

SCHEDULE OF QUANTITY

Name of Work : Providing LWSS Rudana in G.P. Shiva Sanog in Tehsil Paonta Sahib Distt. Sirmour(HP)
(SH:- Providing and fixing of complete solar pump set with all accessories for water lifting scheme and its automation)

Estimated Cost :-Rs.300000/-
Earnest Money :-Rs.6000/-
Time:- Three months.

Sr.No. 1	Description 2	Qty. 3	Rate 4	Unit 5	Amount 6.
<u>PUMPING MACHINERY</u>					
1	Design, Engineering, Providing and fixing of complete solar pump set with all accessories as per direction of Engineer-in-Charge including testing, commissioning complete including providing M.S. sheet 16 SWG steel fabricated floor mounted closed almirah type switch board including angle iron post of suitable height and size ISA 40x40x6mm duly painted comprising and capable of mounting the allied accessories with all internal connections including with locking arrangement.. The drawing of panel board shall be subject to approval of Engineer in charge, including with locking arrangement.	5.00		HP	
i)	<u>PV ARRAY:</u> The SPV water pumping system should be operated with a PV array .Sufficient number of modules in series and parallel could be used to obtain the required PV array power output. Use of PV modules with higher power output is preferred. a). Indigenously produced PV module (s) containing mono/ multi crystalline silicon solar cells should be used in the PV array for the SPV Water Pumping systems. b). Modules supplied with the SPV water pumping systems should have certificate as per IEC 61215 specifications or equivalent National or International/ Standards. c). Modules must qualify to IEC 61730 Part I and II for safety qualification testing. d). The efficiency of the PV modules should be minimum 14% and fill factor should be more than 70%. e). The terminal box on the module should have a provision for "Opening" for replacing the cable, if required. f). There should be a Name Plate fixed inside the module which will give: Name of the Manufacturer or Distinctive Logo, Model Number , Serial Number, Year of manufacture				
ii)	<u>MOTOR PUMP-SET:</u> Submersible solar AC Pump to meet required discharge and head and should have the following features. a. MNRE approved Solar AC pump of reputed make i.e KSB/Lubi/ Kirloskar/or equivalent. b. The manufacturers of pumps should self-certify that, the pump and all external parts of motor used in submersible pump which are in contact with water, are of stainless steel.				
	i) Head: 147.96 mtr.				
	ii) Discharge: 0.97 LPS				
	iii) Dia of Rising main:- 40 mm dia				
iii)	<u>MOUNTING STRUCTURES AND TRACKING SYSTEM:</u> a. The PV modules should be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. The support structure used in the pumping system should be hot dip galvanized iron with minimum 80 micron thickness. b. To enhance the performance of SPV water pumping systems, manual or passive tracking system must be used.				

1	2	3	4	5	6.
iv)	<p><u>ELECTRONICS AND PROTECTIONS:</u></p> <p>a. Maximum Power Point Tracker (MPPT) should be included to optimally use the Solar panel and maximize the water discharge.</p> <p>b. The inverter must have IP 54 protection or must be housed in a cabinet having at least IP54 protection.</p> <p>c. Adequate protections should be incorporated against dry operation of motor pump set, lightning, hails and storms.</p> <p>d. Full protection against open circuit, accidental short circuit and reverse polarity should be provided.</p>				
v)	<p><u>OTHER ASSESSORIES:</u></p> <p>a. A good reliable switch suitable for DC / AC use is to be provided with the motor pump set.</p> <p>b. Sufficient length of cable should be provided for inter-connection between the PV array and the motor pump set.</p>				
2	<p>Providing and fixing of GSM based remote submersible pump auto operation control cum protection device for solar pump as per item no. 1, complete in all respects with in all leads and lifts as per direction of Engineer-in-Charge including testing, commissioning complete with following features:-</p> <p>i) Remote start / stop operation of pump with Call /SMS.</p> <p>ii) Pump start / stop feedback through call /SMS with reason of stop / trip.</p> <p>iii) Pump start / stop feedback through unauthorized local start / stop through starter.</p> <p>iv) Auto / Manual mode for auto pump start post grid supply resumption.</p> <p>v) Remotely settable timer for scheduling pump start / stop on Hourly / daily / Weekly / Monthly basis.</p> <p>vi) Remotely settable timer for scheduling pump starter / stop for fixed hours in a day.</p> <p>vii) Inbuilt Protection against over run, phase reversal, Single phasing . With user configurable remotely settable voltage and current limits for these protections.</p> <p>viii) Inbuilt GPS tracker for prevention of loss / theft.</p> <p>ix) Controlled operation access through authenticated mobile numbers only which can be added for removed by main user remotely.</p>				
				Total:-	

TERMS AND CONDITIONS:-

- 1 The work shall be executed as per IPH/PWD specification and instructions of the Engineer-in-charge.
- 2 Security, GST and Income tax will be deducted from each bill as per latest Govt. Amendments.
- 3 The PV Modules must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. The whole system including submersible pumps shall be warranted for 1 years and after sale service should be 10 years at least.
- 4 The device shall be manufactured by reputed company having ISO certification.
- 5 The Mobile SIM and operation changes shall be borne by department.
- 6 The Make, Model and specifications of the Equipment being supplied should be clearly mentioned by the bidder in the offer.
- 7 All accessories required to make the system fully functional shall be part of the original equipment nothing extra shall be paid on this account.

- 8 The Contractor/bidder should submit Manufacturers or system integrators Authorization with the offer.
- 9 The equipment supplied should be compatible to the HPSEB Norms. The wiring and installation of electric equipment shall be as per HPSEB rules and regulations and subject to the approval of the Chief Electrical Inspector and or his authorized ,Officer.
- 10 Any defect pointed out shall be rectified by the firm without any extra cost.
- 11 All statutory deductions as applicable from time to time shall be deducted from running bills of contractor on the total amount of work done including cost of material supplied by the Department.
- 12 Royalty toll taxes and other local taxes will be paid by the contractor himself.
- 13 The contractor will show their enlistment/renewal in IPH Department at the time of obtaining of tender forms.
- 14 Tender forms shall not be issued to contractors/firms who are not registered under GST.
- 15 The Contractors/Firms must quote their rates in words as well as in figures.
- 16 The tenders of those contractors/firms will not be considered whose previous performance is found not satisfactory and who has not done such type of work.

- 17 In case of sudden holiday on the date of opening of tenders the same will be opened on the next working day.
- 18 Comprehensive Warranty and Guarantee of the complete system:-12 Months from the date of completion and acceptance of the work. In case any defect is found within Warranty period the same will be rectified by the contractor free of cost at the site of work with a down time of less than 36 Hours will be released after expiry of the warranty and the AMC period.
- 19 The down time due to failure of the system should not exceed more than 36 hours otherwise a penalty of 1% of total amount of the award shall be charged for each day for which the system is not fully functional. In case the fault due to which the scheme is idle /partly functional beyond three days the penalty shall be charged @ 2% per day.
- 20 Electrical power supply shall be provided by the department. The contractor shall not use the electricity for any other purpose except for the bonafied use of the running and repair of scheme.
- 21 Item to be dismantled after installation of automation system shall be handed over to the J.E. Concerned for proper record.
- 22 Watch and ward shall be provided by the department
- 23 The bidder shall provide manual of operation and also train the departmental worker to operate the system.

Executive Engineer,
I&PH Division,
Paonta Sahib (HP)