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1. E-Tender Notice

E-Tender is invited on behalf of Governor of Haryana for the work mentioned below from Firms/ agency/ contractor enlisted/ registered at least up to DNIT cost with any Department/ Board/ Corporation of Central or any State Govt. on the date of opening of tender as per the eligibility criteria as mentioned in the tender document.

Sr. No.	Particular	Remarks
1	Description of work/ items	Jamalpur- Providing canal based drinking water supply be construction of B/S, laying of rising main (Rs. 81.70 Lacs) "Supply, fixing and commissioning of Solar panel system off grid capable of generating 10 KW including solar panels, solar controller, Horizontal Submersible motor pump set & cabling etc. complete in all respects in village Khentawas and all other works contingent there to".
2	➤ Tender document fee ➤ e-service fee ➤ Earnest Money	Rs..... Rs..... Rs.....
3	Bid submission End Date and Time	
5	Bid Opening Date & Time	
The bid forms and other details can be downloaded from the website i.e. https://etenders.hry.nic.in		

**Executive Engineer
Public Health Engineering
Division Gurugram**

Ph. 0124-4238801
Email id- ee.gurugram@phedharyana.gov.in

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2. Instructions to bidder on Electronic Tendering System

Registration of bidders on e-procurement Portal:-

Detailed instructions may be seen under “Help for Contractors” option available on Home Page of NIC e-Procurement portal i.e. <https://etenders.hry.nic.in>.

Information about Digital Certificate

Detailed instruction may be seen under “Information about DSC” option available on Home Page of NIC e-Procurement portal i.e. <https://etenders.hry.nic.in>

Instructions about Online Payment of Tender Document Fee/ e-service fee/ Earnest Money

Bidders have to pay Earnest Money Deposit (EMD), Tender Document Fee & e-Service Fees online only as applicable. For detailed instructions refer to FAQ for Online Payment available at Home page of NIC e-Procurement portal i.e. <https://etenders.hry.nic.in>

Other General Issues

Solutions of general queries may be seen under “FAQ” option available on Home page of NIC e-Procurement portal i.e. <https://etenders.hry.nic.in>

HELP- DESK SUPPORT

Office Timing of Help –desk Support & Contact details

The detail may be seen under “Contact us’ Option available on Home page of NIC e-Procurement portal i.e. <https://etenders.hry.nic.in>

For Support related to Haryana Tenders in addition to Helpdesk:-

In addition , For support related to Haryana Tenders in addition to helpdesk you may also contact to following

Email id- eproc.nichry@yahoo.com

Telephone No. 071-2700275

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3. Eligibility Criteria

The Bidder should have completed at least one project of installation of Solar System of any capacity and completion certificate from the competent authority not less than the rank of Executive Engineer needs to be uploaded along with the bid as eligibility criteria.

Note: 1. Bidders requested to visit the site of work before participating in the bid.

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4. NOTICE INVITING TENDER

Jamalpur- Providing canal-based drinking water supply be construction of B/S, laying of rising main (Rs. 81.70 Lacs) "Supply, fixing and commissioning of Solar panel system off grid capable of generating 10 KW including solar panels, solar controller, Horizontal Submersible motor pump set & cabling etc. complete in all respects in village Khentawas and all other works contingent there to".

Rs. 3.69 lacs

PARTICULAR OF THE OFFICER

INVITING THE TENDERS

Executive Engineer

Haryana Public Health Engineering Deptt.

Public Health Engineering Division

Gurugram

Hereinafter referred to as

“Executive Engineer”

1. i) The tender shall required to be kept open for acceptance for a period of at least 3 calendar months from the prescribed date of opening of the tenders/price bid. Any tender not complying with the above conditions shall be rejected outright and the earnest money forfeited. Further the quoted rates of such tender shall not be announced at the time of opening.
 - ii) The tenders shall not be modified or withdrawn at any time after submission, until 3 calendar months have elapsed after the date of opening.
 - iii) Tenders shall not be burdened with any conditions.
Any infringement of above is likely to result in loss of earnest money.
- 2 The approval to acceptance of the tender will rest with the Governor of Haryana or any other duly authorized Officer, acting for and on his behalf, who does not bind himself to accept the lowest tender and reserve to himself the authority to reject any or all of the tenders received without assigning any reason whatsoever.
3. The contractor, whose tender is accepted will be required to execute a contract deed on the condition contained in the prescribed mentioned in paragraphs (2) above, amended as per E-tendering conditions and will be required to furnish security for the due fulfillment of his contract. The **security shall be Rs. 5% of the estimated cost of work, including the earnest money already deposited and performance security to be deposited.** The demand notice for deposit of full amount of security may be made any time after the letter of acceptance has been issued. Usually a time period of 10 days shall be allowed for the same. In case of non-deposit of the security, the same shall be deducted from first running bill of the work.

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5. SCHEDULE – I

HARYANA PUBLIC WORKS DEPARTMENT

FORM: F-1

TENDER AND CONTRACT FOR WORKS

General Rules and directions for the guidance of Contractor

CONTRACTORS SHOULD CAREFULLY STUDY THE RULES GIVEN BELOW WHICH ARE FOR THEIR GUIDANCE BEFORE SUBMITTING THE TENDERS & COMPLY WITH THE SAME ANY NON COMPLIANCE OF THE SAME IS LIKELY TO RESULT IN FORFEITURE OF EARNEST MONEY & MAY RESULT IN CANCELLATION OF THIS CERTIFICATE OF ENLISTMENT.	
Rule No.1: Any contractor who submits tenders may sign an affidavit to the effect that he has no connection or relation with the firm/ contractor black-listed by Haryana Government/ Govt. of India from time to time. The form of affidavit can be seen in the office of the “Executive Engineer”.	
Rule No.2: The tender shall not be burdened or loaded with any conditions. Only rate shall be quoted. A conditional tender is liable to be rejected outright at the discretion of the accepting authority. In the alternative, the accepting authority may treat the conditions as null and void and make a counter offer to the tenderer to do the work at the rate quoted by him without the conditions. If the contractor who submitted the tender refuses to accept the said counter offer to do the work at the rates quoted by him without the conditions within one week of the said offer having been made by the accepting authority, the earnest money which accompanied the tender shall stand forfeited and the contractor shall have no claim to the same whatsoever.	Conditional Tenders
Rule No.3: The tender shall be signed by the person or persons authorized to do so in a manner by the authority granting the certificate of enlistment. Any tender not signed in the manner so authorized shall be deemed to be an invalid tender and shall be rejected and the earnest money shall be forfeited without prejudice to any other rights & remedies available to the Executive Engineer. In the event of tender being submitted by a firm, it must be signed separately by each member thereof, or in the event of the absence of any partner,	Contractor's Signature

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it must be signed on his behalf by a person holding a power of attorney authorizing to do so. For the purpose of identification, the contractor shall supply to the Executive Engineer specimen signatures duly attested by a Gazetted Officer known to the Executive Engineer. The specimen signature must be supplied well before the date of submission of tenders. The contractor(s) shall sign, on all pages of tender form to be submitted by him in addition, he shall also sign at the places, where he is to sign which are marked 'X' on pages. All corrections shall be made in a manner so that the original is legible. There shall be no over-writings. The corrections shall be authenticated by the signatures of the authorized person as described above. Any tender not so signed may be rejected and the earnest money forfeited.	
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Single Rate	Rule No. 4: (a) For Schedule Items- Any person who submits a tender shall fill up the usual printed form stating the percentage above or below the "Ceiling rates" as defined in Rule 1 at which he is willing to undertake the work. Only one single rate of percentage above or below an all items of the contract Schedule & for all purposes shall be mentioned in the space provided in the Tender Form. For the purpose of this single rate Explanatory Memo, below may be seen, which explains the manner in which the admissible payment shall be worked out after taking into consideration the sanctioned Ceiling Premia as enumerated in the "Schedule of Ceiling Premia" mentioned in Rule (1) together with the single rate quoted by the contractor. Any rate entered outside this space may render the tender invalid. If a contractor quotes more than one rate in that case only lower or lowest of the rates so quoted shall be considered and a counter offer shall be made to him accordingly at the lowest of the rates quoted by him and in the event of his not accepting the same the earnest money that accompanied the tender shall stand forfeited and the contractor shall have no claim to the same whatsoever. b) For Non Schedule Items:- A persons submitting a tender shall fill up their rates against each item shown on page . No premium over the rates quoted by him will be admissible over N.S. Item
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Form for specific work	A single tender form shall be used, for one specific work only viz. the work for which the same has been issued by the specific contractor to whom the same has been issued by the Executive Engineer . The tender form preferably be put in the cover and the cover may be sealed by the contractor. If the cover is not sealed by the contractor, Executive Engineer shall not be responsible for any consequence thereof.
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6. EXPLANATORY MEMO

(REFER TO RULE 4 OF GENERAL RULES AND DIRECTIONS FOR THE GUIDANCE OF CONTRACTORS)

For the purpose, the basis rate for a particular item specified in the Contract Schedule of Rates shall be increased by the sanctioned Ceiling Premium as per the “Schedule of Ceiling Premium” which is attached and is a part of this form. The total amount shall then be subjected to the discount of Premium quoted by the contractor.

For example, the basis rate for an item is Rs. 120 per cum, and sanctioned ceiling premium is 50%, 300 cum of the items are executed and premium/rebate rate quoted by the contractor is 3% below. The net payment shall be worked out as below

Quantity	Item	Unit	Rate	Amount Rs.
300 cum		cum	Rs.120.00	Rs.36000
	Add Ceiling Premium-	50%		Rs.18000
	GROSS TOTAL			Rs.54000
	Less contractor rebate 3% (-)			Rs.1620
	NET PAYABLE			Rs.52380
If the rate quoted by the contractor was 5% above, the amount payable would be as under:-				
	GROSS TOTAL			Rs.54000
	Add. Contractors Premium 5%			Rs.2700
				Rs.56700

6. (a) The Superintending Engineer or any other officer duly authorized by him will open tenders. Any contractor(s) (who may have submitted tenders) or their authorized agents may be allowed to be present at the time of opening of tenders.

(b) The Executive Engineer, PHE, Division Gurugram then announces the rate quoted by all other contractors whose tender do not suffer from any infirmities. In case where the tenders have any or many short-comings, the rates may not be announced and such tender may be put up in cover and sealed. This fact shall be announced. The tender so sealed shall be dealt with according to rule and regulation on the subject/situation.

(c) The Executive Engineer shall have the right of rejecting all or any of the tenders without assigning any reason.

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In the event of a tender being accepted, an acknowledgement of the Deposit at Call receipt forwarded therewith shall thereupon be given to the Contractor who shall thereupon for the purpose of identification sign copies of specifications and other documents mentioned in Rule 1. In the event of a tender not being accepted, the earnest money forwarded with such tender unless the same has been forfeited will thereupon be returned to the concerned tenderer.

7. The memorandum of work tender for and memorandum of materials supplied by the public health engineering deptt. and their issue rates shall be filled in and completed in the office of the Executive Engineer before tender form is issued. If a form is issued to a contractor who intends to tender without having been so filled in and completed, he shall request the office to have this done before he completes and delivers his tender.
8. The department may refuse or suspend payments on account of a work when executed by a firm or by contractors described in the their tender as a firm, unless receipts are signed by all the partners, or one of the partners or some other person produces written authority enabling him to give effectual receipts on behalf of the firm.

TENDERS FOR WORKS

In figure as well as in words	I/We hereby tender for the execution for the Public Health Engineering Department of the work specified in the memorandum within the time specified in such memorandum.
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(A) Schedule Items

(in figure)	(in words)

percent ABOVE/BELOW the ceiling rates worked out as per Contract Schedule of Rates and the Schedule of Ceiling Premia read with rule 1 and in accordance in all respects with the specifications, drawings and instructions in writing referred to in Rule 1- thereof and in Clause II of the annexed conditions and with such materials as are provided for by the Engineer-in charge in all other respects in accordance with such conditions, so far as applicable.

B) NS Items

Sr. No.	Description	Qty.	Unit	Rate to be quoted by the contr.
1	Supply and installation of Solar Panel 10 KW (Mono PERC with 380- 425W output along with RCC base and mounting structure. [ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR]	1	job	

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2	Supply and Installation Solar Charge Controller for 3 phase output DC to AC along with all accessories like cables, switches, MCB etc. required for Solar Charge Controller [ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR]	1	job	
3	Supply and installation of AC Horizontal Submersible pump set capacity to discharge 960 LPM and 40 Mtr. Head having BIS for AC pump sets as well as MNRE certification along with accessories like cable, switches, delivery size riser of GI pipe etc. complete in all respects. [ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR, CRI, BS]	1	job	

*Enter the rates both in words and figures only in this space, In the event of variation of rate in words & figures, tenders may be rejected or otherwise the lower value only shall be considered. Also in case of N.S. Item, if rate of any item is not quoted by contractor, the same shall be considered as free of cost.

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7. MEMORANDUM

(a) General Description	a) . (b) If Several Works are included they should be detailed in a separate list.
(b) Estimated Cost Rs Lacs	
(c) Earnest Money:- @ 2 % Rs.	(c) This deposit will vary from 1% to 2% of the estimated cost of the work according to the requirement of the case
(d) Security to be deposited including earnest money and performance security	(d) This will be 5% of the contract cost of the work.
(e) Percentage, if any, to be deducted bills	(e) This will be 7% of the gross amount of each bill (Including earnest money). See note to Clause 1 of conditions of the contract.
Time allowed for the work from date of written order to commence 3 months	
In case this tender is accepted I/We hereby agree to abide by and fulfill all terms and provisions of the said conditions of contract annexed hereto so far as applicable, or in default thereof forfeit to and pay to the Haryana, Public Health Engineering Department. or its successor in office the sums of money mentioned in the said conditions. The sum of Rs. _____/-*Deposited vide Deposit at Call in the name of Executive Engineer PHED Divn., Gurugram dated as earnest money, the full value of which is to be absolutely forfeited to the Haryana Public Health Engineering Department or its successor in office without prejudice to any other rights or remedies of the said Haryana Public Health Engineering Department or its successor in office Should I/We fail to commence the Work specified in the above memorandum the said sum of Rs. shall be retained by the Haryana Public Health Engineering Department on account of the security deposit specified in clause I of the said conditions of contract. Should I/we withdraw or modify the tender within	*Give particular and number. Strike out (a).if no cash security deposit to be taken. *Strike out (b) if any cash security deposited is taken.

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three calendar months from the date of opening of tender, my/our earnest money will stand forfeited to Haryana Public Health Engineering deptt. and in both the cases 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 amount of which excess the certificate in writing the Executive Engineer 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 the contract or otherwise or from the proceeds of sale of his property or a sufficient part thereof. The above tender is hereby accepted by me for and on behalf of the Governor of Haryana. Dated..... The Day of..... 20 Executive Engineer Public Health Engineering Division, Gurugram	*Signature of contractor before submission of tender Signature of witness contractor's signature Signature of officer by whom accepted.
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8. CONDITIONS OF CONTRACT

Clause 1: The person/persons whose tender may be accepted (hereinafter called the contractor) shall permit the Executive Engineer Public Health Engineering Division, Gurugram Haryana hereinafter called the Engineer – in – Charge at the time of making any payment to him for work done under the contract to deduct such some as 5% of all money so payable in addition to 5% of the estimated cost of work already deposited as security before commencement of the work including earnest money and performance security. Such deductions to be held by Government by way of security deposits.

Clause 2 : The time allowed for carrying out of work as entered in the tender shall be strictly observed by the contractor, and shall be reckoned from the date on which the order to commence work is given to the contractor. The work shall throughout the stipulated period of the contract be proceeded with all due diligence (time being deemed to be the essence of the contract on the part of the contractor) and the contractor shall pay as compensation an amount equal to one percent which the Executive Engineer may levy on the amount of the estimated cost of the whole work as shown by the tender for every day that the work remains uncompleted or unfinished, after proper dates. And further, to ensure good progress during the execution of work the contractor shall be bound, in all uses in which the time allowed for any work exceeds one month to complete one-fourth of the whole of the work before one-fourth of the whole time allowed under the Contract has elapsed, one half of the work before one-half of such time has elapsed and three fourth of the work before three-fourth of such time has elapsed. In the event of the contractor failing to comply with this condition he shall be liable to pay as compensation an amount equal to one percent which the Executive Engineer, may levy on the said estimated cost of the whole work for every day that due quantity of work remains incomplete provided always that the amount of compensation to be paid under the provisions of this clause shall not exceed ten percent of the estimated cost of the work as shown in the tender. 'The Superintending Engineer on representation in writing from the contractor may reduce the amount of compensation and his decision in writing shall be final.

Clause 3 : In any case in which under any clause or clauses of this contract the contractor shall have rendered himself liable to pay compensation amounting to the whole of his security deposit (whether paid in one sum or deducted by installments) the Executive Engineer on behalf of the Government shall have power to adopt any of the following courses, as he may deem best suited to the interests of Government :-

(a) To rescind the contract (of which rescission notice in written to the contractor under the hand of the Executive Engineer shall be conclusive evidence) and in which case the security of the contractor shall stand forfeited, and be absolutely at the disposal of Government and 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 amount of which excess the

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certificate in writing the Executive Engineer 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 the contract or otherwise or from the proceeds of sale of his property or a sufficient part thereof.

(b) To employ labour paid by the Public Works Deptt. 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 a certificate of the Executive Engineer 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 his contract; the certificate of the Executive Engineer as to the value of the work done shall be final.

(c) 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 amount of which excess the certificate in writing the Executive Engineer 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 the contract or otherwise or from the proceeds of sale of his property or a sufficient part thereof.

In the event of any of the above courses being adopted by Executive Engineer, 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 engagement or made any advances on account of or with a view to the execution of the work or the performance of the contract. And in case the contract shall be rescinded under the provision aforesaid the contractor shall not be entitled to recover or be paid any sum for any work therefore actually performed under this contract, unless and until the Executive Engineer will have 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: In any case in which any of the powers conferred upon the Executive Engineer by clause-3 hereof, shall become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers 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 and the liability of the contractor of past and future case of compensation shall remain unaffected. In the event of the Executive Engineer putting in force either of the powers (a) or (c) vested in him under the preceding clause he may, if he so desires take possession of all or any tools, plant material and stores in or upon the works or the site thereof

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or belonging to the contractor, or procured by him and intended to be used for the execution of the work on 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 Executive Engineer whose certificate hereof shall be final otherwise the Executive Engineer 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 such requisition, the Executive Engineer may remove them at the contractor's expenses or sell them by auction or private sale on account of the contractor and at his risk in all respects and the certificate of the Executive 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: If the contractor shall desire an extension of the time for completion of the work on the grounds of his having been avoidably hindered in its execution or any other ground, he shall apply in writing to the Chief Engineer through Superintending Engineer, Public Health Engg. Circle Gurugram of the Executive Engineer, Public Health Engg. Divn. Gurugram within 30 days of the date of the hindrance on account of which he desires such extension as aforesaid but before the expiry of contract period and the Executive Engineer / Sup Chief Engineer, If in his opinion (which shall be final) reasonable grounds have been shown thereof authorize such extension of time, if any as may in his opinion be necessary of proper. -

"16.16.6 The authority competent to technically sanction the estimate shall have the power to grant EOT. However, to check disproportionate EOTs and to ensure uniformity in approach, the Engineer-in-Chief shall issue instructions in this regard from time to time".

Clause 5-A: The contractor shall deliver in the office of the Executive Engineer, on or before the 10th day of every month during the continuance of the work covered by this contract, a return showing details of any work claimed for as extra, and such return shall also contain the value of such work as claimed by contractor value of which shall be based upon the rates and prices mentioned in the contract or in the schedule of rates in force at that time. The contractor shall include in such monthly return particulars of all claims of whatever kind and however arising, which at the date thereof he has or may claim to have against the Executive Engineer under or in respect, of in any manner arising out of the execution of work and 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 so included, whatsoever be the circumstances.

Clause 6: Without prejudice to the rights of Government under any clause hereinafter contained on completion of the work, the contractor shall be furnished with a certificate by the Executive Engineer (hereinafter called the Engineer-in-charge) of such 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 premises on which the work shall be executed all scaffolding,

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surplus materials and rubbish, and cleaned off the dirt from all wood works, doors, windows, walls, floors or other parts of any building, in upon or about which the work is to be executed, of which he may have had possession for the purpose of the execution thereof and the measurements in the said certificate shall be binding and conclusive against the contractor, 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 on or before the date fixed for the completion of the work, the Engineer-in-charge may at the expense of the contractor, remove such scaffolding or surplus materials and rubbish and dispose of the same as he thinks fit and clean off such dirt 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 less any expense incurred by the Engineer-in-charge in connection therewith.

Clause 7: No payment shall be made for work estimated to cost less than rupees one thousand till after the whole of the works shall have been completed and a certificate of completion given. But in case of works estimate to cost more than rupees one thousand, the contractor shall be submitting the bill thereof, 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 the sum so payable shall be final and conclusive against the contractor. But all such intermediate payments shall be regarded as payments by ways of advance against the final payments only and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsounded and imperfect or unskillful work to be removed and taken away and reconstructed or re-erected, or be 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 affecting any way the powers of the Engineer-in-charge, under these conditions or any of them as 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 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 7 (a):- The deductions referred to in clause 1 herein before or such part thereof as may be due to the contractor under this contract shall be payable to the contractor as per schedule given below: -

(A) For works up to Rs. 5.00 Crores

- (i) Performance security will be refunded after expiry of defect liability period or after the date specified in contract.
- (ii) Retention money / Security Deposit: - One half of the security deposit will be refunded on payment of final bill of the work and the other half will be released one year after expiry of defect liability period or as may be laid down in the tender documents. For petty / minor works (costing up to Rs. 25.00 Lacs) 100% security deposit may be released after defect liability period is over.

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- (iii) The defect liability period for the works costing Rs. Less than 25.00 Lacs would be six months from the date of the payment of the final bill or as specified in the tender documents.
 - (iv) The defect liability period for the works costing from Rs. 25.00 Lacs up to Rs. 5.00 Crore should be one year from the date of the payment of the final bill or as specified in the tender documents.
 - (B) For works costing more than Rs. 5.00 Crores
 - (i) Performance security will be refunded after expiry of defect liability period or after the date specified in contract.
 - (ii) Retention money / Security Deposit: - One half of the security deposit will be refunded on payment of final bill of the work and the other half will be released one year after expiry of defect liability period or as may be laid down in the tender documents.
- The defect liability period for the works costing Rs. more than Rs. 5.00 Crores would be one year from the date of the payment of the final bill or as specified in the tender document.

Any conditions / clauses etc. Of Tender and contract document and any schedule in reference to performance security and retention money and security deposit.

To be amended up to extent as per decisions approved by the Government.

Clause 8: A bill shall be submitted by the contractor each month on or before the date fixed by the Engineer-in-charge for all work executed in the previous month and the Engineer-in-charge shall take or cause to be taken the requisite measurement for the purpose of having the same verified, and the claim, as far as admissible, adjusted if possible, before the expiry of ten days from the presentation of the bill. If the contractor does not submit the bill within the time fixed as aforesaid, the Engineer-in-charge may depute a subordinate to measure up the said work in the presence of the contractor whose counter signature to the measurement list will be sufficient warrant and Engineer-in-charge may prepare a bill from such list which shall be binding on the contractor in all respects.

Clause 9: The contractor shall submit all bills in triplicate on the printed forms to be had from the office of the Engineer-in-charge, and the charges in the bills shall always be entered at the rates specified in tender on 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 10 : If the specification of estimate of the work provides for the use of any special description of materials to be supplied from the Engineer-in-charge's store or if it is required that the contractor shall use certain stores to be provided by the Engineer-in-charge (such materials and stores and the price to be charged therefore as hereinafter mentioned being so far as practicable for the convenience of the contractor, but not so as in any way to control the meaning of effect of this contract, specified in the schedule or memorandum, here to annexed), the contractor shall be supplied with such materials and stores as required from time to time to be used by him for the purposes 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

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may be set off or deducted from any sums then due, or thereafter to become due to the contractor under the contract or otherwise, against or from the security deposit, or the proceeds of sale thereof, if the same is held in Government securities, the same or a sufficient portion thereof being in this case sold for the purpose. All materials supplied to the contractor shall remain the property of the contractor, but shall not on any account be removed from the site of the work without the written permission of the Engineer-in-charge and shall at all times be open to inspection by him. Any such materials unused and in perfectly good condition at the time of completion or determination of the contract shall be returned to the Engineer-in-charge's store and shall have no claims 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.

Clause 11 : The contractor shall execute the whole and every part of the work in the most substantial and workman like manner, and both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully to the designs, contract drawings 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 at the site of the work for the purpose of inspection during office hours, and the contractor shall, if he so requires, be entitled at his own expense to make or cause to be made copies of the specifications, and of all such designs, drawings and instructions as aforesaid.

Clause 11(a): The Engineer-in-charge shall have full powers at all times to object to the employment of any workman, foreman or other employees on the works by the contractor, and if the contractor shall receive notice in writing from the Engineer-in-charge requesting the removal of any such man or men from the work, the contractor shall comply with the request forthwith.

No such workman, foreman or other employee after his removal from the works by request of the Engineer-in-charge shall be re-employed or re-instated on the work by the contractor at any time except with the prior approval in writing of the Engineer-in-charge.

The contractor shall not be entitled to demand the reason from the Engineer-in-charge for requiring the removal of any such workman, or foreman or other employees.

Clause 12: The Engineer-in-charge shall have power to make any alterations in or omissions from or additions to or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to 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, omissions, 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 and at the same rates as are specified in the

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tender for 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. And if the altered, additional or substituted work includes any class of work, for which no rate is specified in this contract, then such class of work shall be carried out at the rates entered in the Haryana schedule of rates subject to the same percentage above or below, as for the items included in the contract, and if such class of work is not entered in the Haryana schedule of rates, the contractor shall within seven days of the date of his receipt of the order to carry out of work, inform the Engineer-in-charge of the rate he intends to charge for such a class of work, and if the Engineering-in-charge does not agree to this rate he shall by notice in writing, 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, provided always that if the contractor shall commence work or incur any expenditure in regard thereto before the rates shall have been determined as lastly hereinbefore mentioned then and in such case he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of determination of the rates as aforesaid according to such rates as shall be communicated by the Engineer-in-charge, after getting the same decided by the competent authority.

Clause 13 : If at any time after the commencement of the work, if the Government shall for any reason, whatsoever not requires 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 have any payment 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 compensation by reason of any alterations having been made in the original specification, drawings, designs and instructions which shall involve any curtailment of the works as originally contemplated.

Clause 14: If it shall appear to the Engineer-in-charge or his subordinate in charge of the work, that any work has been executed with unsounded, imperfect or unskillful workmanship or with materials 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 for, or otherwise not in accordance with the 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, forthwith rectify or remove and reconstruct the work so specified in whole or in part as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and 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 aforesaid, the contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimated cost of the work covered by this contract for everyday not exceeding ten days, while his failure to do so shall continue and in the case of any such failure, the

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Engineer-in-charge may certify or remove and re-execute the work or remove and replace with other materials or articles complained of, as the case may be at the risk and expense in all respects of the contractor.

Clause 15 : All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer-in-charge and his subordinates and the contractors 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 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 that 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 : The contractor shall give not less than five 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 the measurement any work 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 or his subordinate-in charge of the work. If any work shall be covered up or placed beyond the reach of the 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 shall be made for such work materials with which-the same was executed.

Clause 17: If the contractor and his work people or his servant shall break, deface injury or destroy any part of building, in which they may be working or any building, road fence, enclosure or grass and or cultivated ground contiguous to premises on which the work or any part of it is being executed or if any damage shall happen to work, while in progress from any cause whatever or any imperfections become apparent in it within three months after a certificate final or other of its completion shall have been given by the Engineer-In-charge as aforesaid, the contractor shall make the same good at his own expense or in default, 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 any time thereafter may become due to the contractor or from his security deposit or the proceeds or sale thereof or of a sufficient portion thereof.

Clause 18: The contractor shall supply at his own cost all materials (except such special materials if any, as may in accordance with the contract be supplied from the Engineer- in-charge' s store), plants, tools, appliances, implements, ladders etc., scaffolding and temporary works requisite or proper for the 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, 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

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these condition 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 supply without charge the requisite number of persons with the means and materials necessary for the purpose of setting out works and counting, weighing and assigning 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 expenses 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 of his property 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 defense of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precaution, and to pay any damage, and costs which may be awarded in any such suit, action, or proceedings to any such persons or which may with the consent of the contractor be paid to compromise any claim by any such person.

Clause 18 (a): The final bill of the contractor shall not be paid unless or until he furnishes to the satisfaction of the Engineer-in-charge a proof of the price of the earth used for the works having been fully paid to the owners of the land from which the earth was removed or of the matter having been amicably settled with them. The contractor shall also be liable to indemnify the Government against all claims made proceedings and actions taken by any person in respect of the price of the earth removed by the contractor from his land for the work against all losses, damages, cost and expenses which the Government may suffer or incur as a result of such claims.

Clause 19 (a): No laborer below the age of 12 years shall be employed on the work.

Clause 19(b): the contractor shall pay his labourers not less than the wages paid for similar work in neighborhood.

Clause 20: No work shall be done-on Sunday without the sanction in writing of the Engineer in Charge.

Clause 20 (a) : In every case in which by virtue of the provisions of section 12, sub-section(1) of the Workman's Compensation Act,1923, Government is obliged to pay compensation to a workman employed by the contractor, in execution of the works, Government will recover from the contractor the amount of the compensation so paid and without the prejudice to the rights of Government Under section 12, sub-section (2) of the Act, Government shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Government to contractor whether under this contract or otherwise.

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Government shall not be bound to contest any claim made against it under section 12, sub-section (1) of the said Act except on the written request of the contractor and upon his giving to Government full security for all costs for which, Government might become liable in consequence of contesting such claim.

Clause 21: The contract shall not be assigned or sublet without the written approval of the Engineer-in-charge. And if the contractor shall assign or sublet his contract or attempt to do so or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so or if any bribe, gratuity, gift, loan, requisite reward of advantage, pecuniary or otherwise; shall either directly or indirectly be given, promised or offered by the contractor or any of his servant or agents to any public officer or person in the employment of Government, in any relating to his office or employment, or any such officer, or person shall become, in any way directly or indirectly interested in the contract, the Engineer-in-charge may thereupon by notice in writing rescind the contract and the security deposit of the contractor shall there upon stand forfeited and be absolutely at the disposal of Government and the same consequence shall ensure, 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 22: 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 22 (a): Any excess payment made to the contractor inadvertently or otherwise under this contract on any account whatever and any other sum bound to be due to Government by the contractor in respect of this contract or any other contract or work order or on any account whatever, may be deducted from sum whatever, payable by Government to the contractor either in respect of this contract or any work order or contract or any other account by any other department of the Government.

Clause 23: In the case of tender by partners, any change in the constitution of the firm shall be forthwith notified by the contractor to the Engineer-in-charge for his information.

Clause 24: All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Superintending Engineer of the circle 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 25: No claims for payment of an extraordinary nature, such as claims for a bonus for extra employed in completing the work before the expiry of the contractual period at the request of the Engineer-in-charge or claims for compensation where work has been temporarily brought to a stand-still though no fault of the contractor, shall be allowed unless and to the

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extent that the same shall have been expressly sanctioned by the Haryana Government under the signature of its Secretaries.

Clause 25 (a) : If any dispute or difference of any kind whatsoever shall arise between the Governor of Haryana/ his authorised agent and the contractor in connection with or arising out of the contract or the execution of the work that is (i) whether before its commencement or during the progress of the work or after its completion (ii) and whether before or after the termination, abandonment or breach of the contract, it shall in the first instance be referred to for being settled by the Executive Engineer-in-charge of the work at the time and he shall within a period of sixty days after being requested in writing by the contractor to do so, convey his decision to the contractor and subject to arbitration as hereinafter provided such decision in respect of every matter so referred shall be final and binding upon the contractor. In case the work is already in progress, the contractor will proceed with the execution of the work on receipt of the decision by the Executive Engineer-in-charge as aforesaid, with all due diligence whether he or the Governor of Haryana/his authorised agent requires arbitration as hereinafter provided or not. If the Executive Engineer in charge of the work has conveyed his decision to the contractor and no claim to arbitration has been filed with him by the contractor within a period of sixty days from the receipt of letter communicating the decision, the said decision shall be final and binding upon the contractor and will not be a subject matter of arbitration at all. If the Executive Engineer-in-charge of the work fails to convey his decision within a period of sixty days after being requested as aforesaid, the contractor may within further sixty days of the expiry of first sixty days from the date on which request has been made to the Executive Engineer in charge request the Engineer -in-Chief, that the matters in dispute be relevant to arbitration, as hereinafter provided.

2. All disputes or differences in respect of which the decision is not final and conclusive shall at the request in writing of either party made in a communication sent through Registered A.D. Post, be referred to the sole arbitration of any serving Superintending Engineer or Chief Engineer of Haryana P.H.E.D. to be nominated by designation by the Engineer-in-Chief, Haryana, P.H.E.D. at the relevant time. It will be no objection to any such appointment that the arbitrator so appointed is a Government servant or that he had to deal with the matters to which the contract relates and that in the course of his duties as a Government servant, he had expressed in his visit on all or any of the matters in dispute. The arbitrator to whom the matter is originally referred being transferred or vacating his office, his successor-in-office, as such shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

In case the arbitrator nominated by the Engineer-in-Chief is unable or unwilling to act as such for any reason, whatsoever, the Engineer-in-Chief shall be competent to appoint and nominate any other Superintending Engineer or Chief Engineer, as the case may be, as arbitrator in his place and the arbitrator so appointed shall be entitled to proceed with the reference.

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3. It is also a term of this arbitration agreement that no person other than a person appointed by the Engineer-in-Chief, Haryana P.H.E.D. shall act as arbitrator and if for any reason that is not possible, the matter shall not be referred to arbitration at all. In all cases where the aggregate amount awarded exceeds Rs. 25,000/- (Rupees Twenty five thousand only) the arbitrator must invariably give reasons for his award in respect of each claim and counter-claim separately.
4. The arbitrator shall award separately giving his award against each claim and dispute raised by either party including any counter-claims individually and that any lump-sum award shall not be legally enforceable.
5. The following matters shall not lie within the purview of arbitration :-
- (a) Any dispute relating to the levy of compensation as liquidated damages which has already been referred to the Superintending Engineer and is being heard or/and has been finally decided by the Superintending Engineer in charge of the work.
 - (b) Any dispute in respect of substituted, altered, additional work/committed work/defective work referred by the Contractor for the decision of the Superintending Engineer in charge of the Work if it is being heard or has already been decided by the said Superintending Engineer.
 - (c) Any dispute regarding the scope of the work or its execution or suspension or abandonment that has been referred by the contractor for the decision of the Government of Haryana and has been so decided finally by the Haryana Government.
6. The independent claims of the party other than the one getting the arbitrator appointed, as also counter-claims of any party will be entertained by the arbitrator notwithstanding that the arbitrator had been appointed at the instance of the other party.
7. It is also a term of this arbitration agreement that where the party invoking arbitration is the contractor, no reference for arbitration shall be maintainable unless the contractor furnishes to the satisfaction of the Executive Engineer in charge of the work, a security deposit of a sum determined according to details given below and the sum so deposited shall, on the termination of the arbitration proceedings, be adjusted against the cost if any, awarded by the arbitrator against the claimant party and the balance remaining after such adjustment in the absence of any such cost being awarded, the whole of the sum will be refunded to him within one month from the date of the award :-

Amount of Claims	Rate of security deposit
(i) For claims below Rs. 10,000	2% of amount claimed.
(ii) For claims of Rs. 10,000 and above and below Rs.1,00,000	5% of amount claimed
(iii) For claims of Rs. 1,00,000 and above	10% of amount claimed.

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The stamp-fee due on the award shall be payable by the Party as desired by the arbitrator and in the event of such party's default the stamp-fee shall be recoverable from any other sum due to such party under this or any other contract.

8. The venue of arbitration shall be such place or places as may be fixed by the arbitrator in his sole discretion. The work under the contract shall continue during the arbitration proceedings.

9. Neither party shall be entitled to bring a claim for arbitration if the appointment of such arbitrator has not been applied within 6 months :-

- (a) of the date of completion of the work as certified by Executive Engineer in charge, or
- (b) of the date of abandonment of the work, or
- (c) of its non-commencement within 6 months from the date of abandonment or written orders to commence the work as applicable or
- (d) of the completion of the work through any alternative agency or means after withdrawal of the work from the contractor in whole or in part and/or its recession, or
- (e) of receiving an intimation from the Executive Engineer in charge of the work that final payment due to or recovery from the contractor had been determined which he may acknowledge and/or receive.

Whichever of (a) to (e) above is the latest.

If the matter is not referred to arbitration within the period prescribed above all the rights and claims of any party under the contract shall be deemed to have been forfeited and absolutely barred by time even for civil litigation notwithstanding.

10. It is also a term of this arbitration agreement that no question relating to this contract shall be brought before any Civil Court without first involving and completing the arbitration proceedings as above if the scope of the arbitration specified herein covers issues that can be brought before the arbitrator i.e. any matter that can be referred to arbitration shall not be brought before a Civil Court. The pendency of arbitration proceedings shall not disentitle the Government to terminate the contract and make alternative arrangements for the completion of the work.

11. The arbitrator shall be deemed to have entered on the reference on the day he issues notices to the parties fixing the first date of hearing. The arbitrator may from time to time with the consent of the parties enlarge the initial time for making and publishing the award.

12. It is also a term of this arbitration agreement that subject to the stipulation herein mentioned, the arbitration proceedings shall be conducted in accordance with the provisions of the arbitration Act, or any other latest law in force for the time being, Indian Arbitration and Reconciliation Act of 1996 shall be applicable on this contract.

Clause 26 : Any fluctuations in Railway rates which may occur during the subsistence of and affecting freights of any material to be supplied under this contract shall be brought to the notice of the Engineer-in-charge by the contractor within fifteen days from such date without prejudice to the rights of Government, should the contractor fail to comply with the above requirement any excess or short charge on account of such increase or decrease shall be credited to or recovered from the contractor. No alteration in contract rates shall be admissible

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in consequence of fluctuation in railway freight when such railway freight is on account of material which is required by a contractor in the manufacture of an article to be supplied under this contract e.g. fluctuation of railway freight on coal required for burning bricks will not be taken into consideration or for an article which forms part of a finished work for purpose of this clause. Similarly no alteration in rates will be allowed when a manufactured article is transported by rail from place A to place B to form part of a finished work.

Clause 27: The contractor shall be responsible for making his own arrangements for securing priorities and license for material and transportation required for the works and Engineer-in-charge shall not be held responsible in any way for making such arrangements for any of them.

Clause 28: In the case of any clause of work for which there is no such specification as is mentioned in rule 1, such work shall be carried out in accordance with the P.H.E.D. specifications and in the event of there being no P.H.E.D. specification, then in such case the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-charge.

Clause 29: The Expression "work" or "works" where used in these conditions shall unless there be something either in the subject or context repugnant to such constructions be constructed and taken to mean the work by or by virtue of the contract, contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional.

Clause 30: The percentage referred to at page (3) of the tender will be calculated on the gross amount (value of finished work including cost of materials whether purchased from Government or direct of (I) the items of works to which the rates in the tender apply and also (2) the items of work to which rates exist in the Schedule of rates of the district

Clause 32: The contractor states that he is not related to any of the officers employed by the Haryana P.H.E.D.

Clause 33: No pit shall be dug by the contractor near the site of the work for taking out earth for use on the work. In case of default the pit so dug will be filled in by the Department at the cost of the contractor.

Clause 34: Fair wage clause attached.

Clause 35: The contractor shall have to pay sales tax to Excise and Taxation Dept. in accordance with the rules in force from time to time.

Clause 36: All payments for work done under this contract shall be made by cheque to the contractor. The work covered by this contract as shown on plans which have been signed by the contractor are annexed herewith.

Clause 37: Should the tenderer withdraw or modify his tender within three months from the date of opening of tender he is liable to be blacklisted and earnest money forfeited.

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Clause 38: All royalty and compensation for building stone, bajri and stone metal etc. should be included in the rates to be quoted and is payable by the contractor.

Clause 39: The rates given are for the finished work inclusive of Excise, duty, Octroi charges, sales taxes, service tax etc.

Clause 40: It will be the responsibility of the contractor to ensure that the trees at the site of work and in the vicinity or their fruit etc are not damaged by his labour or agent. The cost of such damage, if any will be at the discretion of the Engineer-in-charge and shall be deducted from the bill of the contractor

Clause 41: The contractor shall provide at his own cost separate latrine, bathing enclosures and platform for use of the men and women labour and keep them clean to the satisfaction of the Engineer-in-charge. He should also arrange, at his own expenses for clean drinking water, housing, medical facilities necessary for the welfare of the labour employed at his work, in case of his failure the same shall be provided by Government at contractor's cost. Any dispute regarding this will be settled by the Engineer-in-charge whose decision will be binding.

Clause 42: Any material left on the site of work after one month from the date of completion of the work shall become the property of the Government and no payment shall be made for it.

Clause 43: The amount of the work can be increased or decreased according to the requirement of the department and no claim whatsoever on this account will be entertained.

Clause 44: The department reserve option to take away any items of the work or part thereof any time during the currency of the contract and re-allot it to another agency with due notice to the contractor without liability or compensation.

Clause 45: It is not obligatory to the contractor to employ labour through Employment Exchange but he may avail of the facilities offered by the Employment Exchange in case he wishes to do so.

Clause 46: No claim on account of fluctuation in prices due to war or any other cause will be entertained.

Clause 47: The contractor shall be liable to make good all damages caused by breakage from the moment the stores, pipes and fittings etc., are handed over to his charge.

Clause 48: No compensation whatever will be payable on account of any delay or default in the supply of material mentioned in the "List of material to be issued to the contractor", by the department and consequent delay in the execution of work.

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Clause 49: The contractor will inform the C.M.O. about the employment of laborer on the work for carrying out Malaria surveillance.

Clause 50: No premium shall be payable on Non-schedule items, whether depicted in enclosed schedule of rates or not. Contractor will quote his separate rates as depicted on page No. of the tender form.

Clause 51: Sales Tax/ Income Tax will be deducted from gross payment as per Govt. instructions.

Clause 52: Labour Cess Charges @ 1% will be deducted from gross payment.

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9. A- FAIR WAGES CLAUSES

- (a) The contractor shall pay not less than fair wage to labour engaged by him on the work.

Explanation: Fair Wage means wage whether for time or piece work notified at the time or inviting tenders of the work and where such wages have not been so notified, the wages prescribed by the Public Works Department, Building and Roads Branch, Haryana for the district in which the work is done.

- (b) The contractor shall notwithstanding the provisions of any agreement to the contrary caused to be paid fair wages to laborers indirectly engaged on the work including any labour engaged by his sub-contractors in connection with the said work, as if the labourers had been directly employed by him.

- (c) In respect of labour directly employed on the works for the performances of the contractor's part of this agreement the contract shall comply with or cause to be complied with the Haryana Public Works Department Contractor's Labour's Regulations made by Government from time to time in regard to payment of wages, period deductions from wages, recovery of wages not paid and deductions unauthorisedly made maintenance of wage book, wage slip, publication of wages and other terms of employment inspection and submission of periodical returns and all other matters of alike nature.

- (d) The Executive Engineer or Sub-divisional Engineer concerned shall have the 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 reason of non-fulfillment of the conditions of the contract for benefit of the workers, nonpayment of wages or deductions made from his or their wages, which are not justified by the terms of the contract for non observance of the regulations referred to in clause

('c' above)

- (e) Vis-a-vis the Haryana Government, the contractor shall be primarily liable for all payments to be made under 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 a part of this contract.

- (g) Attendance card should invariably be issued by the contractors to their workers, which should be returned to the contractors concerned at the time of receiving payment of their wages.

- (h) Before making payment to the contractors the authorities concerned should obtain a certificate from the contractors that he has made payment to all the workers connected with the execution of the work for which the payment is being made.

- (i) Contractors employing 50 or more workers on the site of a particular work should provide facilities of housing, latrines, water and light to their workers at their own expense.

- (j) The normal working hours of workers employed by contractors for the execution of work allotted to them should be 8 hours per day with a break of 2 hours during summer, one hour during winter after

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continuous work of 4 hours at the latest. The spread over should in no case exceed 10 hours, workers working beyond these hours, should be paid overtime wages at the double the ordinary rate of their wages calculated by the hour.

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HARYANA PUBLIC WORKS DEPARTMENT

9. B-Contractor's Labour Regulation

1. Short title

These regulations may be called Haryana (1) Public Works Department Contractor's Labour Regulations.

2. Definition

In these regulations, unless otherwise expressed or indicated the following words and expression shall have the meaning hereby assigned to them respectively, that is to say.

- i) Labour means workers employed by a Public Works Department contractors directly or indirectly a sub-contractor or other persons or by an agent on his behalf.
- ii) Fair wages means whether for item or piece work notified at the time of inviting tenders for the work and where such wages have not been so notified the wages prescribed by the Public Works Department for the district in which the work is done.
- iii) Contractor shall include every person whether a sub-contractor or headman or agent employing labour on the work taken on contract.
- iv) "Wages" shall have the same meaning as defined in the payment of Wages Act and includes time and piece rate wages.

3. Display of notice regarded wages etc.

The contractor shall before he commences his work on contract, display and correctly maintain and continue to display and correctly maintain a clean and legible condition at conspicuous places on the work notice in English and in the Local Language spoken by the majority of the workers, giving the rate of wages which have been certified by the Executive Engineer, the Superintending Engineer, the Chief Engineer or Regional labour Commissioner as fair wages and the hours of work for which such wages are earned and a copy of such notices to the District Labour Welfare Officer.

4. Payment of Wages

- (I) Wages due to every worker be paid to him direct.
- (II) All wages shall be paid in current coin or currency or in both.

5. Fixation of Wage Periods

- (I) The contractor shall fix the wage periods in respect of which the wages shall be payable.
- (II) No wage period shall exceed one month.
- (III) Wages of every workman employed on the contract shall be paid before the expiry of ten days after the last of we wage period in respect of which the wages are payable.

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- (IV) When the employment of any worker is terminated by or on behalf of the contractor, the wages earned by him shall be paid before the expiry of succeeding the one on which his employment is terminated.
- (V) All payment of wages shall be made on a working day except the work is completed before the expiry of the wages period in which case final payment shall be made within 48 hours of the last working day.

Notes — the terms working day means a day on which the work on which the labour is employed is in progress.

6. Wages Book and Wages Slip etc.

- (i) The contractor shall maintain a wage book of each worker in such a form as may be convenient but the same shall include the following particulars:-
 - (a) Rate of daily or monthly wages.
 - (b) Nature of work for which employed.
 - (c) Total number of days worked during each wage period.
 - (d) Total amount payable for the work during each wage period.
 - (e) All deductions made from the wages with an indication in each case of the ground for which the deduction is made from the wage.
 - (f) Wages actually paid for each wage period.
- (ii) The contractor shall also maintain a wage slip for each worker employed on the work. The wage slip shall contain all the particulars given in the wage book.
- (iii) The Executive Engineer may grant exemption from the maintenance of Wage Book and Wage Slips to a contractor who in his opinion may not directly or indirectly employ more than 50 persons on the work.

7. Fine and deductions which may be made from wages

- 1. The wages of workers shall be paid to him without any deduction of any kind except the following:
 - (a) Fines.
 - (b) Deductions for absence from duty viz., from the place or places where by the terms of his employment is required to work.

The amount of deduction shall be in proportion to the period for which he was absent.
 - (c) Deductions for damage to or loss of goods expressly entrusted to the employed person for custody, or for loss of money for which he is required to account, where such damage or loss is directly attributable to his neglect or default.
 - (d) Any other deductions which the Government may from time to time allow.
- 2. No fine shall be imposed on a worker and no deduction for damage or loss be made until the worker has been given an opportunity of showing cause against such fines or deductions.

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3. The total amount of fine which may be imposed in any one wage period on a worker shall not exceed an amount equal to half an anna in a rupee of the wage payable to him in respect of that wage period.
4. No fine imposed on any worker shall be recovered from him by installments, or after the expiry of 60 days from the date in which it was imposed.

8. Register of Fine etc.

The contractor shall maintain a Register of fine and of all deductions for damage or loss. Such Register shall maintain the reason for which fine was imposed or deduction for damage or loss was made.

The contractor shall maintain both in English and local Indian Language, a list approved by the Chief Labour Commissioner clearly stating the acts and commissions for which penalty or fine may be imposed on workmen and display it in a good condition at a conspicuous place on the work.

9. Preservation of Registers

The wage book, the wage slips and the Register of fines, deductions required to be maintained under these regulations shall be preserved for 12 months after the date of last entry made in them.

10. Power of Labour Welfare Officer to make Investigation Enquiry

The Labour Welfare Officer or any person authorised by the Government on their behalf shall have to make enquiries with a view to ascertaining and enforcing due and proper observance of the fair wage clause and provisions of these Regulations. He shall be investigating into any complaint regarding the default made by the contractor or sub-contractor in regard to such provision.

11. Report of Labour Welfare Officer

The Labour Welfare Officer or any other person authorised as aforesaid shall submit a report of the result of his investigation or enquiry to the Executive Engineer concerned, indicating the extent if any to which the default has been committed and the amount of fine recoverable in respect of the acts of omission and commission of the labourer with a note that necessary deduction from the contractor's bill be made and the wages and other dues be paid to the labourers concerned.

12. Appeal against the decision of Labour Welfare Officer

Any person aggrieved to the decision and recommendation of the Labour Welfare Officer or other person so authorised may appeal against such decision to the Regional Labour Commissioner within 30 days from the date of decision forwarding simultaneously a copy of

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his appeal to Executive Engineer concerned but subject to such appeal the decision of the Labour Welfare Officer shall be final and binding upon the contractor.

13. Representation of Parties

- (1) A workman shall be entitled to be represented in any investigation or inquiry under these regulations by:
 - (a) An officer of a registered Trade Union to which he is a member.
 - (b) An officer of Federation of Trade Unions to which the trade union referred to in clause (a) is affiliated.
 - (c) Where the worker is not a member of any registered union, an officer of registered trade union connected with, or by any other workman employed in the industry in which the worker is employed.
- (2) An employer shall be entitled to be represented in any investigation or inquiry under these regulations by:
 - (a) An officer of an association of employers of which he is a member.
 - (b) An officer of an association of employees to which the association referred to in clause (a) is affiliated.
 - (c) Where the employer is not a member of any association of employees by an officer of an association of employers connected with or by any other employer is engaged.

14. Inspection of Books

The contractor shall allow inspection of Wage Book, the Wage Slips and Register of Fines and deduction to any of his workers or his agent at a convenient time and place after notice is received or to the Labour Welfare Officer or any other person authorized by the Government on his behalf.

15. Submission of returns

The contractor will follow the contract labour (Regulation and Abolition Act 1970) and the contract labour (Regulations and Abolition Central Rule 1971) enforced by Haryana Labour and Employment Department Memo No. 12 (26-78-4- Labour dated 10-6-79).

The contractor shall submit periodical returns as specified from time to time.

16. Licensing of Contractor

The building and other construction works (Regulation of Employment and conditions of services) Act 1996 is intended to provide safety, health and welfare measures to construction labour. Every contractor (employing ten or more workman) and every workman so employed

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are required to register themselves under the Act”. As per the clause of Haryana PWD code 16.11.14

17. Amendments

The Haryana Government may from time to time amend these regulations on any question as to application, interpretation or effect of these regulations; the decision of the Labour Commissioner to Haryana Government in that behalf shall be final.

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10. Appointment of Arbitrators

- i) In so far as the Engg. Deptt are concerned, the Engineer-in-chief, Chief Engineer will make the appointment of Arbitrator at their own level, in the cases, where the cost of the work including interest does not exceed.
- ii) In other Govt. department, the appointment of Arbitrators will be appointed by the Hands of Departments concerned and submit to administrative department of final approval. While doing so, the point regarding appointment of an IAS officer as an Arbitrators shall be kept in view.
- iii) In order to avoid unjustified benefit to the contractor / Agency two or three Arbitrators may be appointed for cases involving financial implication of more than Rs. 5.00 lacs. The possibility of appointment of Arbitrator other than the office of Depp. Concerned should not be ignored, especially in case of world Bank Project Works. The appointment of out-sided arbitrator in respect of the world Bank Project cases, keeping in view the merit and circumstances of the case may also be kept in view.
- iv) While issuing the appointment orders of the Arbitrators, it will be clearly specified that the Arbitrators will give a speaking award along with item wise detail of claim and amount of awarded expenditure and reasons thereof .

A. Agreement

The agreement which is entered into with the contractor at the time of allotment of the work should be clear and specified. For claim exceeding Rs. 5.00 lacs it should be clearly indicated in the agreement that the State Govt. can appoint one more arbitrators. The arbitrators. The arbitrators may be asked to give speaking award within a reasonable time as per the provisions in the Arbitration and conciliation Act 1996. A formal of such agreement should be prepared by the Deptt. concerned in consultation with the law Deptt.

B. Proper Defence of the Arbitration Cases

The department will fix the responsibility of the concerned Officer or any other Office of the Deptt. Along with legal wing of the Deptt. To defend such cases properly, the replies of the Deptt. will be got approved from the Chief Engineer (in case of Engg. Deptt.) Heads of Department and vetted from the Legal Cell of the department. The concerned Administrative Secretary will also review the periodical progress of the disposal of such cases.

C. Delay in Arbitration Cases

It has also been that in most of the cases unnecessary delay occur, As result of which the State Govt. have to pay the interest. The responsibility of the concerned Officer / Officer may be fixed by the department / Administrative Deptt. in each individual cases, for such lapses.

D. Payment of amount awarded in arbitration cases

In order to avoid any litigation and interest liability, payment will be made by the Head of Deptt. out of their provisions, and if needed, proposal for making provisions in the respective Heads of account shall be sent to Finance Deptt. at appropriate time. Budgetary procedure will be followed strictly.

The above decision may please be brought to the notice of all concerned and the receipt of this letter may I also in acknowledged.

Contractor

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NOTE FOR SCHEDULE NO. 1

1. All the materials shown in Schedule No. 1 will be issued at the place of issue given there and all the cost of loading, unloading and carriage from the place of issue to site of work will be borne by the contractor and this is included in the rate for the work to be carried out by the contractor.
2. In case any quantity of material i.e. cement, steel, coal, or any other controlled or uncontrolled commodity etc issued to the contractor by the Engineer-in-charge for use directly on the aforesaid work of manufactures of materials required in connection therewith, which is not utilized for the purpose for which it is issued and is otherwise disposed of by him or spoiled or lost or allowed to get deteriorated or used in excess of the quantities actually required to be used as per specifications therein stipulated or those fixed by the Engineer-in-charge , the cost of such quantities of that materials shall without prejudice to other rights and remedies available to the Government be recoverable from the contractor at double the rate at which it is agreed to be supplied to the contractor. In case of other materials issued free of cost, the recovery will be affected at double the stock issue rates.
3. 3% storage charges will be levied on all material issued to the contractor from stock, the cost of which is recoverable.
4. The contractor will have to make his own arrangement for bricks and tiles, cement & steel etc.
5. The consumption of cement will be regularized as per PWD specification along with amendments , if any.
6. The octroi, terminal tax royalty and other taxes and charges on the materials issued shall be borne by the contractor.

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Notes

Jamalpur- Providing canal-based drinking water supply by construction of B/S, laying of rising main (Rs. 81.70 Lacs) "Supply, fixing and commissioning of Solar panel system off grid capable of generating 10 KW including solar panels, solar controller, Horizontal Submersible motor pump set & cabling etc. complete in all respects in village Khentawas and all other works contingent there to".

Rs. 3.69 lacs

1. The work will be carried out strictly in accordance with the PWD. book of specification edition 1990, which forms a part and parcel of this contract agreement.
2. In this contract schedule of rates only essential portion of description of item has been written but it will deem to cover the entire items as fully described in Haryana PWD. Schedule of rates 1988.
3. The Engineer-in-Charge shall be entitled to order work against any item of work shown in this contract schedule of rates hereinafter called the schedule to any extent and without any limitation where-ever as may be required in his opinion for the purpose of work, irrespective of the fact that the quantities are omitted all together in the schedule or are shown more or less than the work ordered to be carried-out.
4. The rate for any item of work not provided in the Haryana PWD Schedule of rates 1988 but executed at site will be decided by the competent authority and the decision will be binding upon the contractor.
5. All the items in this contract schedule of rates are subject to foot notes/notes given in this Haryana PWD. schedule of rates 1988 regarding these items.
6. Approximate quantities are given in the contract Schedule of rates and may vary at the time of execution of work. The payment will however be made for the actual work done by the contractor. No extra claims whatsoever will be admissible to the contract on account of variation, alteration or deletion of any item over the quantities depicted in this contract schedule of rates.
7. All amendments issued in the Haryana PWD Schedule of rates 1988 as appended in the DNIT will be applicable on the contract schedule of rates.
8. The contractor will have to make his own arrangement of bricks and all other materials required for successful execution, completion and operation and maintenance of the work.
9. Any other item not included in this contract schedule of rates and got done at site of work will be paid according to relevant item of Haryana PWD schedule of rates @ rates accepted in the allotment letter and approval issued by the competent authority against this contract.
10. No claim will be entertained from the contractor in case any omission in description of rates and DNIT which might have occurred in any of these items taken in schedule while comparing

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this schedule or on account of typing/comparison or over writing in case of any error, the same shall be rectifiable at any stage as per Hr. PWD Schedule of rates 1988 alongwith the amendments on the same received from time to time.

11. The premium should be quoted above or below the contract schedule of rates and no condition should be given. In case, any condition is tendered, this will be considered as Null and void and only the premium or discount quoted by the tenderer shall be accepted. In case , any tenderer refuses to accept this, his earnest money will be forfeited.
12. The contractor shall submit the test certificate if the steel brought by him to site of work also the sample of steel may be got tested by the Engineer-in-charge. The steel shall be ISI marked.
13. No premium shall be payable on Non-Schedule items.
14. All the reinforcement shall be Fe-500 grade duly ISI marked confirming to relevant BIS and shall be procured by the contractor at his own cost.
15. Contractor shall be fully responsible for structural safety in all respect of the structure existing/ under construction in the vicinity of structures under construction.
16. The rates included in the contract cover the cost of filling of the water retaining structure, testing for water tightness, to the full satisfaction of the Engineer-in-Charge and emptying the same if desired.
17. Minimum 40mm clear cover be provided on the reinforcement on the inner side of the structure. The contractor shall give structurally safe and waterproof structure.
18. The contractor will dispose off the excavated surplus soil, at his own cost to a place as directed by Engineer-in-Charge, but shall by all means, clear the site from the extra earth. No extra lead, lift, wet earth, loading, unloading and carriage will be paid to the contractor who will have no claim on the same at any time later. Further, the contractor will quote his rate taking in to account the effect of the surplus earth which will be disposed of by him at his own cost.
19. Each manhole cover and frame shall have the trademark of manufactures month and year alongwith class and work and shall be ISI mark.
20. All taxes such as Royalty Municipal tax, Octroi charges forest tax and any other kind of taxes shall be paid by the contractor and are included in the rate quoted by the contractor separately for which no premium will be allowed.
21. The tender form will be issued to only those contractors who have been pre qualified for RCC work by the PHED Haryana at least NIT cost.
22. The contractor / agencies shall fill up the component wise rates in figures and words for non-schedule items in the space given on page ____ under the heading B) Non schedule items. The tender of the contractor /agency who does not fill up the component wise rates shall be outrightly rejected as an irresponsive tender and earnest money of the concerned contractor / agency shall be forfeited for not observing the required procedure.

Contractor

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23. The contractor is required to verify the water table bearing capacity and other Geo physical conditions before tendering and no subsequent payment of dewatering pile foundation etc will be made on this account.
24. Where the agency quotes abnormally low rates an equivalent amount of such item should be kept reserved and would be released to the agency in commensurate of the progress of work done. In case the agency falls to execute such works this amount would be forfeited.
25. Wherever the agency quotes abnormally high rates the quantity would be restricted as depicted in the DNIT.
26. Drawing will be submitted by the contractor for approval before the start of the work.

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Contractor

Witness

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11. SCOPE OF WORK FOR BIDDER

The scope of this work starts from providing and installation of complete Solar power operated water pumping system at existing boosting station of village Khentawas and all other components and accessories as per specification and making it operational. The successful bidder in this tender will be responsible for: -

- a) Carrying out work at B/S of village Khentawas.
- b) Execution of work of Solar Water Pumping System at B/Station of village Khentawas as per award of work. Providing, installation, Commissioning & Testing of Solar Water Pumping System for running 3 Phase Horizontal Submersible motor pump set as per design within stipulated time as mentioned in letter of award of contract including
 - M.S. fabricated & galvanized structure to house solar panels.
 - Solar mono perk panels of adequate capacity as per design over MS structure and/ or on ground as per site requirement and directions of Engineer-in charge
 - Installation and commissioning of Solar energy operated Horizontal Submersible pumping set AC in existing underground tank of required capacity as per DNIT with suitable size GI riser pipe, cables, electrical controller/ connections etc.
 - The riser from Horizontal Submersible pump set to be connected in the existing water supply pipeline near the underground tank which is part of scope of work.
 - All other necessary works to make the system operational
- 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) The Solar System includes the following items: -
 - i) Three Phase SOLAR Pump and Motor
 - ii) Three Phase SOLAR pump controller (MPPT)
 - iii) Solar Panels of Mono Perk
 - iv) All other accessories like wires, cables etc. for commissioning of Solar System.

Contractor

Witness

Executive Engineer

Warranty	
1. Solar Pump Controller	2 Years
2. Solar Pump (380 V three Phase)	2 Years
3. Solar PV Module	25 Years

- e) Agency will supply all relevant documents to the department after completion of work and give training regarding proper operation and maintenance of the system

Contractor

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TECHNICAL SPECIFICATIONS

1. General

A solar photovoltaic (SPV) water pumping system consists of a PV array, a DC / AC Horizontal 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) and Controls/ Protections.

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. The solar installation shall consist of solar mono perk panels, DC/ AC Horizontal Submersible pump with controller, control unit with all electronics including MPPT with DC MCB, and ~~wires~~ cables 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.

2. SOLAR PANELS OF MONO PERK TYPE

The SPV water pumping system should be operated with a PV array 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 300 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.

Indigenously produced SPV module (s) containing mono perc 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
- 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 mono PERC type & made of transmissivity glass front surface giving high encapsulation gain, employing lamination technology using established

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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 aluminum frame with edge sealant around the laminate, which is electrolytically compatible with the structural material used for mounting the module.
- 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 Haryana"
- 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.

S.No	Specifications	
1.	Total Watt	10,640/ 10.64 KW
2.	Each Panel	380 – 425 Watt
3.	VOC	46.44 V
4.	VMP	38.88 V
5.	Current	9.77 A
6.	Total Panel Nos	28 NOS
7.	Cell	72 Cell
8.	Make	ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR

Contractor

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3. 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:

4. 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.
5. 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
6. 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.
7. 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.
8. Each panel frame shall be complete with a weatherproof junction box as per the relevant specifications, where the module terminals shall be interconnected, and apt taken.
9. 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.
10. The structure should be designed to allow easy replacement and inclusion of any additional module.
11. The array structure shall be so designed that it occupies minimum space without sacrificing the output from the SPV panels.
12. There shall be a minimum air gap of 3 ± 0.3 cm between the facing edges of two adjacent modules on all sides
13. Mounting structure for solar panels shall be provided in shadow free area as per MNRE/ MoDWS guidelines.

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14. Bottom edge of the array should be sufficient above the ground for security and to avoid flooding/ obstructing panels by rain water/ growing vegetation etc.

4. THREE PHASE SOLAR PUMP CONTROLLER

- Three Solar Pump Controller is designed to run any electric three phase Horizontal Submersible and mono block pump/ motor.
- It should provide water in remote location by converting high solar Output DC from Solar Panel into AC to run a standard AC Horizontal Submersible Pump/Motor
- When Solar Power is not available controller can be automatically or manually switched to an alternating single phase or three phase input AC.

SALIENT FEATURES

LCD display shows Frequency (%), input DC voltage, Output AC voltage and current

- MPPT- Maximum power point tracking for maximizing the efficiency of input power.
- Uses MPPT Technology to maximize water delivery at various solar energy levels.
- Soft starter features prevent water hammering and increase system life.
- High flow system for faster tank fill and significant water output.
- Simple installation and requires less maintenance.
- Solar pump controller: optional features (ac/dc change over, Grid sharing facility difference voltage range controller and RMS facility).

S.No	Specifications	
1.	Make	ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR
2.	Model	10 HP / 7.5 KW
3.	Max Input VOC	1288 V
4.	Max Input VMP	1064 V
5.	Current	17 AMP
6.	MPPT	Inbuilt

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7.	Display	Inbuilt
8.	Protection	Dry Run, Overload, Low Load Voltage, Cloudy Weather Safety, Reverse Polarity, Short Circuit, Open Circuit

5. SOLAR PUMP SET

S.No	Specifications	
1.	Make/Model	ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR
2.	Type	Three Phase Horizontal Submersible Pump Water / Oil Filled Impeller / Mixed Flow
3.	HP/KW	960 LPM (10 HP / 7.5 KW)

- AC Solar Horizontal 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 Horizontal 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 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 abovehead 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 Horizontal Submersible Pumps shall be ISI marked duly approved by MNRE having valid certifications.
- The coupling shall be preferably of mesh type grid sleeves coupling of stainless-steel non-slip type with matching groove, collar and keyway arrangement.

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- **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

- **Horizontal Submersible Motor**

- AC Solar Horizontal Submersible Motors shall conform to IS 9283-1995 (amended upto date). The motor shall be of continuous duty (type S1) as specified in IS: 12824:1989
- 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 pretested coils.
- 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.
- 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:

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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 impregnated
04	Rotor laminations	CED/Electrical sheet of IS: 648:1994
05	Rotor conductor core	ALUMINIUM / Electro grade copper of IS:613:1984
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 Horizontal 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**

- (i) Dry run protection
- (ii) Over and under voltage protection
- (iii) Overload Protection
- (iv) 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.

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DNIT

Jamalpur- Providing canal-based drinking water supply be construction of B/S, laying of rising main (Rs. 81.70 Lacs) "Supply, fixing and commissioning of Solar panel system off grid capable of generating 10 KW including solar panels, solar controller, Horizontal Submersible motor pump set & cabling etc. complete in all respects in village Khentawas and all other works contingent there to".

Sr. No.	Description	Qty.	Unit	Rate	Amount
1	Supply and installation of Solar Panel 10 KW (Mono PERC with 380- 425W output along with RCC base and mounting structure. [ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR]	1	Job	271500	271500
2	Supply and Installation Solar Charge Controller for 3 phase output DC to AC along with all accessories like cables, switches, MCB etc. required for Solar Charge Controller [ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR]	1	Job	39750	39750
3	Supply and installation of AC Horizontal Submersible pump set capacity to discharge 960 LPM and 40 Mtr. Head having BIS for AC pump sets as well as MNRE certification along with accessories like cable, switches, delivery size riser of GI pipe etc. complete in all respects. [ADANI SOLAR, TATA POWER SOLAR, LUMINOUS, LOOM SOLAR, SHAKTI SOLAR, LUBI SOLAR, KIRLOKAR SOLAR, CRI, BS]	1	Job	57000	57000
	Total				368250

Say Rs 3.69 Lacs

**Junior
Engineer**

Sub Divisional Engineer

Executive Engineer

Contractor

Witness

Executive Engineer