inspection

The department may at its discretion may appoint third party inspecting agency (like SGS/ RITES/ CEIL or any other agency approved by MNRE) or quality control monitors to inspect the works and materials to be used by contractor, like SPV panels, pumps etc to check them as per specifications prior to installation at factory of manufactures and or after installation at site on random selection basis or on 100% basis..

Based on the report of third party inspecting agency/ quality control monitor, the contractor shall have to make necessary modification/ rectifications as suggested, if any. All the expenses incurred, as decided by the department, on account of third party inspection/ quality control monitoring & evaluation of the system shall be initially borne by the vendor and such amount will be reimbursed through the bills of the contractor.

8. OPERATION & MAINTENANCE PERIOD/ WARRANTY

The complete SPV water pumping system shall be warranted for a minimum period of seven years from the date of successful installation and commissioning which has to be certified by Engineer-in-charge. The warranted period of **seven years** shall include:

- **Manufacturer's warranty** for the pumps, motor, controllers for defect in material and workmanship from the date of commissioning of the system.
 - The mechanical structures, electrical works including power conditioners/ inverters / charge controllers / maximum power point tracker units/ float switch/ water level guard/ MCB/ distribution boards/ digital meters/ switchgear etc. and overall workmanship of the SPV modules/ panel array must be warranted against any manufacturing / design / installation as per MNRE guidelines
 - PV modules used in solar pumping systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years and in case of desired output peak watt capacity is not generated it will be sole responsibility of the vendor to replace the same at any stage without claiming any cost. Full rated output of the SPV Array to be ensured after one year of operation. Required Spares for trouble free operation during the Warrantee period should be provided along with the system.
 - To ensure the required head and discharge over the design & warranted period, considering the panel efficiency degradation as mentioned above, bidder will get the panel tested for ensuring the panel efficiency of panel array at regular interval of every 2 years at its own cost from NABL accredited laboratory / onsite testing with power analyser, I-V checker and array tester and if degradation is found beyond the limit of MNRE guidelines i.e. @ 1% per year, then the vendor has to replace or augment the panel array system at its own cost. The bidder shall also ensure that augmented panel array system is accordingly provided at the end of ACMSCP period i.e. 7 years.
 - The mild steel structure, all the electrical equipments including panel array/ inverters/ charge controllers / maximum power point tracker units/ float switches/ water level sensors/ guards/ MCBs/ distribution boards/ digital meters and other switchgears, accessories, apparatuses etc. including workmanship of the SPV pumping system shall be warranted against any manufacturing/ design/ installation defect for a minimum period of 7 years as per MNRE guidelines.
- 8.1** Maintenance and service contract shall be as under
- a. Annual Comprehensive Maintenance and Service Contract period (ACMSCP) for the first seven years from the date of commissioning of system including

defect liability of the solar water pumping system and operation and maintenance services as defined under the contract like cleaning of panels at least once in a month & ensure their functioning, adjustment of tilt angle of solar panels as and when required, ensure tracker is functioning properly if installed and clean the same, any wear and tear is observed should be replaced, ensure proper connections of cables and all electronics, upkeep and maintenance of water filters and its replacement of cartridges at required interval, ensure the desired sun exposure of the solar array, checking and tightening of the solar array mounting structure nut bolts,

- b. During the above said period it is the whole responsibility of vendor to provide maintenance services including all units/ parts of all equipments of the system and ensure monthly / quarterly routine checkups for its smooth functioning like proper functioning of pumps, panels tracker and replacement of the any component or subcomponents of the system for proper operation of the system etc. The scope of work includes repairing/replacement of solar panels to make the system functional within warranty period.
- c. Any non-functioning of the plant shall be responsibility of the contractor. In any case of breakdown or whenever a complaint is lodged by the user, the contractor shall attend the same within same day at site and shall resolve the same immediately but within a period not exceeding 48 Hrs. If the plant down time period exceeds 48 hrs (due to reasons on part of Contractor) a penalty at the rate of Rs. 200/- per day from date of breakdown shall be deducted from annual O&M payments of the plant. Non-performing DFU (i.e. treated water quality being beyond the acceptable limits) shall also be considered as a break down.
- d. It is mandatory that the vendor opens an authorized service center in the concerned region before supply/ installation of the system for smooth operation and maintenance.
- e. The important activities carried out for proper O&M of the system shall be uploaded on RTOMMS by vendor regularly.

8.2 OPERATION AND MAINTENANCE MANUAL

An *Operation and Maintenance Manual*, in English and Hindi, should be provided before the operation and maintenance period, i.e. during execution stage. The provisions in the manual must incorporate every aspect of good engineering practices even if not elaborated in the bidding documents. The O&M Manual should contain at least the following:

1. The procedure for periodic monitoring and reporting.
2. Procedure of re-generation detailing the method of re-generation of DFU media.
3. Procedure for treatment & disposal of waste from re-generation of media or waste of other process.
4. Procedure for repair of other parts of the plant.
5. information about solar energy, photovoltaic, modules, DC/AC submersible motor pump set, mounting structures, electronics, switches and De-fluoridation unit

6. Size of inventory which should be kept for effective maintenance.
7. DO's and DONT's and on regular maintenance and trouble shooting of the pumping system.
8. First aid, spill response.

Name and address of the person or centre 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 department.

The manufacturer can also provide additional information's about the system and conditions of warranty as necessary.

9. GENERAL REQUIREMENTS

- SPV Modules, pumps and other items should be of required specification and warranties as per Ministry of New & Renewable Energy (MNRE), Govt. of India, guidelines for implementation of the programme on "Off-grid and Decentralized Solar Applications" of the Jawaharlal Nehru National Solar Mission (JNNSM) (visit web site - www.mnre.gov.in for MNRE guidelines). If any amendments are issued by MNRE in due course of time, in this context, then those shall be applicable.
- The Vendor must satisfy himself regarding quantity and quality wise supply of Solar Modules / panel, Solar Photovoltaic (SPV) with support structures, DC / AC motors pumps, storage tank with supporting structure as well as all aspects of supplying, installation, commissioning & testing of solar infrastructural facility.
- Down time of any system should not be greater than 48 hours as per MNRE requirements. Bidder must have representative office area / district / state where systems are installed with minimum required material inventory and technical staff for sustainable of the systems.
- **Shifting of complete system:** In case of drying/failure of the borehole the department shall provide the raw water from other alternate source or permit relocating the plant to some other mutually acceptable location. Extra payment for relocation shall be payable, if any, as per rate determined/ analyzed by department treating the same as an extra item (not exceeding Rs 0.75 lacs/ plant). The bidder should shift the unit within 15 days.

10. PAYMENT OF SUBSIDY :

MNRE has agreed to provide subsidy for solar water pumping system used for drinking water purpose. Ministry of Drinking Water and Sanitation, GoI Letter No. F.No. W-11044/02/2012-Water-II dated 14.10.14 & No. 32/38/2014-15 /PVSE dated 2/2/2015 contain the details of subsidy to be provided. The department shall claim subsidy from MNRE/ RRECL directly. It shall however be responsibility of the vendor to execute the work as per tender specifications and MNRE guide lines to be eligible to get subsidy. The vendor shall also furnish information of HP of individual installations/ type of motor (AC/DC) & other required details well in advance to department to enable it to submit claim and utilization certificate accordingly.

Format for Completion Certificate

It is certified that M/s..... have satisfactorily completed and commissioned the following work awarded vide work order No. dated..... issued by (Name of order issuing authority).....:-

1	Name of work	
2	Amount of work order (Rs.)	
3	Stipulated date of commencement	
4	Stipulated date of completion	
5	Actual date of completion	
6	Delay if any (days)	
7	Amount of work completed (Rs.)	
8	Details of work completed	
	i. No of total SPV water pumping system ordered	
	ii. No of total SPV water pumping system completed & commissioned as listed below	

List of SPV water pumping system completed & commissioned

SN	District	MLA constituency	Block	Gram Panchayat	Name of habitation	HP of pump installed	Wp of solar panel installed	Remarks

Signature, seal and Name of the officer issuing certificate
(to be issued by officer not below the rank of Executive Engineer)

Annexure-I

**TENTATIVE LIST OF VILLAGES/ HABITATIONS FOR INSTALLATION OF
SOLAR ENERGY BASED WATER PUMPING SYSTEM**

S N	Name of District	MLA Constituency	Block Name	Panchayat Name	Village Name (MH)	Habitation Name	Present Populatio	Flouride	Hand Range of the Pump(Up to 60/60-90/90-120/120-150/150-180/180-210M)	No of New Bore Well Req	Remarks
1	SIROHI	Sirohi Sheoganj	Sirohi	Udd	Mandwara	Mandwara	2855	2.7	90-120	4	
2	SIROHI	Sirohi Sheoganj	Sirohi	Sanpur	Kakendra	Kakendra	1312	3.3	90-120	2	
3	SIROHI	Sirohi Sheoganj	Sirohi	Madiya	Madiya	Madiya	1960	2.3	90-120	3	
4	SIROHI	Sirohi Sheoganj	Sirohi	Amlari	Amlari	Amlari	2683	3.5	90-120	4	
5	SIROHI	ABU PINDWARA	Pindwara	Isra	Ker	Ker	2040	2.8	90-120	3	
6	SIROHI	ABU PINDWARA	Pindwara	Telpur	Arasana	Arasana	1933	4.2	90-120	2	
7	SIROHI	Sirohi Sheoganj	Sirohi	Sanpur	Positara	Positara	884	3.2	90-120	1	
8	SIROHI	ABU PINDWARA	ABUROAD	AMTHALA	AMTHALA	GORA ANGARIYA FALI	240	3.3	90-120	1	
9	SIROHI	ABU PINDWARA	ABUROAD	AMTHALA	AMTHALA	KALA ANGARIYA FALI	191	2.1	90-120	1	
10	SIROHI	ABU PINDWARA	Pindwara	Mandwara Khalsa	Khokhari Khera	Khokhari Khera	1060	3.7	90-120	1	
11	SIROHI	ABU PINDWARA	Pindwara	Isra	Churli Khera	Churli Khera	1040	1.9	90-120	1	
12	SIROHI	Sirohi Sheoganj	Sirohi	Sanpur	Siyakara	Siyakara	910	2.6	90-120	1	
13	SIROHI	Sirohi Sheoganj	Sirohi	Amlari	Bag	Bag	800	3.1	90-120	1	
14	SIROHI	ABU PINDWARA	Pindwara	Mandwara	Bor Umri	Bor Umri	452	3.7	90-120	1	
15	SIROHI	Sirohi Sheoganj	Sirohi	Sildar	Rampura	Rampura	256	3.2	90-120	1	
16	SIROHI	Sirohi Sheoganj	Sirohi	Fugani	Noon	Noon	2523	2.1	90-120	4	
17	SIROHI	Sirohi Sheoganj	Sirohi	Jailla	Jailla	Jailla	1334	2.6	90-120	1	
18	SIROHI	Sirohi Sheoganj	Sirohi	Bhootgaon	Bhootgaon	Bhootgaon	2464	3.2	90-120	3	
19	SIROHI	Sirohi Sheoganj	Sirohi	Bhootgaon	Jamotra	Jamotra	1758	2.3	90-120	3	
20	SIROHI	Sirohi Sheoganj	Sheoganj	Rowara	Keral	Keral	1315	2.1	90-120	1	
21	SIROHI	Sirohi Sheoganj	Sirohi	Sanpur	Sanpur	Sanpur	2106	2.3	90-120	3	
22	SIROHI	Sirohi Sheoganj	Sirohi	Tanwari	Chadual	Chadual	1439	4	90-120	1	
23	SIROHI	Sirohi Sheoganj	Sheoganj	Kesharpura	Chandana	Chandana	1109	2.6	90-120	1	
24	SIROHI	Sirohi Sheoganj	Sheoganj	Joyla	Joyla	Naya Joyla	1345	3.5	90-120	1	

Tender document for
Providing Installation & commissioning of SPV plants 07/2018-19

S N	Name of District	MLA Constituency	Block Name	Panchayat Name	Village Name (MH)	Habitastion Name	Present Populatio	Flouride	Hand Range of the Pump(Up to 50/60)	No of New Bore Well	Remarks
25	SIROHI	Sirohi Sheoganj	Sheoganj	Chuli	Chuli	Chuli	1133	3.6	90-120	1	
26	SIROHI	Sirohi Sheoganj	Sirohi	Sindarth	Meerpur	Meerpur	1383	5.1	90-120	1	
27	SIROHI	Sirohi Sheoganj	Sheoganj	Dhrubana	Dhrubana	Dhrubana	1179	2.9	90-120	1	
28	SIROHI	Sirohi Sheoganj	Sheoganj	Van	Van	Van	2259	5.8	90-120	3	
29	SIROHI	Sirohi Sheoganj	Sheoganj	Naradara	Sawali	Sawali	1074	3.1	90-120	1	
30	SIROHI	Sirohi Sheoganj	Sheoganj	Joyla	Joyla	Joyla	2900	3.7	90-120	4	
31	SIROHI	Sirohi Sheoganj	Sheoganj	Andore	Sagaliya	Sagaliya	1201	3.5	90-120	1	
32	SIROHI	Sirohi Sheoganj	Sheoganj	Oda	Oda	Oda	2599	3.8	90-120	4	
33	SIROHI	Sirohi Sheoganj	Sirohi	Madiya	Akoona	Akoona	1172	22	90-120	1	
34	SIROHI	Sirohi Sheoganj	Sirohi	Sartara	Valdara	Valdara	1528	3.5	90-120	1	
35	SIROHI	Sirohi Sheoganj	Sheoganj	Jhadoli	Taleta	Taleta	1103	3.8	90-120	1	
36	SIROHI	Sirohi Sheoganj	Sirohi	Manora	Manora	Manora	2355	9	90-120	3	
37	SIROHI	Sirohi Sheoganj	Sheoganj	Dhrubana	Godana	Godana	1373	2.5	90-120	1	
38	SIROHI	Abu Pindwara	Pindwara	Panchdeval	Phoola Bai Ka Khera	Phoola Bai Ka Khera	2705	5.5	90-120	4	
39	SIROHI	REODAR	REODAR	LUNOL	KAROTI	NEAR RIVER	1097	2.5	90-120	1	
40	SIROHI	REODAR	REODAR	Selwada	DHANPURA	In village	2162	3.7	90-120	3	
41	SIROHI	REODAR	REODAR	BHERUGARH	KARELI	Koliwas	1005	1.8	90-120	1	
42	SIROHI	Sirohi Sheoganj	Sirohi	Haliwara	Sirodaki	Sirodaki	1104	3.4	90-120	1	
43	SIROHI	REODAR	REODAR	Nembaj	Nembaj	In village	672	3.4	90-120	3	
44	SIROHI	Sirohi Sheoganj	Sirohi	Sartara	Siloiya	Siloiya	1695	3.1	90-120	1	
45	SIROHI	REODAR	REODAR	DABANI	CHAPOL	MEGHWALWAS	885	2.1	90-120	1	
46	SIROHI	REODAR	REODAR	GUNDWARA	JAMTHA	Koliwas	1008	1.6	90-120	1	
47	SIROHI	REODAR	REODAR	Datani	KARJIYA	REBARIWAS	1137	1.9	90-120	1	
48	SIROHI	Abu Pindwara	Pindwara	Gharat	Gharat	Gharat	3006	2.7	90-120	4	
49	SIROHI	REODAR	ABUROAD	MAVAL	MAVAL	GOVT.SCHOOL DHANI	400	1.8	90-120	1	
50	SIROHI	REODAR	ABUROAD	MAVAL	MAVAL	NATH COLONY	334	1.8	90-120	1	
51	SIROHI	REODAR	ABUROAD	MAVAL	MAVAL	RABARI WAS	400	1.8	90-120	1	
52	SIROHI	REODAR	REODAR	Bherugarh	AWADA	In village	1958	2.2	90-120	2	
53	SIROHI	REODAR	REODAR	NIMBAJ	KESUA	Raput Was	935	5.7	90-120	1	
54	SIROHI	Sirohi Sheoganj	Sheoganj	Rukhara	Rukhara	Rukhara	1496	2.1	90-120	1	
55	SIROHI	REODAR	REODAR	LUNOL	PERWA	In village	1429	2.4	90-120	2	
56	SIROHI	REODAR	REODAR	Dhawli	Dhawli	In village	3042	2.3	90-120	3	
57	SIROHI	REODAR	ABUROAD	SOORPAGLA	SOORPAGLA	SOORPAGLA	2045	1.8	90-120	1	
58	SIROHI	REODAR	ABUROAD	SOORPAGLA	DERI	KHADRA FALI	285	1.8	90-120	1	
59	SIROHI	REODAR	ABUROAD	MOONGTHALA	MOONGTHALA	MOONGTHALA	1920	6.8	90-120	1	
60	SIROHI	REODAR	ABUROAD	MOONGTHALA	MOONGTHALA	MEGHWAL FALI	119	6.8	90-120	1	
61	SIROHI	REODAR	ABUROAD	JAMBURI	JAMBURI	JAMBURI	1060	3.7	90-120	1	
62	SIROHI	REODAR	REODAR	POSITARA	DANGERLI	near School	1077	4.6	90-120	1	
63	SIROHI	REODAR	REODAR	Datani	SALOTARA	Koliwas	1158	1.8	90-120	1	

Tender document for
Providing Installation & commissioning of SPV plants 07/2018-19

S N	Name of District	MLA Constituency	Block Name	Panchayat Name	Village Name (MH)	Habitastion Name	Present Populatio	Flouride	Hand Range of the Pump(Up to 60/60)	No of New Bore Well	Remarks
64	SIROHI	REODAR	REODAR	Makawal	GORLI	Koliwas	1170	2.1	90-120	1	
65	SIROHI	REODAR	REODAR	DATANI	PALDIKHERA	Megwal Was	1231	1.8	90-120	1	
66	SIROHI	REODAR	REODAR	RAIPUR	WADVAJ	Megwal Was	1255	3.3	90-120	1	
67	SIROHI	REODAR	REODAR	SELWADA	SERWA	Koliwas	1294	1.6	90-120	1	
68	SIROHI	REODAR	REODAR	Rohua	Rohua	In village	2707	2.6	90-120	1	
69	SIROHI	REODAR	REODAR	RAIPUR	RAIPUR	In village	2162	2.1	90-120	3	
70	SIROHI	REODAR	REODAR	Marol	Nimbora	near School	1872	2.6	90-120	2	
71	SIROHI	REODAR	REODAR	PADAR	BADECHI	Kolwas	1521	1.7	90-120	2	
72	SIROHI	REODAR	REODAR	Marol	MITHAN	In village	1511	1.9	90-120	2	
73	SIROHI	REODAR	REODAR	Dhawli	THAL	In village	2522	1.8	90-120	3	
74	SIROHI	Sirohi Sheoganj	Sheoganj	Bagseen	Bhaiv	Bhaiv	3772	2.3	90-120	4	
75	SIROHI	Abu Pindwara	Pindwara	Peshua	Peshua	Peshua	3197	2.9	90-120	4	
76	SIROHI	Abu Pindwara	Pindwara	Kojra	Shivgarh	Shivgarh	2753	3.9	90-120	3	
77	SIROHI	Abu Pindwara	Pindwara	Bhimana	Tarungi	Tarungi	2039	2.2	90-120	2	
78	SIROHI	Abu Pindwara	Pindwara	Gharat	Malera	Malera	1992	1.6	90-120	2	
79	SIROHI	Abu Pindwara	Pindwara	Thandi Beri	Malap	Malap	1946	2.1	90-120	2	
80	SIROHI	Abu Pindwara	Pindwara	Undra	Muri	Muri	1718	6.6	90-120	2	
81	SIROHI	Abu Pindwara	Pindwara	Achpura	Achpura	Achpura	1402	5.8	90-120	1	
82	SIROHI	Abu Pindwara	Pindwara	Undra	Kerla Padar	Kerla Padar	1333	4.5	90-120	1	
83	SIROHI	Sirohi Sheoganj	Sirohi	Udd	Udd	Udd	3081	2.6	90-120	4	
84	SIROHI	Sirohi Sheoganj	Sheoganj	Chheebagaon	Chotila	Chotila	1168	2.5	90-120	1	
85	SIROHI	Sirohi Sheoganj	Sirohi	Sartara	Sartara	Sartara	1109	3.5	90-120	1	
86	SIROHI	Sirohi Sheoganj	Sheoganj	Bagseen	Bagseen	Bagseen	3393	4.2	90-120	4	
87	SIROHI	Sirohi Sheoganj	Sheoganj	Morli	Barewara	Barewara	1253	13.6	90-120	1	
88	SIROHI	REODAR	ABUROAD	DHAMSARA	BAGERI	BAGERI	884	2.1	90-120	1	
89	SIROHI	REODAR	ABUROAD	KIVERLI	PANDURI	RAJPUT VAS	464	1.6	90-120	1	
90	SIROHI	REODAR	ABUROAD	KIVERLI	PANDURI	MATA JI MANDIR KE PASS	1308	4	90-120	1	
91	SIROHI	ABU-PIND.	ABUROAD	Muderla	KYARA	KYARA	385	3.7	90-120	1	
92	SIROHI	REODAR	ABUROAD	UPLAGARH	UPLAGARH	NEAR ANGANWARI	434	1.9	90-120	1	
93	SIROHI	REODAR	REODAR	Datani	Karjiya	Nr. School Garasiya Basti	1052	3	90-120	1	
94	SIROHI	REODAR	REODAR	Jolpur	Vikanwas	Kolio Ka Vas	1327	3.5	90-120	1	
95	SIROHI	REODAR	REODAR	Selwada	Selwada	Bus Stand	1230	2.3	90-120	1	
96	SIROHI	REODAR	REODAR	Nembaj	Himmatpura	In village	799	2.6	90-120	1	
97	SIROHI	REODAR	ABUROAD	Taleti	Meen	In village	698	1.9	90-120	1	
98	SIROHI	REODAR	REODAR	Vasan	Vasan	Kochariya Khera	4819	3.5	90-120	1	
99	SIROHI	REODAR	REODAR	Selwada	Selwada	Rabarion Ka Vas	1230	2.1	90-120	1	
100	SIROHI	REODAR	REODAR	Bherugarh	Kareli	Nr. Patwarghar	1280	2.3	90-120	1	
101	SIROHI	REODAR	REODAR	Selwada	Selwada	Kumharo Ka Vas	1230	2.8	90-120	1	
102	SIROHI	REODAR	REODAR	Selwara	Dhandhpura	Near Temple	1660	3	90-120	1	

Tender document for
Providing Installation & commissioning of SPV plants 07/2018-19

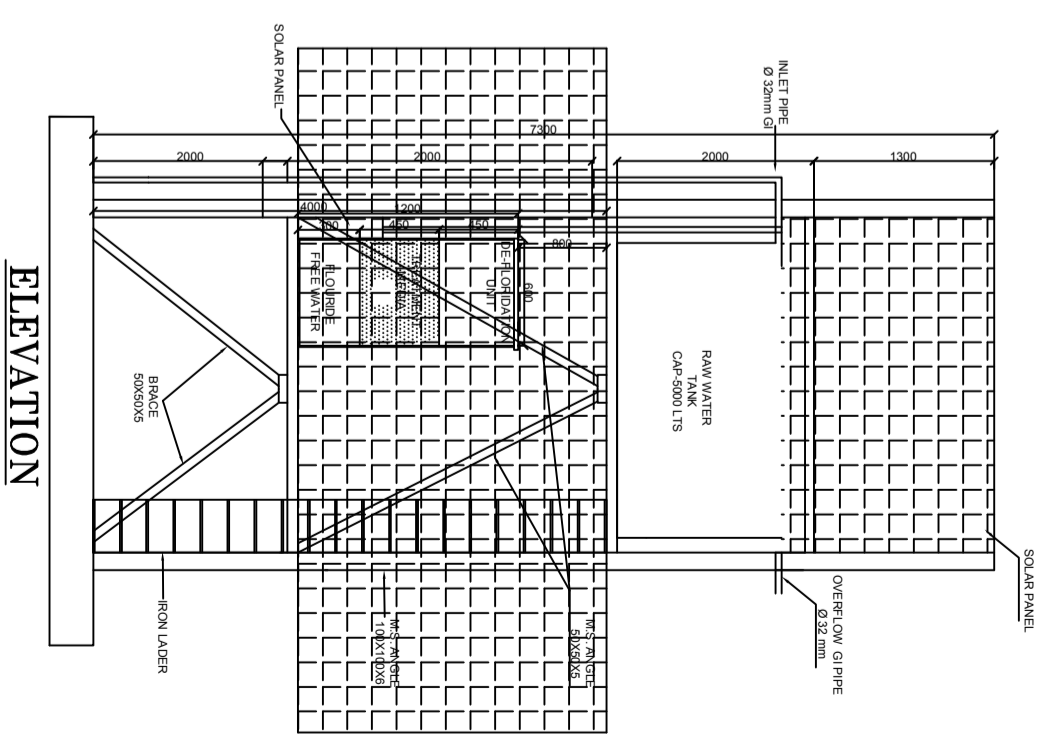
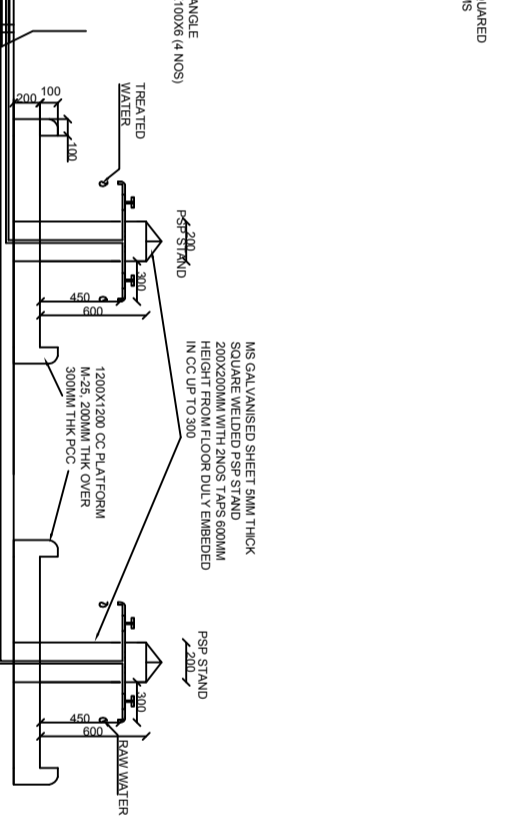
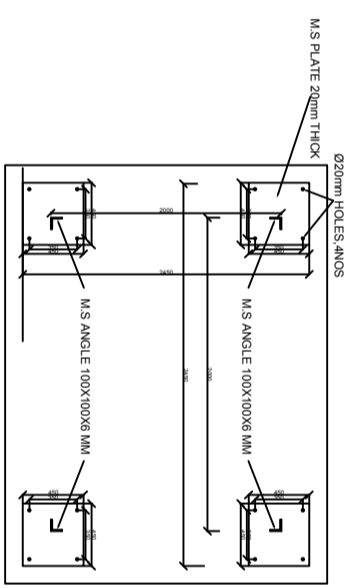
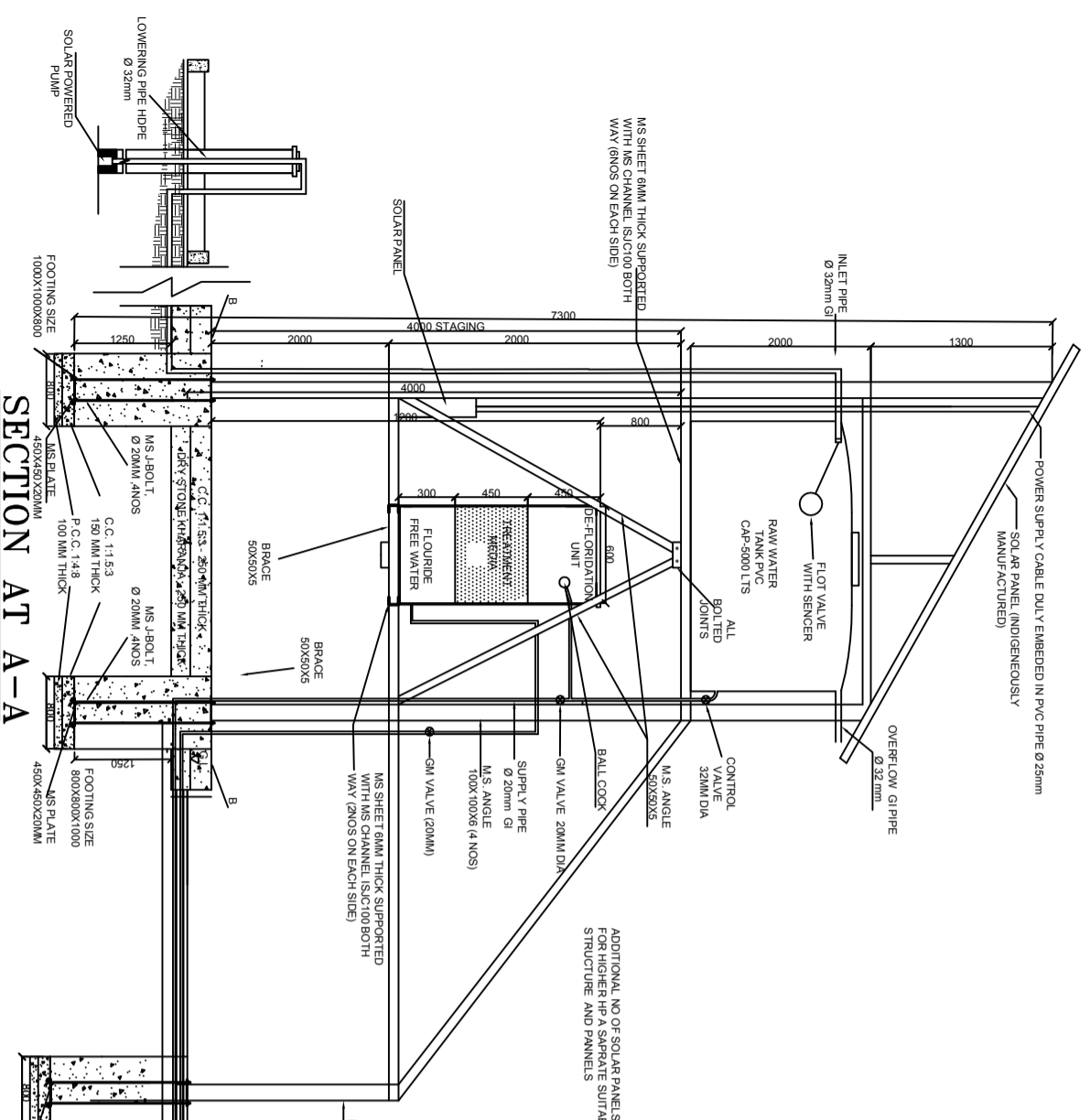
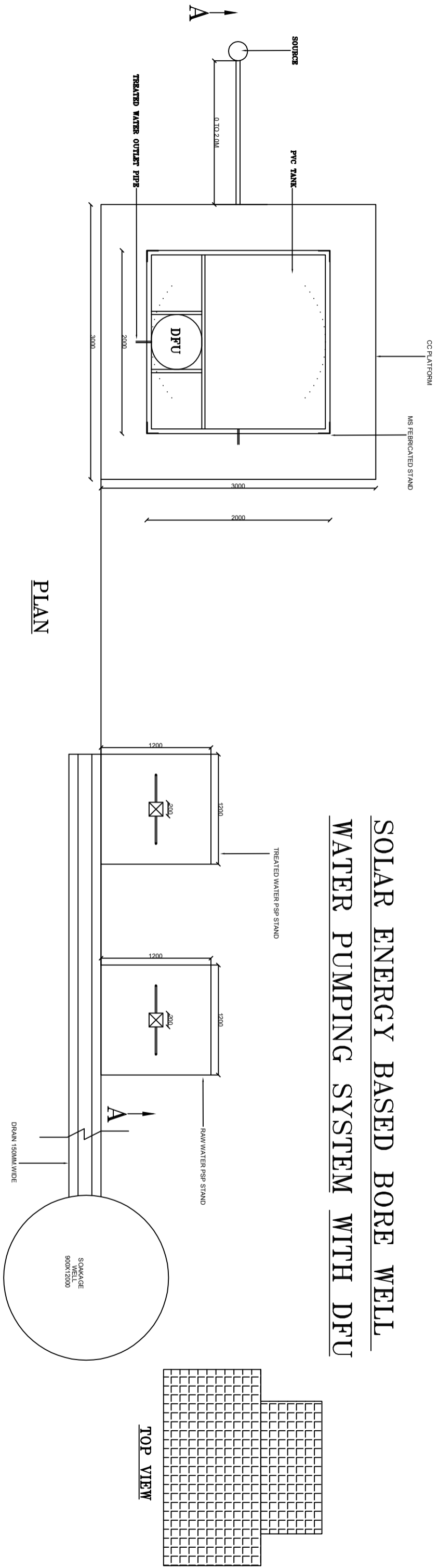
S N	Name of District	MLA Constituency	Block Name	Panchayat Name	Village Name (MH)	Habitastion Name	Present Populatio	Flouride	Hand Range of the Pump(Up to 60/60)	No of New Bore Well	Remarks
103	SIROHI	REODAR	REODAR	Jolpur	Derol	Bus Stand	647	2.2	90-120	1	
104	SIROHI	REODAR	REODAR	Datani	Bidmiya	Nr. School Garasiya Basti	240	3.2	90-120	1	
105	SIROHI	REODAR	ABUROAD	ORE	Derna	At the GLR	1154	1.9	90-120	1	
106	SIROHI	ABU-PIND.	ABUROAD	PABA	Paba	In village	186	2.1	90-120	1	
107	SIROHI	ABU-PIND.	ABUROAD	DOITARA	Bori Bhuj	Baliya Khet Meen Nr Anganwadi	317	1.9	90-120	1	
108	SIROHI	REODAR	ABUROAD	Siyawa	Siyawa	Mali Vas	475	4.1	90-120	1	
109	SIROHI	REODAR	ABUROAD	Taleti	Meen	SC/ST Basti	250	1.9	90-120	1	
110	SIROHI	REODAR	REODAR	Selwara	Dhandhpura	Basiya Dhani	1660	2.1	90-120	1	
111	SIROHI	REODAR	REODAR	Vasan	Vasan	Ratanpura Khera	4819	2.3	90-120	1	
112	SIROHI	REODAR	REODAR	Dhawli	Thal	Sasaliya Fali	2742	2.2	90-120	1	
113	SIROHI	REODAR	REODAR	Jolpur	Vikanwas	On village Chohta	1327	2	90-120	1	
114	SIROHI	ABU-PIND.	ABUROAD	Muderla	Muderla	Velangari Fali	296	3.6	90-120	1	
115	SIROHI	REODAR	REODAR	Peethapura	Peethapura	Nr. Canal (Kumhar Vas)	3487	3.2	90-120	1	
116	SIROHI	REODAR	ABUROAD	Siyawa	Siyawa	Mata Fali	296	1.7	90-120	1	
117	SIROHI	REODAR	ABUROAD	Chandela	Chandela	in village ST basti	781	3.5	90-120	1	
118	SIROHI	Sirohi Sheoganj	SIROHI		Nawara	H.P. Meghwal vas	1984	2	90-120	3	
119	SIROHI	Sirohi Sheoganj	SIROHI		Balda	H.P. Village	934	3.3	90-120	1	
120	SIROHI	Sirohi Sheoganj	SIROHI		Akuna	Public Tap	1267	1.8	90-120	1	
121	SIROHI	Sirohi Sheoganj	SIROHI		Nimbora	Nr. Sec. School	835	1.8	90-120	1	
122	SIROHI	Sirohi Sheoganj	SIROHI		Balda (V)	Nr. GLR	1624	1.6	90-120	1	
123	SIROHI	Sirohi Sheoganj	SHEOGANJ		VERA VILPUR	IN SCHOOL	1331	2.3	90-120	1	
124	SIROHI	ABU-PIND.	ABUROAD	DOITARA	Bori Bhuj	Nichhali Fali	385	2	90-120	1	
125	SIROHI	ABU-PIND.	ABUROAD	DOITARA	Bori Bhuj	Gopala Beda, Police Forest Choki	210	1.8	90-120	1	
126	SIROHI	ABU-PIND.	ABUROAD	DOITARA	Bori Bhuj	Bejya Kher	317	1.6	90-120	1	
127	SIROHI	ABU-PIND.	ABUROAD	DOITARA	Bori Bhuj	Bhagla Fali	263	2.1	90-120	1	
128	SIROHI	ABU-PIND.	ABUROAD	DOITARA	Bori Bhuj	Nai Aanganwadi	638	2.2	90-120	1	
129	SIROHI	ABU-PIND.	ABUROAD	PABA	Paba	Sanva Fali Nr. Saluba Surama Nadia Fali	140	2	90-120	1	
130	SIROHI	ABU-PIND.	ABUROAD	PABA	Paba	Ratra Fali	283	2	90-120	1	
131	SIROHI	ABU-PIND.	ABUROAD	PABA	Ranora	In village	336	2	90-120	1	
132	SIROHI	ABU-PIND.	ABUROAD	PABA	Ranora	Near School	164	2	90-120	1	
133	SIROHI	REODAR	ABUROAD	ORE	Derna	Rabari Vas	144	1.9	90-120	1	
134	SIROHI	REODAR	ABUROAD	ORE	Derna	Rajput Vas Laxman Singh	133	1.7	90-120	1	
135	SIROHI	REODAR	ABUROAD	ORE	Derna	Nichhala Bhilwara PHED Quarter	227	1.7	90-120	1	
136	SIROHI	REODAR	ABUROAD	ORE	Derna	Purohit Vas	144	3.1	90-120	1	
137	SIROHI	ABU-PIND.	ABUROAD	Muderla	Muderla	Viya Ki Fali	296	4.1	90-120	1	
138	SIROHI	ABU-PIND.	ABUROAD	Muderla	Muderla	Bhima Patel Fali	535	1.9	90-120	1	

Tender document for`
Providing Installation & commissioning of SPV plants 07/2018-19

S N	Name of District	MLA Constituency	Block Name	Panchayat Name	Village Name (MH)	Habitastion Name	Present Populatio	Flouride	Hand Range of the Pump(Up to 50/50)	No of New Bore Well	Remarks
139	SIROHI	ABU-PIND.	ABUROAD	Muderla	Muderla	Harji Patel Ki Fali	610	3.8	90-120	1	
140	SIROHI	ABU-PIND.	ABUROAD	Muderla	Muderla	Bhandari Fali	149	2.4	90-120	1	
141	SIROHI	ABU-PIND.	ABUROAD	Muderla	Muderla	In village	779	3.7	90-120	1	
142	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Chouhano Ki Fali	328	3.2	90-120	1	
143	SIROHI	REODAR	ABUROAD	Chandela	Amba Beri	SC/ ST Basti	781	4.9	90-120	1	
144	SIROHI	REODAR	ABUROAD	Chandela	Amba Beri	Upli Fali	188	2.3	90-120	1	
145	SIROHI	REODAR	ABUROAD	Bahadupura	Mahekhera	In Village	445	1.9	90-120	1	
146	SIROHI	REODAR	ABUROAD	Bhadurpura	Sakoda	Dedka Pooki Dhani	209	4.9	90-120	1	
147	SIROHI	REODAR	ABUROAD	Bhadurpura	Sakoda	Heera Bhai Ghar Ki Dhani	268	1.8	90-120	1	
148	SIROHI	REODAR	ABUROAD	Bhaisa Singh	Bhaisa Singh	SC/ST basti	407	2.3	90-120	1	
149	SIROHI	REODAR	ABUROAD	Bhaisa Singh	Bhaisa Singh	Near Nai School	409	2	90-120	1	
150	SIROHI	REODAR	ABUROAD	Jamburi	Jamburi	Jhakora Fali	194	3.2	90-120	1	
151	SIROHI	REODAR	ABUROAD	Jamburi	Jamburi	Nala Fali	194	3	90-120	1	
152	SIROHI	REODAR	ABUROAD	Jamburi	Jamburi	Uplifali	408	3.5	90-120	1	
153	SIROHI	REODAR	ABUROAD	Taleti	Meen	Vera Fali	132	1.8	90-120	1	
154	SIROHI	REODAR	ABUROAD	Taleti	Meen	Kingra Fali	250	1.8	90-120	1	
155	SIROHI	REODAR	ABUROAD	Taleti	Meen	Upra Khetra Fali	250	1.8	90-120	1	
156	SIROHI	REODAR	ABUROAD	UPLAGARH	UPLAGARH	GAON FALI	536	1.8	90-120	1	
157	SIROHI	REODAR	REODAR	Dabani	Chhapol	In School	1212	3.5	90-120	1	
158	SIROHI	REODAR	REODAR	Selwara	Dhandhpura	Nr. School	1660	2.8	90-120	1	
159	SIROHI	REODAR	REODAR	Dabani	Dabani	In village	1840	2	90-120	2	
160	SIROHI	REODAR	REODAR	Bherugarh	Bherugarh	In village	1230	2.6	90-120	2	
161	SIROHI	REODAR	REODAR	Sanwara	Asawa	In village	1825	2.3	90-120	3	
162	SIROHI	REODAR	REODAR	Peethapura	Peethapura	In village	3487	2.3	90-120	3	
163	SIROHI	REODAR	REODAR	Jolpur	Vikanwas	SC/ST Basti	1327	3	90-120	1	
164	SIROHI	REODAR	REODAR	Jolpur	Derol	In School	647	2.6	90-120	1	
165	SIROHI	REODAR	REODAR	Datani	Karjiya	Garasiya Basti on Road	1052	2.8	90-120	1	
166	SIROHI	REODAR	REODAR	Datani	Mulia Khera	Garasiya Fali	661	3	90-120	1	
167	SIROHI	REODAR	REODAR	Makawal	Bootadi	In village	656	3.5	90-120	2	
168	SIROHI	REODAR	REODAR	Jeerawal	Panchdeval	In village	73	2.3	90-120	1	
169	SIROHI	REODAR	REODAR	Marol	Nimbora	In village	1846	3.5	90-120	2	
170	SIROHI	REODAR	REODAR	Vasan	Vasan	At the GLR	5510	1.8	90-120	1	
171	SIROHI	Sirohi Sheoganj	Sheoganj	Jetpura	Jetpura	Jetpura	2029	2.3	90-120	2	
172	SIROHI	Sirohi Sheoganj	Sheoganj		Kaldari	Kaldari	887	2.1	90-120	2	
173	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Rabari Vas	131	1.8	90-120	1	
174	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Dela Fali	166	2.1	90-120	1	
175	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Jabrafali	328	1.9	90-120	1	
176	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Bhola Dena	131	1.8	90-120	1	
177	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Vaga Fali	532	2	90-120	1	
178	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Amardo Ki Fali	205	2.1	90-120	1	
179	SIROHI	REODAR	ABUROAD	Chanar	Chanar	Vaya Ki Fali	532	1.9	90-120	1	
180	SIROHI	REODAR	ABUROAD	Chanar	Forest Chotila	At the HP located	265	2.1	90-120	1	
181	Pali	Jaitaran	Raipur	Sumel	Nahargarh	Nahargarh	686	2	90-120	1	

DRAWINGS

SOLAR ENERGY BASED BORE WELL WATER PUMPING SYSTEM WITH DFU



TOP VIEW

PLAN

SECTION AT A-A

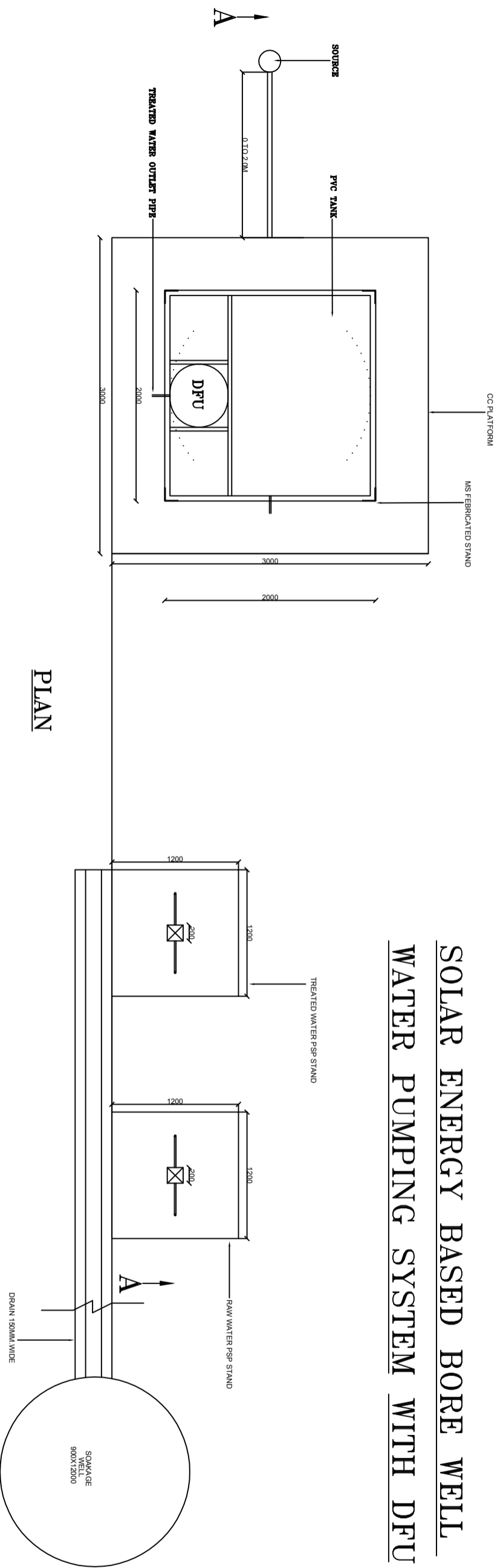
SECTION AT B-B

ELEVATION

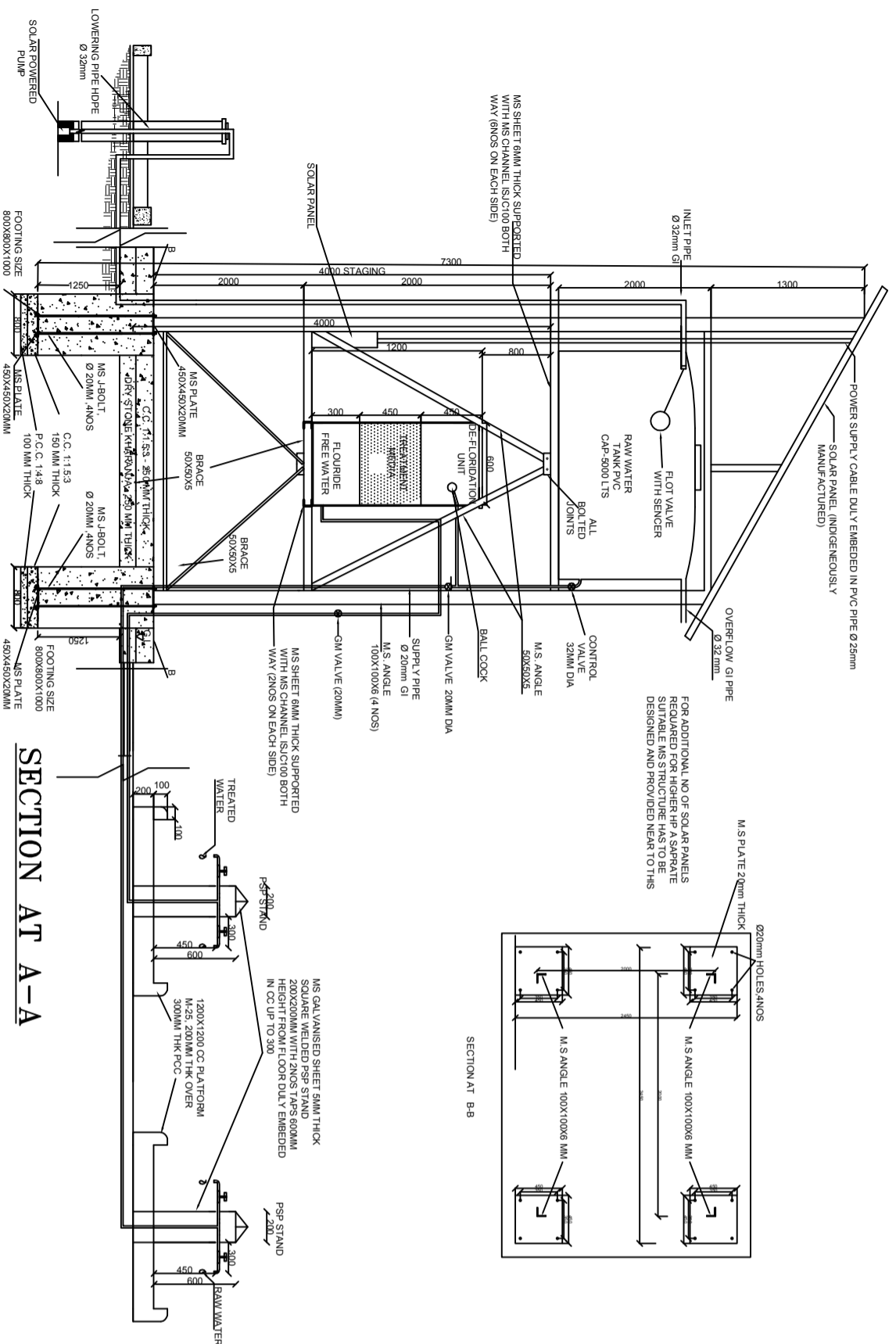
ADDL. CHIEF ENGINEER
P.H.E.D. -----
SOLAR ENERGY BASED BORE WELL
WATER PUMPING SYSTEM

Drawing No.-

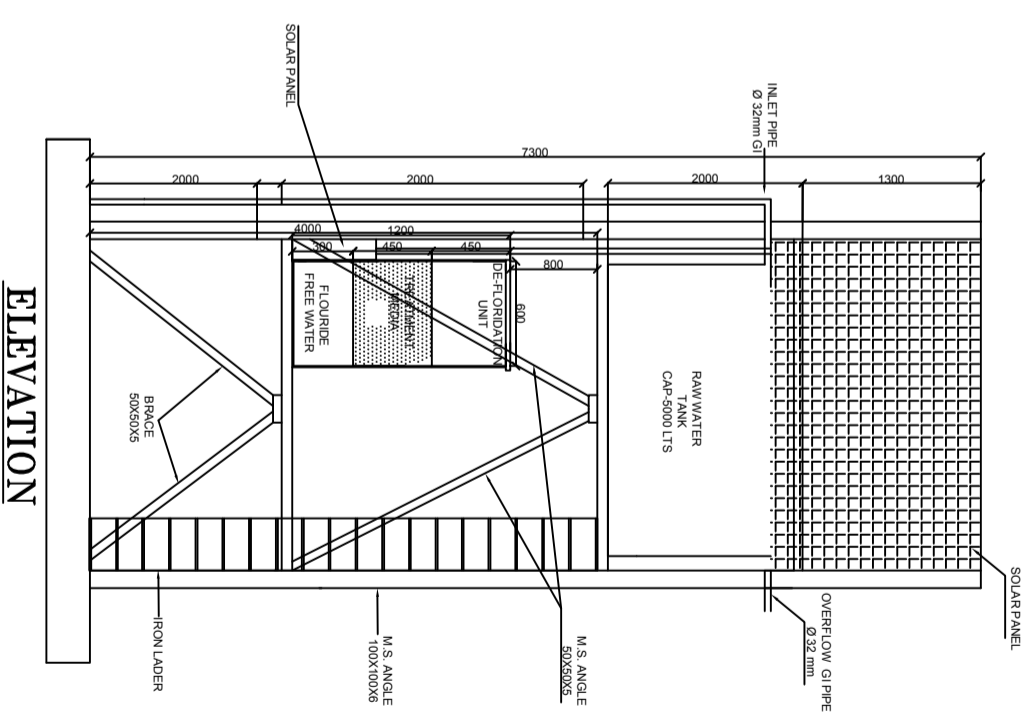
SOLAR ENERGY BASED BORE WELL WATER PUMPING SYSTEM WITH DFU



PLAN



SECTION AT A-A



ELEVATION

ADDL. CHIEF ENGINEER
P.H.E.D.
SOLAR ENERGY BASED BORE WELL
WATER PUMPING SYSTEM

Drawing No. -

फोटो 1

राजस्थान सरकार
जन स्वास्थ्य अभियान्त्रिकी विभाग

फोटो 2

सौर ऊर्जा चलित पनघट योजना मय
डी-फ्लोरिडेशन संयंत्र

ग्राम का नाम ग्राम पंचायत का नाम जिले का नाम योजना प्रारंभ
करने की दिनांक



जल ही जीवन का आधार हैं, बून्द बून्द बचाइये

शिकायत के लिए टोल फ्री नम्बर-

-

निर्माता कम्पनी का नाम
प्लांट ऑपरेटर का नाम व मोबाईल
नम्बर

SAMPLE FLEX DESIGN