

WATER SUPPLY AND SANITATION DEPARTMENT



UNDER JAL JEEVAN MISSION PROGRAMME

e-TENDER NOTICE NO. 02 FOR 2024-25 (Second Call)

**Name of work:- Simple Automation & Solar Work for various water supply schemes
under JJM in Jalgaon & Dhule District.**

**SUPERINTENDING ENGINEER,
MAHARASHTRA JEEVAN PRADHIKARAN, CIRCLE JALGAON**

**EXECUTIVE ENGINEER,
MAHARASHTRA JEEVAN PRADHIKARAN, DIVISION JALGAON**

SAVE WATER EVERY DROP COUNTS

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PRESS TENDER NOTICE

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MAHARSHTRA JEEVAN PRADHIKARAN REGION NASHIK
MAHARSHTRA JEEVAN PRADHIKARAN CIRCLE JALGAON
MAHARSHTRA JEEVAN PRADHIKARAN DIVISION JALGAON

UNDER JAL JEEVAN MISSION

Name of work : **Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District.**

TENDER NOTICE NO. 02 FOR 2024-25
(Second Call)

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महाराष्ट्र जीवन प्राधिकरण विभाग, जळगांव

फोन नं. २५७ - २२३३०७४

E-mail Id:- ee.jalgaon@mjp.gov.in

**ई - निविदा सुचना क्रमांक ०२ सन २०२४ - २०२५
(दुसरी मागणी)**

जल जीवन मिशन कार्यक्रमांतर्गत जळगांव व धुळे जिल्ह्यातील विविध पाणी पुरवठा योजनासाठी स्वयंचलीत यंत्रणा व सोलर कामाची गृप ई-निविदा महाराष्ट्र जीवन प्राधिकरण विभाग जळगांव कडून मागविण्यात येत आहे. कामाची अंदाजीत रक्कम रु.९६,०७,८२४/- इतकी आहे. सदर निविदेचा सविस्तर तपशिल दि.२६/०८/२०२४ पासून www.mahatenders.gov.in या वेबपोर्टलवर उपलब्ध करून देण्यात आलेला आहे

निविदा प्रक्रिया कार्यक्रमाचा सर्व तारखा www.mahatenders.gov.in या वेबपोर्टलवर अपलोड करण्यात आलेल्या ऑनलाईन निविदा सुचनेनुसार राहतील.

दि.२०/०८/२०२४

११ कार्यकारी अभियंता
म.जी.प्रा.विभाग, जळगांव

**MAHARASHTRA JEEVAN PRADHIKARAN DIVISION,
JALGAON**

Phone No. 0257 – 2233074


E- mail Id :- ee.jalgaon@mjp.gov.in

**E – TENDER NOTICE NO.02 FOR 2024 – 2025
(Second Call)**

Maharashtra Jeevan Pradhikaran Division, Jalgaon
Invites Group e – Tenders for the work Simple Automation &
solar works for various water supply schemes under JJM in
Jalgaon & Dhule District valued at Rs.9607824/- The e-
Tender details are available on www.mahatenders.gov.in
from dated :- 26/08/2024

All relevant dates will be as per the tender
published in web portal www.mahatenders.gov.in

Dt.20/08/2024


Executive Engineer
M.J.P.Division, Jalgaon

DETAILED TENDER NOTICE

Maharashtra Jeevan Pradhikaran Division, Jalgaon

Name of work : Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District.

DETAILED TENDER NOTICE NO. 02 OF 2024 -25 (Second Call)

Online percentage rate basis Tender in B-1 Form in two envelopes system are invited for the following works from the contractors registered be registered in Class A in MJP (Mech./ Electrical) / PWD (E.) or any other government department in India for Mech./ Electrical work in equivalent class of MJP. The details of tender are available on the Government of Maharashtra e-Tendering Portal :<http://mahatenders.gov.in>

Note : In order to participate in e-tendering process, it is mandatory for new contractors (first time users of this website) to complete the Online Registration Process for the e-Tendering website. For guidelines, kindly refer to Bidders Manual Kit documents provided on the website

NAME OF WORK - Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District.

a) **ESTIMATED TENDER COST** : Rs. 96,07,824/-

b. **EARNEST MONEY DEPOSIT** : Rs. 96,100/- (1% of the cost put to tender)

c. **DOWNLOADING COST OF TENDER DOCUMENTS Fee:-**

: Rs. 5900/- (Including GST 18%) (Non-refundable).

d. **CLASS OF CONTRACTOR** : Class A in MJP (Mech./ Electrical)/ PWD (E.) or any other government department in India for Mech./ Electrical work in equivalent class of MJP.

1. **EARNEST MONEY DEPOSIT/TENDER FEES :**

Tender fee and EMD shall be paid by

1. SBI Net Banking or
2. Other Bank Internet Bank MOPS.
3. In shape of Bank Guarantee for 8 month period in any Nationalized Bank in favour of MJP Jalgaon.

For any assistance please contact help desk. Details are available online.

The online payment procedure can be seen on <https://mahatenders.gov.in> → Announcement → online payment procedure.

Online payment requires 48 hours in Bank working days for clearance and hence, payment should have been made accordingly.

The EMD will be retained in the pooling account and will be refunded to the unqualified / unsuccessful bidders after award of tender to the successful lowest bidder. The EMD of successful bidder will be ultimately refunded or will be adjusted against the security deposit after selection of the successful bidder at the time of execution of the contract. In case, the Chief Engineer decided to forfeit / adjust the EMD amount of the bidder, the EMD amount in such cases shall be credited to the bank account of the MJP. The mandate for EMD refunds / forfeit / adjustment against security deposit shall trigger from e-tender application of CNP / NIC portal.”

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NOTE - The bidder should make the payment well in advance so as to ensure that the payment reaches to Bank 4 (four) days before date and time for submission of tender.

2. SECURITY DEPOSIT

- 4% of the Estimated cost or Accepted Tender cost whichever is higher
- **Initial Security Deposit.**
2% of estimated cost or accepted tender cost whichever is higher in the form of Fixed Receipt OR Bank Guarantee from Nationalized / Scheduled Bank in the name of Executive Engineer, MJP, Div Jalgaon, for initial minimum period of 30 months (time limit) and shall be extended suitably if the work is not completed within the time limit.
- **Deductions through R.A. Bills.**
Remaining Balance 2% plus 2% of Clause 38 amount and EIRL amount will be recovered through each running bill at 5% of the gross amount of R.A. Bill to the extent that total required security deposit is to be recovered.

2.1 Additional Security Deposit.(Performance security)

- If the tenderer has quoted the offer below than the estimated rates put to the tender, the tenderer shall have to submit Additional Security Deposit(ASD) (Performance security) in the form of bank guarantee of any nationalise or scheduled Bank in favour of the “Executive Engineer, MJP Division Jalgaon.”.
- The tenderer shall submit the Bank Guarantee of Additional Security Deposit (ASD) within 8 days from opening of Financial Bid to the office of “Executive Engineer, Maharashtra JeevanPradhikaran, Division Jalgaon”.
- If the first lowest (L-1) tenderer failed to submit the Additional Performance Security Deposit within eight days then his tender shall be liable for rejection and his EMD will be forfeited. In such case, if the second lowest (L-2) tenderer agree to execute the work at less than the rates of first lowest tenderer, then his tender will be accepted. The 2nd lowest tenderer will have to submit the Additional Performance Security Deposit in form of Bank Guarantee / Demand Draft.
- The amount of the (ASD) Bank Guarantee shall be calculated by the tenderer in accordance with this following manner.
- If the tenderer has quoted below the estimated rates, the ASD(Performance security) shall be paid additionally as mentioned below.

Rate quoted to Estimated Rate	Additional Security Deposite (Performance security)
Below 0% to below 1%	1) NIL
Lower than below 1	2) 1% of estimated cost put to tender
% to below 10% Lower than below 0% to below 15%.	3) 1% + (% rate quoted -10%) For example : If 15% below is quoted the amount of performance security (Additional Security Deposit) shall be 1+ (15-10) = 6% Performance Security of estimated cost put to tender. If the amount is less than Rs. 1000/-, then minimum to be Rs. 1000/-

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Lower than 15% below	<p>4) % as per Sr. No. 3 + (% rate quoted -15%) x 2</p> <p>For example : If 19% below is quoted the amount of performance security (Additional Security Deposit) shall be $6 + (19 - 15) \times 2 = 6\% + 8\% = 14\%$ Performance Security of estimated cost put to tender.</p> <p>If the amount is less than Rs. 1000/-, then minimum to be Rs. 1000/-.</p>
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- The bank Guarantee shall be valid upto defect liability period of the tender. It should bear MICR and IFS code.
- In case it is found that documents / Bank Guarantees submitted by the tenderer are false or misleading his earnest money shall be suspended for the period of 1 year. Additionally legal action may be initiated against the tenderer.
- The work order shall be given to the concerned tenderer after the clearance of the Bank Guarantee submitted by him.

REFUND OF PERFORMANCE SECURITY

- The amount of the performance security in the form of Bank Guarantee shall be released after completion of defect liability period of the tender.
- Non submission of additional security deposit in the form of Bank Guarantee shall be liable to summarily rejection of his tender.

3. STAMP DUTY

The contractor shall bear the revenue stamp duty on total security deposit of the agreement and/or Additional Security Deposit (payable as per tender condition), as per the Indian Stamp Duty Act(1985) (latest revision) provision applicable during contract period.

4. TIME OF COMPLETION -

4+2=6 (Six) calendar months including Monsoon period for completion of work, 2 months trial run of the scheme. Total Time limit is 6 months. This will be counted from the date of issue of the work order.

Sr. No.	Name of Water Supply Scheme	Completion Period (including trial run) in Months
1.	Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District.	6 months

5. DETAILED TENDER SCHEDULE

Sr. No.	Activities	Date & Time
1	Tender publishing date	26/08/2024
2	Documents download start date	26/08/2024 at 11.00 Hrs
3	Documents download end date	02/09/2024 at 17.00 Hrs
4	Pre-bid meeting date	
5	Bid submission start date	26/08/2024 at 11.00 Hrs
6	Bid submission closing date	02/09/2024 at 17.00 Hrs
7	Bid opening date (Technical Bid)	03/09/2024 at 17.00 Hrs if possible
8	Bid opening date (Commercial Bid)	Date will be communicated separately

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6. PRE QUALIFICATION CRITERIA

The bidder will have to fulfil the criteria mentioned below in order to qualify for opening of envelope (II) i.e. Commercial bid.

A) Bidder registered in appropriate class

- I. The firm / contractor should be registered with MJP / MIDC / CIDCO OR ANY GOVERNMENT DEPARTMENT IN INDIA in Class A (Mech) (or equivalent class of MJP). The validity of registration should be at least upto the last date for submission of tender, then only pre-qualification will be considered. It is necessary to renew the registration before issue of work order. Bidder need to submit online copy of registration.
- II. The agency shall have experience of successful completion and commissioning of the works listed below with any Govt/Semi Govt. Organization/ Government local body or equivalent organization. The experience of each work should be under single agreement.

Sr. No	Component in the project	Experience required
1	Providing, installing, testing, Commissioning & giving satisfactory test & trial of Simple Automation system (GSM/ GPRS Pump on/off system, Energy Monitoring system, Water quality Monitoring)	<ol style="list-style-type: none"> 1) The bidder shall be registered in Class A in MJP (Mech./ Electrical) / PWD (E.) or any other government department in India for Mech./ Electrical work in equivalent class of MJP. 2) Contractor must have experience of successful installation & commissioning of Automation in minimum one WSS/ Sewerage scheme with Automation at Water Treatment Plant, Pumping Machinery operation, Wetwell STP, Water Quality Monitoring. 3) Successfully operated & Maintain system through Automation & SCADA for Annual maintenance period of 2 years. <p>Note:-</p> <ol style="list-style-type: none"> A) Collaboration & Joint Venture for Mechanical & Automation work is allowed. B) Experience certificate from private agencies will not be accepted for Mechanical & Automation works at any cost.

- III. The bidder shall submit online, required experience certificate. The certificate of experience shall have to be issued by the officer not below the rank of Executive Engineer or equivalent officer/ Chief Officer (in case of Municipal council) The certificate issued by Private Individuals/ Private Organization will not be considered.

After submitting the tender i.e. after Bid lock, while opening the Technical Bid, if bidder requests in writing not to open his Commercial Bid, his request will not be considered and his Commercial Bid will be opened. In case if the rates quoted by such bidder found to be lowest, his tender will be accepted and process as per tender conditions to issue work order will be started. If contractor show unwillingness to do the work, then his Tender Security will be forfeited and he will be debarred for one year to participate for all tenders of MJP. This condition is in addition to the condition No.2 (A)(iii) of General Rules and Directions for the Guidance of Contracts of Form B-1. The decision of the Member Secretary, MJP Mumbai will be final and binding on the contractor.

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For any false / fraudulent paper / information submitted in envelop No.1, contractor will liable to be disqualified for opening of Envelop No.2 i.e. Commercial Bid and process for black listing to him will start.

Even after issue of work order, any document submitted with tender found false/ fraudulent/ misleading, contractor will held solely responsible for the same and action under Indian penal Code will be initiated against him. Officials of MJP shall not be held responsible for such fraudulent act of the contractor.

The contractor shall submit affidavit on Stamp paper of Rs.500/- (Non judicial) (Annexure No.VI) in Envelop No.1 that if any of the document submitted found false/ misleading/ forged/ fraudulent then he shall be liable for action under Indian Penal Code.

IV) Apart from Prequalification Criteria mentioned in 6 A the bidder shall submit the following documents :

- The firm / contractor shall have to submit Scanned copy of self declaration (Annexure-VII) that his company is **not black listed** by any Govt./Semi Govt. Organization/any local bodies and any other Private bodies.
- Declaration by contractor in prescribed format (Annexure IV)
- Under taking by contractor in prescribed format (Annexure V).
- Affidavit on stamp paper of Rs. 500/- (Annexure- VI)
- All the documents pertaining to pre-qualification criteria shall be submitted separately online in Envelop No.1 (Technical Bid)

7 COLLABORATION & JOINT VENTURE

• Collaboration :-

The contractor who is willing to participate in tender process, and if he is not having experience of particular sub-work, then he is allowed to have collaboration with other agency or contractor registered with Maharashtra Jeevan Pradhikaran or any government department in India or any contractor (in case of automation) in appropriate class and having experience of the particular sub-work as specified in pre-qualification criteria. Contractor with whom above collaboration is done shall be responsible for successful completion of the works. However it will be the responsibility of the principal contractor to get the work done.

- In no case value of work to be done by collaborator, with whom collaboration is made, should exceed the value of work to be done by the Principal Contractor.
- The collaborating firm shall have collaboration with only one principal contractor.
- The principal Contractor shall be ultimately responsible for completion of entire work.
- Moreover with whom collaboration is made will only be binding to carry out the work to the effect of principal contractor & should submit an agreement on Rs. 100/- stamp paper as per prescribed form (**Annexure II**) duly Notarized at the time of pre-qualification of bidder

Joint Venture :-

The contractor who is interested to have blank tender form and if he do not have necessary experience of one sub-work then he is allowed to have joint venture with another agency having the experience of that particular sub-work

If there is joint venture, same shall be in appropriate format as per **Annexure III** and it shall be clearly mentioned in the agreement that both the contractor will be jointly and severally

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responsible for the successful completion of works included in the tender with all test and trials for full tender period. It is necessary to enclose the registration certificates of joint venture firm with the Registrar of the Partnership Firm or the receipt of payment made to Registrar of the Partnership Firm on account of fees toward joint venture firm with condition of submitting registration certificate before issue of work order. Then only prequalification application will be considered. In the case of joint venture, the contractor having higher class of registration will only be considered.

8. COST OF BLANK TENDER FORM

- 5900./- per set (including GST).
- Blank Tender documents will not be sold by this office. Interested contractors have to download tender documents from the website.
- Cost of blank tender form shall not be accepted in the form of cash or cheque. The cost of the tender documents will not be refunded under any circumstances.

9. ISSUE OF BLANK TENDER FORM

The blank tender forms will have to be downloaded, from the website <http://mahatenders.gov.in> as per online schedule.

10. PRE-TENDER CONFERENCE

Pre-Tender conference is open to all prospective tenderers and will be held on -
hours in the office of the Superintending Engineer, MJP Circle, Jalgaon. wherein the prospective tenderers will have opportunity to obtain clarifications regarding the work and the tender conditions. The prospective tenderers are free to ask for any additional information or clarification either in writing or orally and the reply to the same will be given in writing and this clarification referred to as common set of conditions, shall also be common and applicable to all tendere` The minutes of this meeting along with the letters of tenderers will form the part and parcel of the tender documents. Bidder need to submit online signed copy of pre bid minutes in a technical bid.

11. VALIDITY OF THE OFFER

120 days from the date opening of tender.

12. LAST DATE & TIME OF ONLINE SUBMISSION OF TENDER FORM

As per Schedule up to 17:00 Hrs.

13. DATE & TIME OF ONLINE OPENING OF TENDER

As per Schedule at 11:00 in the office of the Superintending Engineer, MJP Circle, Jalgaon.

14. SUBMISSION OF TENDER

Bids must be accompanied with:

- a. The Valid GST registration No. or TIN No.
- b. The Valid PAN No.

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- c. Scanned copy of all documents, certificates specified in Pre-qualification Criteria in Point No.6.
- d. Scanned copy of duly signed declaration of contractor in prescribed format filled in agency's letter head attached with the tender. (Annexure- IV)
- e. Scanned copy of duly signed undertaking for guarantee in prescribed format filled in agency's letter head attached with the tender. (Annexure-V)
- f. Scanned copy of minutes of Pre-bid meeting duly signed by Contractor.
- g. Scanned copy of Collaboration & Joint Venture in prescribed format.(Annexure II & III) wherever applicable.
- h. The Contractor should submit declaration of his firm that the name of his firm is not black listed by Govt. or semi Govt. department. The scanned copy of the declaration should be submitted in envelope no. 1.(Annexure VII)
- i. The affidavit on Rs. 500/- stamp stating that, the contractor is liable for action under penal code if any papers are found false / fraudulent during contract period and even after the completion of contract should be appended as per Para 2.1 of Maharashtra Govt. Resolution No.CAT-2018 / prakra-127/Ima-2/ Dt.28/11/2018 (Annexure VI)
- j. Scan copy of Bar Chart duly signed by the contractor.

Bid shall be treated as invalid if scanned copies as mentioned above are not submitted online along with the bid.

The guidelines "to download the tender document and online submission of bids procedure of tender opening" can be downloaded from website <https://mahatenders.gov.in>

- 14.1 The two envelopes No. 1 & 2 shall be digitally sealed and signed and submitted online as per the online tender schedule.
- 14.2 The date and time for online submission of envelopes shall strictly apply in all cases. The tenderers should ensure that their tender is prepared online before the expiry of the scheduled date and time and then submitted online before the expiry of the scheduled date and time. Offers not submitted online will not be entertained.
- 14.3 If for any reason, any interested bidder fails to complete any of online stages during the complete tender cycle, department shall not be responsible and any grievance regarding that shall not be entertained.

15. OPENING OF TENDER

The tenders will be opened on the date specified in the tender notice or on the date intimated to prospective bidders, in the presence of the intending bidders or their authorized representative to whom they may choose to remain present along with the copy of the original documents submitted for Pre Qualification. Following procedure will be adopted for opening of the tender.

Envelope No. I (Technical Bid)

First of all, Envelope No. 1 of the tenderer will be opened online through e-Tendering procedure to verify its contents as per requirements. Scanned copies of following documents shall be in Envelope No. 1.

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- a. Scanned copy of all documents, certificates specified in Pre-qualification Criteria in Point No.6.
- b. Scanned copy of duly signed declaration of contractor in prescribed format filled in agency's letter head attached with the tender. (Annexure-IV)
- c. Scanned copy of duly signed undertaking for guarantee in prescribed format filled in agency's letter head attached with the tender. (Annexure-V)
- d. Scanned copy of minutes of Pre-bid meeting duly signed by Contractor.
- e. Scanned copy of Collaboration & Joint Venture in prescribed format.(Annexure II & III) (whereever applicable).
- f. The Contractor should submit declaration of his firm that the name of his firm is **not black listed** by Govt. or semi Govt. department. The scanned copy of the declaration should be submitted in envelope no. 1. (Annexure VII)
- g. The affidavit on Rs. 500/- stamp stating that, the contractor is liable for action under penal code if any papers are found false / fraudulent during contract period and even after the completion of contract should be appended as per Para 2.1 of Maharashtra Govt. Resolution No.CAT-2018 / prakra-127/Ima-2/ Dt.28/11/2018 (Annexure VI)

Note:- Before opening Envelope no.1 concerned Executive Engineer should confirm the on line payment made by contractor through Divisional Accountant concerned on line receipt must be uploaded to mahatenders .gov.in by using tender id and receipt for same will be issued to the contractor concerned.

Envelope No. II (Commercial Bid)

This envelope shall be opened online through e-Tendering procedure after opening of envelope No. 1 only, if the contents of Envelope No. 1 are found to be acceptable to the MJP tendered rate shall then be read out by the tender opening authority.

1. The guidelines, to download the tender document and online submission of bids procedure of tender opening can be downloaded from website. <https://.mahatenders.gov.in>
 2. The two envelopes No. 1 & 2 shall be digitally sealed and signed and submitted online as per the online tender schedule
 3. The date and time for online submission of envelopes shall strictly apply in all cases. The tenderer should ensure that their tender is prepared online before the expiry of the scheduled date and time and then submitted online before the expiry of the scheduled date and time offers not submitted online will not be entertained.
 4. If for any reason, any interested bidder fails to complete any of online stages during the complete tender cycle, department shall not be responsible and any grievance regarding that shall not be entertained.
16. Contractor shall submit a certificate to the effect that “all the payment to the labour/staff are made in bank accounts of staff linked to Unique Identification Number (AADHAR CARD) “The Certificate shall be submitted by the contractor within 60 days from the commencement of contract.

17 GST/GST TDS

The rates quoted by the contractor must be inclusive of all relevant taxes except GST. No extra payment of

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this account will be made to the Contractor.

- a) Bidder shall quote his rate excluding G.S.T.
- b) GST shall be paid on the amount of bill of the work done as per prevailing guidelines rate of GST during the period of work done as applicable
- c) The rates quoted by the contractor shall be deemed to inclusive of the labour welfare cess and other taxes (Other than GST) that the contractor will have to pay for the performance of his contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.
- d) The bidder shall quote his rate considering the provisions counted under GST Act 2017
- e) Amount of GST 2% i.e. CGST & SGST each 1% will be deducted at source (T.D.S.) from 01.10.2018

18. RIGHT RESERVED

- a) Right to reject any or all tenders without assigning any reason thereof is reserved by the competent authority, whose decision will be final and legally binding on all the tenderer.
- b) Tender with stipulations for settlement of a dispute by reference to Arbitration will not be entertained.

19. INSURANCE

Contractor shall take out necessary Insurance policy/policies so as to provide adequate Insurance cover of execution of awarded contract work from the Director of Insurance, Maharashtra State Mumbai-51 only. Its postal address for correspondence is 264 ,1st Floor MHADA, opposite Kala Nagar, Bandra East, Mumbai-400051 (Tel.No.6438403/Fax6438461). Insurance policy/policies taken out from other company will not be accepted. However if The same should be under the co-insurance cum-servicing arrangements approved by the Director of Insurance. If the policy taken out by the contractor is not on coinsurance basis

(G.I.F.60% and Insurance company 40%) the same will not be accepted and the amount of Premium calculated by the Director of Insurance will be recovered directly from the amount Payable to the contractor for the executed contracted work which may be noted.

**Executive Engineer
Maharashtra JeevanPradhikaran
Division Jalgaon**

6.	This guarantee will not be discharged due to the change in the constitution of the Bank or of the Contractor	No of correction	Executive engineer
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Contractor.

7. We, lastly undertake not revoke this guarantee during its currency except with the previous consent of the MJP in writing.

Dated the day of 2024

For _____
(Indicate the name of the Bank)

Note: However, these forms will be as per the current practices of MJP/...MC and Banks

ANNEXURE-II

COLLABORATION AGREEMENT

This agreement made at (Place) _____ this day (date, month and year) _____ between M/s. _____ (Name of the bidder, who intends to collaborate and its registered office address) here-in-after referred as (Principal contractor) which expression shall unless it be repugnant to the context or contrary to the meaning there of be deemed to mean and includes its successors in business and permitted assigns of the ONE PART and M/s _____ (name of the collaborator and its registered address) here-in-after referred as (Collaborator) which expression shall unless it be repugnant to the context or contrary to the meaning there of be deemed to mean and includes its successors in business and permitted assigns of the OTHER PART.

WHERE AS

- 1) MJP has floated a tender for the work -----
- 2) (Principal contractor) -----registered with MJP / MCGM / MIDC / CIDCO/ANY GOVT ORGANIZATION in Class -----is well established contractor engaged in the activities of construction of water supply projects.
- 3) (Collaborator) -----Registered with MJP/MIDC/MSEDCL / CIDCO/ANY GOVT in Civil / Mechanical Class----- is well established contractor having the experience of work (details of works),
- 4) The principal contractor desires to collaborate with the collaborator for execution of following works, as he don't have sufficient experience of this particular work included in tender as mentioned in para 1 above.

Sr.No.	Name of work	Amount
	Total :-	

(Note :- It is obligatory to furnish above information otherwise collaboration agreement will not be considered).

- 4) The Parties hereto have come together to set up a collaboration in order to quote for the tender mention in para 1 above and on award of the tender to jointly execute the work as mentioned in para 4 above as well as to guarantee it's perfect execution utilizing the technical experience. The principal contractor involved in this collaboration, directly or indirectly will hold fully responsible towards MJP to look after the execution of the said work as per the terms and conditions and specifications mentioned in tender.

NOW IT IS HEREBY AGREED BY AND BETWEEN THE PARTIES HERE TO AS UNDER :-

- 1) In consideration of the mutual understanding, trust and confidence each of the parties in other, they have mutually agreed to form a collaboration to submit the tender and if the tender is accepted by the MJP then carry on the business as a collaboration in respect of development and execution of the said work in

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accordance with the terms and conditions that may be imposed or agreed by and between the MJP and the Principal contractor hereto.

2) The collaborator shall be responsible for completion of works for which the collaboration is made, however the principal contractor shall be ultimately responsible and liable for completion of entire works in accordance with the terms and conditions on which the award to execute the work is made by MJP under the said tender.

3) In the event of any dispute or difference or misunderstanding arises between both of them in course of execution of the work after the award of the work to the Principal contractor by MJP, the same shall be referred to Member Secretary, Maharashtra Jeevan Pradhikaran and his decision in this respect shall be final and binding on both the parties

IN WITNESS WHERE OF the parties hereunto have set and subscribed there respective hands and seals the day, month and year first above written.

SIGNED, SEALED AND DELIVERED BY THE WITH NAMES

(Name of First Party)

(Name of Second Party)

WITNESS :-

1.

2.

ANNEXURE-III**JOINT VENTURE AGREEMENT****JOINT VENTURE AGREEMENT**

This agreement of joint venture made and entered into at _____ on this _____ day _____ of _____ by and between.

1. PARTY NO.1:- _____

2. PARTY NO.2:- _____

1. Name of joint venture firm _____

1. Period of Joint Venture is valid upto _____.

DEFINITION

In this deed the following words and expressions shall have the meaning set out below

The joint venture (J.V.) shall mean _____ (Party No.1) and _____ (Party No.2) Collectivity acting in collaboration for the purpose of this agreement.

"Appex Co-ordination Body (ACB) shall mean the body comprising the managing director of _____ (Party No.1) and managing director of _____ (Party No.2) - as the two partners of the Joint Venture. New firm will be _____ (Name of joint venture firm) _____".

"The Employer" shall mean the Executive Engineer of Maharashtra Jeevan Pradhikaran (MJP)/COMMISSIONER/CHIEF OFFICER

The _____ 'work' _____ shall _____ mean

.....

"The contract" shall mean the contract emerged into or to be entered into between the joint venture and the employer for the work.

JOINT VENTURE

Whereas Parties hereto declare that they agree and undertake to form a joint venture for the purpose of

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applying for pre-qualification for tender and if pre-qualified to execute the work, as an integrated joint venture. The J.V. shall be called as "*Name of joint venture firm*".

The parties are not, under this agreement entering into any permanent partnership or joint venture to tender for undertake any contract other than the subject work.

WITNESS

Whereas the Executive Engineer of M.J.P/COMMISSIONER/CHIEF OFFICER, hereinafter referred as the Executive Engineer/COMMISSIONER/CHIEF OFFICER, have invited pre-qualification for the work of.....
.....
.....

Whereas "as *Name of joint venture firm* wish to apply for pre-qualification for tender and if pre-qualified to execute the work if awarded as per the terms for the bid documents contract.

Now Therefore This Deed of Partnership Witnesses As Follow :-

1. That these recitals are and shall be deemed to have been part and parcel of the present Agreement of joint venture.
1. That this Agreement shall come into force from the date of this Agreement i.e. _____ day of _____.
1. That the operation of this agreement for joint venture firm concerns and is confined to this work only.
1. That the name of the joint venture firm shall be "*Name of joint venture firm*".
2. That "*Name of joint venture firm*" shall jointly execute the work according to all terms and conditions as stated in the relevant instruction contained in the bid document contract as integrated joint venture styled.
1. That this agreement for J.V. shall regulate the relations between the parties and shall include without being limited to them the following condition.
 - a. "*Name of joint venture firm*" shall be the lead company in charge of the joint venture, for all intents and purpose.
 - a. The parties here to shall be jointly and severally liable to employer for all act, deeds and things pertaining to the contract.
 - a. That the managing director of the lead partner of the joint venture shall be the manager of the joint venture firm and shall have the power to control and manage the affairs of the joint venture.
 - b. That on behalf of the "*Name of joint venture firm, the manager*" shall have the authority to incur

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liabilities, receive instructions and payments, sign and execute the contract for and on the joint venture. All payment and under the contract shall be made into the joint venture's bank account.

- a. One bank account shall be opened in the name of J.V. to be operated by the individual signatory as mutually decided by the representatives of joint venture partners.
- b. That each partners of the J.V. agrees and undertakes to place at the disposal of the joint venture the benefit of its individual experience, technical knowledge and skill and shall in all respects bear its share of the responsibilities including the provision of information, advice and other assistance required in connection with the work. The share and the participation of the all the partner in the joint venture shall broadly be as follows.

Name of partner

Percentage of shares

1. Party No.1

2. Party No.2

- a. And all rights, interests, liabilities, obligations, work experience and risks (and all net profit or net losses) arising out of the contract shall be shared or born by the parties in proportion to these share. Each of the parties shall furnish its proportionate share in any bounds, guarantees, sureties required for the work as well as its proportionate share in any working capital and other financial requirements, all in accordance with the decisions of the ACB.
- b. Any loan/advances shall be shared by the Party No.1 and Party No.2 at the ratio of & respectively.
- c. All funds, finance or working capital required for carrying out and executing the works or contract shall be procured and utilized by the parties as mutually agreed by them.

a. **Site management :-**

A project manager appointed by ACB will manage the execution of the work on the site. The project manager shall be authorized to represent the joint venture on site, in respect of matters arising out of or under the contract.

- a. The Name of joint venture firm shall be jointly and severally responsible and liable towards the employer for the execution of the contract condition.
- b. The joint venture deed shall be registered with the Registrar of partnership firms, Govt. of Maharashtra.
- c. This joint venture agreement shall not be dissolved till the completion of defect liability period as stipulated in the tender document condition of works.
- d. This joint venture agreement is deemed to be null and void in case the joint venture firm is not qualified by the employer or unsuccessful in the award of work.
- e. That question relating to validity and interpretation on this deed shall be governed by the laws of India. Any disputes in interpretation of any conditions mentioned herein shall be referred to Member Secretary, Maharashtra Jeevan Pradhikaran and his decision in this respect shall be final and binding to both the parties. Neither the obligation of each party hereto performs the contract nor the execution of the work shall stop during the course of this arbitration processing or as a result there of.
- f. That no party to the J.V. has the right to assign any benefits, obligations or liability under the agreement to any third party without obtaining the written consent of the other partner and employer.
- g. Bank account in the name of the joint venture firm may be opened with any scheduled or nationalized bank

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and the representatives of the J.V. partner are authorized to operate upon individually.

- h. That both the parties to the J.V. shall be responsible to maintain or cause to maintain proper books of accounts in respect of the business of the joint venture firm and the same shall be closed as at the end of the every financial year.
- i. That the financial year of the firm shall be the year ended on the 31st March of every year.
- j. That upon closure of the books of account balance sheet and profit and loss account as to that state of affairs of the firms as the end of the financial year and as to the profit or loss made or incurred by the firm of the year ended of that day, respectively shall be prepared and the same shall be subject to audit by a chartered accountant.

LEGAL JURISDICTION

All matters pertaining or to commencing from this joint venture agreement involving the employer shall be subject to jurisdiction of high court of judicature at Mumbai.

NOTICES AND CORRESPONDENCE

All correspondence and notice to the joint venture shall be sent to the following address.

SIGNED, SEALED AND DELIVERED BY THE WITH NAME

(Name of First Party)

(Name of Second Party)

WITNESS :-

- 1.
- 2.

ANNEXURE-IV**DECLARATION BY CONTRACTOR****DECLARATION**

I hereby declare that I have made myself thoroughly conversant with the local conditions regarding all materials such as stones, murum, sand, availability of water etc. and labour on which I have based my rates for this work. The specifications and requirements of lead for this work have been carefully studied and understood by me before submitting the tender. I undertake to use only the best materials, to be approved by the Chief Engineer/Chief Officer/Engineer in charge of the work or his duly authorized representative, before starting the work and also to abide by his decision.

I hereby undertake to pay the labours engaged on the work as per Minimum Wages Act 1984 applicable to the zone concerned.

Contractor's Signature

Contractor

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ANNXURE-VUNDERTAKING FOR GUARANTEE

I/We Guarantee that :

- 1 I/We will replace repair and adjust free of all charges to the employer any part of the work which fails to comply with the Specifications or amendment to such specifications as referred to in our specifications attached to tender, fair wear and tear except until the completion and for a period mentioned under clause 20 from the date of completion of contract.
- 2 All the work will be reliable.
- 3 All the work will be of a type which has been proved in service to be suitable for the duty required by the specifications and will be manufactured and tested in accordance with the appropriate standard specifications approved by the Engineer-in-charge.
- 4 I/We accept to abide by the clause relating to quality and guarantee of work.

DATE :

CONTRACTOR

Contractor

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ANNEXURE-VI**AFFIDAVIT (on Rs. 500/- Stamp Paper)**

I.....age.....address.....
 (Authorized signatory to sign the contract), hereby submit, vide this affidavit in truth,
 that I am the owner of the contracting firm...../ authorized signatory and I am submitting
 the documents in envelope no. 1 for the purpose of scrutiny of the contract. I hereby agree to the conditions
 mentioned below :

1. I am liable for action under Indian penal code for submission of any false / fraudulent paper / information submitted in envelope no. 1.
2. I am liable for action under Indian penal code if during contract period and defect liability period, any false information, false bill of purchases supporting proof or purchase, proof of testing submitted by my staff, subletting company or by myself, I will be liable for action under Indian Penal Code.
3. I am liable for action under Indian penal code if any paper are found false / fraudulent during contract period and even after the completion of contract (finalization of final bill).

(Signature of Contractor)
 (Seal of Company)

ANNEXURE-VII

SELF DECLARATION

I -----age-----years occupation business residing at -----

do hereby state on oath as under :-

That I am proprietor / Director / Partner / Power of Attorney Holder of the company name and style as M/s ----
-----having its address at -----

That I further say that M/s ----- is **not black listed** by any Government / Semi Government Organization / any Local Bodies and any other Private Bodies.

Whatever information of documents submitted for registration are true and correct as per my knowledge. I take full responsibility regarding genuineness of documents submitted by me.

Date :-

Place :-

Signature of Contractor

.

.

Contractor

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**MAHARSHTRA JEEVAN PRADHIKARAN DIVISION JALGAON
(Under Jal Jeevan Mission)**

**Name of work : Simple Automation & Solar Work for various water supply schemes under JJM in
Jalgaon & Dhule District.**

GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS

In the contract, the following terms shall be interpreted as indicated.

- a) "WSSD" means Water Supply and Sanitation Department
- b) "JJM" means Jal Jeevan Mission
- c) "The Contract" means the agreement entered into between the owner and the contractor as recorded in the contract form signed by the parties, includes all attachments and appendices there to and all documents incorporated by references therein. Contract is the deed of contract together with all its original accompaniments and those later incorporated in it by internal consent.
- d) "The Contract Price" means the price payable to the contractor under the contract for the full and proper performance of its contractual obligations.
- e) "The Goods" means all of the equipments, machinery and/or other materials which the contractor is required to supply to the owner under the contract.
- f) "Services" means services ancillary to the contract such as transportation and insurance and any other incidental services, such as Provision of Technical Assistance, Trial Runs, Commissioning, Training to staff and other such obligations of the contractor covered under the contract.
- g) "The Owner" means, the Executive Engineer ,MJP , the person, for the time being holding that Office and also his successors and shall include any Engineer authorized by him.
- h) The "Contractor" means successful tenderer, that is the tenderer, who's tender has been accepted and who has been authorized to proceed with the work.
- i) "The Pradhikaran" shall mean the Maharashtra Jeevan Pradhikaran,
- j) "M. J. P." means, Maharashtra Jeevan Pradhikaran.
- k) "The Chief Engineer " shall mean Chief Engineer , the person, for the time being holding that Office and also his successors and shall include any Engineer authorized by him
- m) "The Superintending Engineer, Maharashtra Jeevan Pradhikaran Circle Jalgaon" means the Engineer, so designated by the Pradhikaran or any other Engineer who is for the time being entrusted with his functions, duties and powers and so notified.
- n) "Tender" means the proposal of the contractor submitted in prescribed form setting-forth the prices for the goods to be supplied and other related services to be rendered and

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setting forth his acceptance of the terms and obligations of the conditions of contract and specifications.

- o) "Contract Time" means period specified in the document for the entire execution of contracted works and other services to be rendered commencing from the date of notification of award including monsoon period.
 - p) "Month" means calendar month.
 - q) "Site" means location at which the contractor will have to execute the contracted work.
 - r) "The Engineer or Engineer-in-charge" shall mean the City Engineer /Hydraulic Engineer / water supply Engineer authorized by the MJP .
2. The contractor shall erect temporary sheds for storage for material supplied by Council/Council and brought by him on site. Also at each construction site contractor shall have separate storage space for cement and other material.
 3. Contractor shall submit designs and drawings for Automation/ SCADA and its layout, all allied electrical and mechanical equipments as directed by Executive Engineer .This designs and drawings shall be got checked from Executive Engineer (M.).
 4. The contractor shall maintain the record of these materials in the prescribed proforma and registers as directed by the Executive Engineer. The sample of prescribed proforma is attached herewith. These registers shall be signed by both contractors and representative of Engineer-in-Charge. These registers shall be made available for inspection, verification for the department as and when required. These registers shall be in the custody of department and shall be maintained by the department.
 5. Contractor shall take photographs and videos of all sub-works during construction and submit two copies in hard and soft along with final bill.
 6. Contractor shall prepare record drawings of all sub-works as per execution in details by using Auto Cad programme; as directed by Executive Engineer. He should submit 3 Nos. C.D. (R.W) along with three hard copies during the submission of final bill. Final bill will not be passed unless and until this is submitted. No extra payment will be made for submission of CDs.

7. **SCOPE AND MEANING OF CONTRACT:**

The term contract hereinafter used means and includes the notice for invitation of tender, schedule 'A' i.e. schedule for departmental supply of materials, schedule 'B' i.e. schedule of items to be executed under this contract, general conditions, schedule of obligatory requirements, general and detailed specifications all appendices drawing and any other documents attached to the blank tender form issued to the contractor firm. These are subject to any alterations and modifications carried out and agreed to before the contract is finally decided and accepted by the Executive Engineer.. The term contract and firms means the agency entering into contract with the Executive Engineer.

The Maharashtra Jeevan Pradhikaran an body of Government of Maharashtra, has proposed to executethe

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following work under sanctioned scheme “Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District.”

This tender includes following subworks -

SW. No.	Name of Scheme
1	Bahaderpur W.S.S. Tal.- Parola Dist.-Jalgaon Solar Power plant at Jackwell & WTP premises
2	Kandari W.S.S. Tal.- Bhusawal Dist.-Jalgaon Web based Energy Monitoring and WQ Monitoring
3	Kandari W.S.S. Tal.- Bhusawal Dist.-Jalgaon Solar Power plant at WTP premises
4	Dhanora W.S.S. Tal.- Amalner Dist.-Jalgaon Web based Energy Monitoring and WQ Monitoring
5	Dhanora W.S.S. Tal.- Amalner Dist.-Jalgaon Solar Power Plant at Jackwell & WTP premises
6	Samode Ghodyamal W.S.S. Tal. Sakhari Dist. Dhule GSM /GPRS base pump operating system Monitoring

8. IMPORT LICENSE AND FOREIGN EXCHANGE :

In respect of the work on contractors own design, the contractor shall quote for the indigenous equipment only. Foreign exchange and import license required by the contractor if any shall have to be arranged by the contractor independently. Department shall not take any responsibility in this regards. Delay in getting any materials shall not be entertained for extension of time limit of the contract.

9. ACQUITTANCE WITH WORKS AND SITE CONDITIONS:

The contractor shall be deemed to have carefully examined the scope of work, location and alignment of various components under this tender, site conditions, the general conditions, the specifications, drawing availability of material required etc. and has fully acquainted himself regarding all aspects of works, if he shall have any doubt as to the meaning of any portion of the tender papers. He shall set forth the particulars of the tender to the notice of Executive Engineer, before submission of tender and get the doubts cleared. Once the tender is submitted duly filled, he shall be supposed to have accepted the conditions and specifications full and interpretation of the conditions be entirely at the discretion of the competent authority of the department.

10. OBSTRUCTIONS IN THE WORK :

All obstructions such as electric cables, telephone line, water and sewer mains, manholes, natural drainage, culverts, storm water drains etc. coming in the way shall be carefully looked after against any damages which otherwise will have to be made good by the contractor at his own cost. Any work of removing, repairing or remaking etc will be carried out by the contractor without any extra claims for the same in contractor with the respective departments.

11. LAND FOR THE USE BY THE CONTRACTOR FOR STORING MATERIALS ETC. :

As far as possible the contractor shall be allowed to use the Municipal Land without any charge, in possession of concern MC for stacking his materials, stores, erection of temporary structures, sheds etc with prior written permission of Executive Engineer. The location of the temporary structures to be erected shall be got approved from the Executive Engineer and all the products obtained after cutting the same shall be stacked at suitable place as directed by Engineer in charge. All concern MC land occupied by the contractor for temporary use shall be handed over

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back in good conditions to the entire satisfactions of the concern MC. as and when demanded by him. Any damage or alterations made in the area shall be made good by the contractor. If the departmental land is not available the contractor has to make his own arrangements of land on hire or otherwise at his own cost.

12. LABOUR CAMPS :

The contractor shall at his own expenses make all necessary provisions for land, housing grains, water supply and sanitary arrangements etc for employees and shall pay direct to the authorized concerned all rents, taxes and other charges. The contractor shall also comply with all requirements of health department in regard to maintenance of anti-epidemic conditions.

13. WORK THROUGH OTHER AGENCY IN THE SAME AREA :

The Executive Engineer shall have the right to execute the works, not included in this contract, but within the premises occupied by the contractor for the purpose of this contract, through any other agency.

14. SPECIFICATIONS

The wording of items in Schedule 'B' shall be taken as guidelines for general provisions and coverage under the item. The detailed specifications for relevant items shall be as per detailed specifications enclosed and as per P.W.D. Hand Book, Standard Specifications, Relevant and latest editions of IS.Code. The other standard, wherever quoted, shall be applicable. If the standard specifications fall short for the items quoted in the Schedule of this contract, reference shall be made to the latest Indian Standard Specifications, IRC codes. If any of the items of the contract do not fall in reference quoted above, the decision and specification as directed by the Executive Engineer shall be final.

It is presumed that the Contractor has gone carefully through the standard specification (Vol. I & II, 1981 edition) and the Schedule of rate of the Division, and has also studied site conditions before arriving at rates quoted by him. The special provisions and detailed specification of wording of any item shall gain precedence over the corresponding contrary provisions (if any) in the standard specification given without reproduction the details in contract. Decision of Executive Engineer shall be final in case of interpretation of specifications.

15. WATER AND ELECTRICITY

The contractor shall make his own arrangements at his own cost for water required for construction and hydraulic testing as well as for labour camp. The MJP does not take any responsibility for supply of water to contractor for construction or testing purposes during the entire work. If water is supplied by MJP, Contractor shall take connection at his cost and provide water meter on it. Water charges shall be paid by contractor as per prevailing water rates to MJP regularly every month. Power supply from MSEDCL if required for construction of work as well as for labour camp will have to be arranged by the contractor at his cost. MJP does not take guarantee for continuous power supply at site.

16. LINE OUT

The contractor shall himself carry out the line out of works in the presence of the representative of the MJP/Council/Council and the contractor shall be responsible for accuracy of it. He shall employ a qualified Engineer for this purpose as well as for supervision of works.

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17. PROGRAMME AND PROGRESS SCHEDULE

The contractor shall furnish within 15 days from the date of work order a progress schedule indicating the date of starting, quarterly progress expected to be achieved and anticipated date of completion of each major item of the work. The schedule should be capable of achievement towards completion of whole work in the stipulated time.

- i. The Contractor shall submit his own programme as per time limit stipulated in the tender, in the form of Bar Chart which should give details of milestones of physical stages of each sub work. Simultaneously with the execution of the Contract Agreement, the Contractor shall submit to The Engineer his item-wise monthly programme, which shall be nothing but detailing of the programme,
- ii. The programme shall also state the milestones of part commissioning and part completion of the sub-work included in the tender. The programme shall also provide the information as to required approvals to drawings, samples, materials, equipments and their time of submissions to the MJP/Council/Council. The progress shall be submitted by the Contractor visa-a-vis programme every month. The works team of the Contractor shall be so motivated to know the balance work at the end of each week and the rate required in the balance period to complete the work and therefore, shall endeavor to complete the task assigned for each week timely. In case, where the updated and revised schedule is required, the same shall be submitted to the owner for approval.

If deviation exceeds 10% in scheduled programme, competent authority has right to reject the tender of successful tenderer.

In the event of contractor failing to execute the work as per scheduled programme submitted by him or in the event of unreasonable delay in the part of contractor, he shall be liable to as compensation an amount at the fixed rate subject to maximum amounting to 10% of the tender cost.

18. CHECKING QUALITY OF THE WORK :

The Executive Engineer should consider it necessary to satisfy himself to the quality of work, the contractor shall at any time during continuance of the contract period produce sample of work done or if necessary pull down a responsible part of the work enough for such inspection and testing as the Executive Engineer may direct. The contractor shall make good the same at his cost and to the satisfaction of the Executive Engineer without extra cost.

19. CHANGES :

Any marginal and minor changes as may be found necessary by the Executive Engineer during execution shall have to be carried out by the contractor without extra cost.

20. INSURANCE OF WORKERS :

The successful tenderer should get the labour insurance done, on account of risk involved within a month from the date of work order, failing which 1% will be withheld from the R. A. bills of Contractor

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the work and it will not be refunded till labour insurance is done and a documentary evidence to this effect is produced by the contractor. The successful contractor tenderer should purchase insurance policy identifying the M.J.P./ Executive Engineer/Executive Engineer therein.

21. ARBITRATION

In case any dispute arises out during execution of works, no arbitrator shall be appointed for redressal of the dispute. In this regard, decision of the Member Secretary, , MJP Mumbai shall be final and remain binding on both parties.

22. INTENT AND INTERPRETATION OF CONTRACT DOCUMENTS

The contract documents are complementary and what is called for by one is as binding as if called for by all. Any work that may be reasonably inferred from the drawings or specifications as being required to produce the intended result shall be provided by the contractor whether or not it is specifically called for, in Schedule- 'B'.

The contractor shall furnish and pay for all labour, supervision, materials, equipment, transportation, construction, equipment and machinery tools, appliances, water, fuel, power, energy, light, heat, utilities, telephone, storage, protections, safety provisions, and all other facilities like service, incidentals, approaches to site etc any nature whatsoever necessary for the satisfactory and acceptable execution, testing and completion of the work in accordance with the contract documents, ready for use and operation by the owner. The cost of all these arrangements shall be deemed to be included in the contract offer and no separate payment shall be admissible thereof.

Interpretations

Written clarifications or interpretations necessary for the proper execution or progress of the work, in the form of drawings or otherwise, will be issued with reasonable promptness by the Engineer and in accordance with any schedule agreed upon.

Drawings

Figured dimensions on drawings shall govern over scaled dimensions and detailed drawings shall govern over general drawings. The Contractor shall submit six sets of drawings according to the design.

Signed Drawings

Signed drawings alone shall not be deemed to be in order for work unless it is entered in the agreement or schedule or drawings under proper attestation of the Contractor and the Engineer or unless it has been sent to the contractor by the Engineer with a covering letter confirming that the drawing is an authority for work in the contract.

Technical Words

Work, materials or equipment described in words which so applied have a well-known trade or technical meaning shall be deemed to refer to such recognized meanings.

23. LANDS, CONDITION AND LAYOUT

Line out of the Work

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Surveys and Measurements

The contractor shall carefully preserve all surveys as also setting out stakes, reference points, bench marks and monuments. If any stakes, points or benches be removed or destroyed by any act of the contractor or his employees, they may be reset at the contractor's expense. The contractor shall supply without charge the requisite number of persons with the means and materials necessary for the purpose of working survey, setting out works, and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials.

Contractor's Verification

The Contractor will establish at the work site a substantial B.M. and connect it to a permanent B.M. available in the area with known value. The contractor will then carry out necessary surveys and leveling, covering his work, in verification of the survey data on the working drawings furnished by the Engineer and he will be responsible for establishing the correct lines and

levels and verification of the lines and level furnished on the working drawings. If any error has occurred in the work due to non-observance of this clause, the contractor will be responsible for the error and bear the cost of corrective work.

Site Office

The Contractor shall construct at his cost a semi-permanent nature site office with minimum of 20 Sq.marea and shall be provided with minimum two tables, two almaries, six Nos of chairs. The office and the furniture shall be provided and maintained by the contractor throughout the contract period at his cost. The use of the site offices shall be adequate size to accommodate the inspecting Engineers of MJP/IRMA/any other inspection committee/agency appointed by the Government of India/Maharashtra/Collector/Municipal Administration to discuss and review progress of work. No extra payment will be made on this account.

The site office shall be provided at all the conspicuous structures to be constructed/components to be executed.

24. SECURITY DEPOSIT AND INDEMNITY BOND

Security Deposit

The security deposit shall be returned to the contractor without any interest when the contractor ceases to be under any obligation under the contract. This shall be read with Clause No.1 and 20 of B-1 Form for Security Deposit and Defect Liability Clause respectively.

Loss or Damage Indemnity Bond

The contractor shall be responsible during the progress as well as maintenance for any liability imposed by law for any damage to the work or any part thereof or to any of the materials or other things used in performing the work or for injury to any person or persons or for any

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property damaged in or outside the work limit. The contractor shall indemnify and hold the owner and the Engineer harmless against any and all liability, claims, loss or injury, including costs, expenses, and attorney's fees incurred in the defense of same, arising from any allegation, whether groundless or not, of damage or injury to any person or property resulting from the performance of the work or from any material used in the work or from any condition of the work or work site, or from any cause whatsoever during the progress and maintenance of the work.

25. SUPERVISION AND SUPERINTENDENCE

SUPERVISORY STAFF :

The contractor shall have experienced technical qualified general supervisor for the work, who is capable of managing and guiding the work and also capable of understanding the instructions given to him by the Executive Engineer from time to time and shall be responsible to carry them out promptly. The contractor shall have during working hours, supervisor of sufficient training and experience to supervise the various items and operations of the work. Further, the Executive Engineer may notice, desire contractor high ranking member to be present on any specified date, the contractor shall comply with such directions Contractor's Supervision

The contractor shall supervise and direct the works efficiently and with his best skill and attention. He shall be solely responsible for means, methods, techniques, procedures and sequences of construction. The contractor shall co-ordinate all parts of the work and shall be responsible to see that the finished work complies fully with the contract documents, and such instructions and variation orders as the Engineer may issue during the progress of the works.

Agent

The Contractor shall keep on the work at all times during its progress a competent resident agent preferably a qualified and experienced Engineer, capable of managing and guiding the work and understanding the specifications and contract conditions. For this purpose the contractor shall communicate to the Department, name, qualification and experience of such Engineer to be appointed for execution of this work. The agent appointed by the contractor shall not be replaced without ten (10) days written notice to the Engineer except under extra-ordinary circumstances. The agent shall be the Contractor's representative at the site and shall have authority to act on behalf of the contractor. All communications, instructions and directions given to the agent shall be binding as if given to the Contractor by the Engineer not otherwise required to be in writing will be given or confirmed in writing upon request of the Contractor. or in work-order book

26. CARE AND USE OF SITE

The Contractor shall not commence operations on land allotted for work without prior approval of the Engineer. If these lands are not adequate the Contractor may have to make his own arrangements for additional lands required for his use. The contractor shall not demolish, remove or alter any of the structures, trees or other facilities on the site without prior approval of the Engineer. All the area of Contractor's operations shall be cleared before returning them to the Engineer.

27. OVERLOADING

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No part of the work or new and existing structures, scaffolding, shoring, sheeting, construction machinery and equipment, or other permanent and temporary facilities shall be loaded more than its capacity. The Contractor shall bear the cost of correcting damage caused by loading or abnormal stresses or pressures.

28. USE OF EXPLOSIVES

The Contractor shall comply with the laws, ordinances, regulations, codes, orders, other governing the transportation, storage and use of explosives, shall exercise extreme care not to endanger life or property and shall be responsible for all injury or damage resulting from the use of explosives for or on the work.

29. MANUFACTURER'S INSTRUCTIONS

The Contractor shall compare the requirements of the various manufacturer's instructions with requirements of the contract documents, shall promptly notify to the Engineer in writing of any difference between such requirements and shall not proceed with any of the works affected by such difference until an interpretation or clarification is issued pursuant to article.

The contractor shall bear all costs for any error in the work resulting from his failure to the various requirements and notify the owner of any such difference.

30. PROTECTION

The contractor shall take all precautions and furnish and maintain protection to prevent damage, injury or loss to other persons who may be affected thereby. All the works and all materials and equipment to be incorporated therein whether in storage or on the site, under the care, custody or control of the contractor or any of his sub-contractors and other improvements and property at the site or where work is to be performed including building, tools and plants, pole lines, fences, guardrails, guide posts, culvert and works markers, sign structures, conduits, pipelines and improvements within or adjacent to streets, right-of-way, or easements, except those items required to be removed by the Contractor in the contract documents. The Contractor's protection shall include all the safety precautions and other necessary forms of protection, and the notification of the owners of utilities and adjacent property.

The contractor shall protect adjoining site against structural, decorative and other damages that could be caused by the execution of works and make good at his cost any such damages that could be caused by the execution of works and make good at his cost any such damages.

31. UTILITIES AND SUB-STRUCTURES

Before commencing any excavations, the Contractor shall investigate, determine the actual locations, and protect the indicated utilities and structures, shall determine the existence, position and ownership of other utilities and substructures in the site or before the work is performed by communication with such property owners, search of records, or otherwise and shall protect all such utilities and substructures.

Restoration and Repair

Except for those improvements and facilities required to be permanently removed by the Contractor

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contractor, the contractor shall make satisfactory and acceptable arrangements with the appropriate owners, and shall repair, restore all improvements, structures, private and public roads, property, utilities and facilities disturbed, disconnected, or damaged as a result or consequence of his work or the operations of those for whom he is responsible or liable, including that caused by trespass of any of them, with or without his knowledge or consent, or by the transporting of workmen, material or equipment to or from the site.

32. WORKMEN

The contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the works any unfit person or anyone not skilled and experienced in the assigned task. The Contractor shall in respect of labour employed by him comply with or cause to be complied with the provisions of various labour law and rules and regulations as applicable to them in regard to all matters provided therein and shall indemnify the owner in respect of all claims that may be made against the owner for non-compliance thereof by the Contractor.

In the event of the contractor committing a default or breach of any provisions of labour laws and rules and regulations, the Contractor shall without prejudice to any other liability under the acts pay the owner a sum as decided by the engineer.

Work during Night or On Sundays and Holidays

Unless otherwise provided, none of the permanent works shall be carried out during night, Sunday or authorized holidays without permission in writing. However, when work is unavoidable or necessary for the safety of life, priority of works, the Contractor shall take necessary action immediately and intimate the Engineer accordingly.

Workmanship

The quality of workmanship produced by skilled knowledgeable and experienced workmen, machines and artisans shall be excellent. Particular attention shall be given to the strength appearance and finish of exposed work.

33. MATERIALS AND EQUIPMENT

All materials and equipment incorporated in the work shall be new. Materials and equipment not covered by detailed requirements in the contract documents shall be of the best commercial quality suitable for the purpose intended and approved by the owner prior to use in the work.

Optional Materials

Only one brand, kind or make of material or equipment shall be used for each specific purpose through-out the works, notwithstanding that similar material or equipment of two or more manufacturers or proprietary items may be specified for the same purpose

34. USE OF APPROVED SUBSTITUTIONS OR EQUALS

The contractor shall bear all extra expenses resulting from providing or using approved substitutions or equals where they affect the adjoining or related work, including the expenses of required engineering, redesigning, drafting and permits where necessary, whether the Engineer's

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approval is given after receipt of tenders.

35. LAWS AND REGULATIONS

36. Governing Law

The contract documents shall be governed by the laws and by-laws of India, the State of Maharashtra and the local bodies in this region.

37. Resolving the disputes:

In case of disputes, between a Contractor and MJP, the decision of the Executive Engineer/Chief Engineer shall be final and binding. In case of any further dispute, the decision of Secretary JJM / Member Secretary MJP or any other person appointed by the Secretary JJM will be final.

38. BURIED AND CONCEALED WORK

The contractor shall help in recording the precise location of all piping, conduits, ducts cables and like work that is buried, embedded in concrete or masonry, or concealed in wood or metal frame walls and structures at the time such work is installed and prior to concealment. Should the contractor cover such buried or work before such recording takes place, he shall uncover the unrecorded work to the extent required by the Engineer and shall satisfactorily restore and reconstruct the removed work with no change in the contract price or the contract time.

39. SAFETY PRECAUTIONS AND EMERGENCIES

Contractor's Responsibility for Safety

The contractor shall be solely responsible notwithstanding any stipulations by owner or Engineer for initiating, maintaining and supervising all safety precautions and programmes, in connection with the work and shall comply with all laws, ordinance, code rules regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damages, injury or loss during the entire contract period including non-working hours.

On the occurrence of an accident arising out of the works which result in death or which is so serious as to be likely to result in death, the contractor shall within one hour of such accident intimate in writing to the Engineer the facts stating clearly and with sufficient details the circumstances of such accidents and subsequent action taken by him. All other accidents on the works involving injuries to the persons or property other than that of the contractor shall be promptly reported to the Engineer clearly and with sufficient details the facts of such accidents and the action taken by the contractor. In all cases, the contractor shall indemnify the Engineer against all losses or damages, resulting directly from the contractor's failure to report in the manner aforesaid.

This includes the penalties or fines, if any payable by the owner as a consequence of failure to give notice under Workmen's Compensation Act or otherwise to conform to the provisions of the said Act in regard to such accidents. In the event of an accident in respect of which compensation may become payable by the contractor, such sum of money as may, in the opinion of the Engineer, be sufficient to meet such liability will be kept in deposit. On the receipt of award from the Labour Executive Engineer in regard to the quantum of compensation, the difference in the amount will be adjusted.

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It is obligatory that the contractor shall take an all Risk Insurance Policy for the works and keep it in force throughout the work period.

40. WARNINGS AND BARRICADES

The contractor shall provide and maintain barricades, guards, guard rails, temporary bridges and walkways, watchmen, headlights and danger signals illuminated from sunset to sunrise and all other necessary appliances and safeguards to protect the work, life, property, the public, excavations, equipment and materials. Barricades shall be substantial construction and shall be painted such as to increase their visibility at night. For any accident arising out of the neglect of above instructions, the contractor shall be bound to bear the expenses of defense of every suit, action or other legal proceedings, at law, that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay all damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the contractor be paid in compromising any claim by any such person.

41. ENGINEER'S STATUS DURING CONSTRUCTION, AUTHORITY OF THE ENGINEER

The Engineer shall have the authority to enforce compliance with the contract documents. On all questions relating to quantities, the acceptability of materials, equipment, or works, the adequacy of the performance of the work and the interpretation of the drawings and specifications, the decision of the Engineer shall be final and binding and shall be precedent to any payment under the contract agreement unless otherwise provided in the contract documents. The Engineer shall have the authority to stop the work or any part thereof as may be necessary to ensure the proper execution of the work, disapprove or reject the works which is defective, to require the uncovering and inspection or testing of the works to require re-examination of the works, to issue interpretations and clarifications, to order changes or alterations in the works, and other authority as provided elsewhere in the contract documents.

The Engineer shall not be liable for the results of any ruling, interpretation or decision rendered, or request, demand, instruction, or order issued by him in good faith. The contractor shall promptly comply with requests, demands, instructions and order from the Engineer.

The whole of the works shall be under the directions of the Engineer, whose decision shall be final, conclusive and binding on all parties to the contract, on all questions relating to the construction and meaning of plans, working drawings, sections and specifications connected with the work. The Engineer shall have the power and authority from time to time and at all times make an issue such further instructions and directions as may appear to him necessary or proper for the guidance of the contractor and the good and sufficient execution of the works according to the terms of specifications and the contractor shall receive, execute, obey and be bound by the same according to the true intent and meaning thereof, fully and effectually.

Engineer may order any of the works contemplated thereby to be omitted, with or without the substitution of any other works in lieu thereof, or may order any works or any portion of works executed or partially executed, to be removed, changed or altered and if needful, may order that other works shall be substituted instead thereof and the difference of expenses occasioned by any such diminution or alteration so ordered and directed shall be deducted from or added to the amount of this contract.

42. DUTIES OF ENGINEER'S REPRESENTATIVE

The duties of the representative of the Engineer are to check, inspect and continuously supervise the work and to test any materials to be used or

workmanship employed in connection with the works. He shall furnish the drawings and information to the contractor, approve the contractor's drawings subject to post-facto approval and signature of the Engineer-in-Charge, recommend and approve the interim certificates and taking over certificates after thorough checking and inspection and recommend extra work required and extension of time.

Approval for or acceptance of any work or material or failure to disapprove any work or material by the representative of the Engineer shall not prejudice the power of the Engineer thereafter to disapprove such work of material and to order removal or modification thereof. If the contractor shall be dissatisfied with any decision of the representative of the Engineer, he shall be entitled to refer the matter to the Engineer, who shall thereupon confirm, reserve or vary such decision only in genuine cases.

The representative of the Engineer shall be liable to inform the Engineer about the daily progress and compare it with the programme. He shall also inform the contractor immediately about the log or lead in the progress than the programme.

43. DEFECTS AND RECTIFICATION

For period specified in the Clause 20 of B.1 form for the defect liability period for the individual type of work from the date of issuance of the completion certificate in accordance with Condition "Final Inspection and Acceptance" mentioned herein after, contractor shall remain liable for any of the works or parts thereof or equipment and fittings supplied which in the opinion of the Engineer fail to comply with the requirements of the contract or are in any way unsatisfactory or defective except fair wear and tear. The

process of the assembly commissioning of all sections of pipe lines, tested hydraulically in patches, will involve some additional measures such as shaft of suitable height, fixing of air valves at more number of places on the alignment and all such measures shall be done by the contractor.

To the intent that the works and each part thereof shall at or as soon practicable after the expiry of the above period be taken over by the Engineer in the condition required by the contract to the satisfaction of the Engineer, the contractor shall finish the work (if any) outstanding at the date of completion as soon as may be practicable after such date and shall execute all such work of repair, amendment, reconstruction, rectification and making good of defects imperfections, shrinkages or other faults as may during the period of maintenance or after its expiry be required of the contractor in writing by the Engineer as a result of an inspection made by or on behalf of the Engineer prior to the expiry of the period. The contractor at his own expenses shall carry out all such work if the necessity thereof shall in the opinion of the Engineer and due to the use of materials or to neglect or failure on the part of the contractor to comply with any obligation expressed or implied on the contractors part under the contract. If the contractor fails to do any such work as entitled to carry out such work in which the contractor should have carried out at the contractor's own cost, the Engineer shall be entitled to recover from the contractor the cost thereof or may deduct the same from the moneys that become due to the contractor.

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Notwithstanding the aforesaid, if the contractor remains in default, one calendar month after the Engineer has given written instructions in writing, the Security Deposit shall become payable to the MJP/Council/Executive Engineer who will deduct the cost plus overhead expenses of such works as have been necessary to rectify the contractor's default and the balance, if any, shall be disbursed. The Contractor shall submit the operation and maintenance manual for the fruitful operation of the works. The Contractor will have a liberty to visit the operating works during the defect liability period and satisfy himself about the on-going operations in case he do not visit and a defect is observed then the Engineer's opinion shall be final and binding as to the application of defect liability.

44. RIGHT TO WITHHOLD

The Engineer may refuse to approve to any payment, or because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously approved and paid to such extent as may be necessary in the opinion of the Engineer to protect him from loss because (a). The work is defective, (b) Third party claims have been filed or there is reasonable evidence indicating probable filing of such claims, (c) of the Contractor's failure to make payment properly to sub-contractors or for labour, materials or equipment, (d) of damage to another Contractor, or to the property of other caused by the Contractor, (e) of reasonable doubt that the work cannot be completed for the unpaid balance of the contract price, (f) of reasonable indication that the work will not be completed within the contract time, (g) of the Contractor's neglect or unsatisfactory prosecution of the work including failure to clean up. Once the provisions of law that enables or require the Engineer to withhold such payments are removed, payment will be made for amounts withheld because of them to the extent the contractor is entitled to payment.

45. FINAL INSPECTION AND ACCEPTANCE

Upon written notice from the contractor, that the entire work required by the contract documents is complete and that all submittals required by him are made, and after the Contractor has delivered the bonds, certificates of inspection, guarantees, warranties, releases and other documents, as required by the contract documents or by law, the Engineer will make a final inspection, and he will notify the Contractor in writing of any particulars in which this inspection reveals that the work is defective, and will also notify the Contractor in writing of any deficiencies in the submittals and the document required from him.

The Contractor shall promptly make such corrections as are necessary to remedy all defects or deficiencies. After the Contractor has completed any such corrections to the satisfaction of the owner, the Engineer will issue a written completion certificate of the work and file any notice and completion required by law or otherwise.

46. CONTINUING OBLIGATION OF THE CONTRACTOR

The Contractor's obligation to perform and complete the work in accordance with the contract documents is and shall be absolute. Neither the observation during construction and final inspection of the work by the Engineer, nor any payment to the Contractor under the Contract documents, nor any use or occupancy of the work or any part thereof by the Engineer, nor any

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act of acceptance by the defective work by the Engineer shall constitute acceptance of work not in accordance with the contract documents.

47. TAXES TO BE DEDUCTED AT SOURCE

During the course of contract period the deduction of Income Tax/Work Contract Tax or any other Central/State or local tax required to be deducted at source, will be made as per prevailing rules from the contractors bills and will be remitted to the concerned Departments. Certificate for such deductions will be issued by the Executive Engineer/Executive Engineer.

48. RECORDS AND MEASUREMENTS

The Engineer shall except or otherwise stated therein, determine by measurement the value in accordance with the contract of works done in accordance therewith.

All items having a financial value shall be entered in a measurement book, level book etc. as prescribed by the Engineer so that a complete record is obtained of all work performed under the contract.

The Engineer OR his authorized representative shall take measurements jointly with the Contractor or his authorized representative. Before taking measurement of any work the Engineer or the person deputed by him for the purpose shall give reasonable notice to the contractor. If the contractor fails to attend or send an authorized representative for measurement after such notice or fails to countersign or record the objection within a week from the date of measurement, then in any such event measurements will be taken by the Engineer, or by the person deputed by him shall be taken to be correct measurements of the works and shall be binding on the contractor.

There shall be absolutely no doubt regarding the measurements and hence the contractor shall first arrange the exact branding of the alignment length on site, and mark distinctly. All hidden measurements shall be measured by steel tape, on the exact section as marked previously and depth by the regular staff generally at an average interval of 30 m or suitable interval decided by Engineer-in-Charge.

In case of difference of opinion in the measured quantity and the payable quantity of any particular measurements, the contractor must know the departmental practices developed as per the manuals and standard specifications.

Normally only excavation will not be measured. When the pipes and specials are laid in position, then only the excavation and other items will be measured.

The Contractor shall, without any extra charge, provide assistance with every appliance and other things necessary for measurements, such as leveling instruments (Auto setting), tapes, staffs, camera, paints, brushes and required labour.

Measurements shall be signed and dated by both the parties each day (for taking measurement) on the site on completion of measurements. The Contractor shall take up still colour photographs at intervals during the execution of works so that a history of development of the works is maintained.

The dated photographs, in two copies, shall be submitted to the Engineer-in-charge every time.

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No extra cost will be paid for this. This generation of record shall provide the used methodology of working and highlight the quality of material and workmanship. The cost of the said work shall be borne by the

Contractor. It shall be the property of the Pradhikaran /Municipal Council/Council. and shall not be used for campaigning, advertising without permission of the Pradhikaran/ Council/Council.

49. WRITTEN NOTICE

Written notice shall be deemed to have been duly served or delivered in person to the individual or member of the firm or to an Engineer of the contractor for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to him who gives the notice. The notice on the Fax Message/ E-Mail shall be deemed to have been duly served. The address given in the contractor's tender on which all notices, letters and other communications to the contractor shall be mailed or delivered, except that said address may be changed by the Contractor by notifying the owner in writing. This shall not preclude the service of any notice, letter or other communication upon the Contractor personally.

50. USE OF COMPLETED PORTIONS

The owner shall have the right, upon written notice to the Contractor, to take possession or occupancy of, and use any completed or partially completed portions of the work, notwithstanding that the time for completing the entire work or such portions may not have expired but such taking possession or occupancy and use shall not be deemed to waive of any requirement of the contract documents or a waiver or acceptance of any work not completed in accordance with the contract documents.

51. CLEANING UP

The contractor shall at all times during the work keep the site and premises, adjoining property and public property free from accumulations of waste materials, rubbish, and other debris resulting from the works, and at the completion of the work shall remove all waste materials, rubbish and debris from and about the site and premises as well as all tools, construction equipment and machinery and surplus materials, and shall leave the site and premises, clean, tidy and ready for occupancy by the owner. The Contractor shall restore to their original condition those portions of the site not designated for alteration by the contract documents paved ways, parking areas and roadways disturbed by the construction shall be redone by filling the excavation, if any, by sand compacted material and bringing it to its original shape as directed and approved by the Engineer. No waste material shall be buried or disposed off on the owner's property unless so approved in writing by the Engineer-in-Charge. Before the Contractor applies for final inspection and acceptance of the work, all items of work shall be complete, ready to operate, and in a clean condition as determined by the Engineer.

52. OWNER'S RIGHT TO CLEAN UP

If the Contractor fails to satisfactorily clean up or if a dispute arises between the Contractor or in several Contractors as to their responsibility for cleaning up, the Engineer may clean up and charge the cost thereof to the Contractor for his failure, or to the several contractors as the Engineer shall determine to be just.

53. FOSSILS ETC.

All fossils, coins, articles of value of antiquity and structures or other remains or things of geological or archaeological interest discovered on the site shall be deemed to be the property of the owner and the Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out at the expenses of the Engineer's order as to the disposal of the same.

54. LABOUR RULES

If demanded by Municipal Authorities, the contractor will have to produce to the satisfaction of the accepting authority a valid and current license issued in his favor under the provision of Contract Labour (Regulation and Abolition) Act 1970, before starting the work, otherwise the Contractor shall have to face the further consequences. The contractor shall have to comply with the Apprentices Act 1961, and the rules and orders issued there under from time to time. If he fails to do so, his failure will be breach of contract and the Superintending Engineer, may in his discretion, cancel the contract, the Contractor shall also be liable, for any pecuniary liability arising on account of any violation of the provisions of this act, by him. Salient features of some major labour laws/ Acts applicable to establishment engaged will be as below.

- a. Workman compensation Act 1923.
- b. Payment of Gratuity Act 1972.
- c. Employees PF and miscellaneous provisions Act 1952.
- d. Maternity Benefit Act 1951.
- e. Contract Labour (Regulations and Abolition) Act 1970.
- f. Minimum Wages Act 1948.
- g. Payment of Wages Act 1936.
- h. Equal Remuneration Act 1979.
- i. Payment of Bonus Act 1965.
- j. Industrial Disputes Act 1947.
- k. Industrial Employment (Standing orders) Act 1946.
- l. Trade Union Act 1926.
- m. Child labour act 1926.
- n. Inter state Migrant Workmen's (Regulation of Employment and Conditioned of Services) Act 1979.
- o. The Building and other construction works (Regulation of employment and conditions of Services Act 1946 and the cess Act of 1996).
- p. Factories Act 1948.

All the relevant law and act will be applicable for this work.

55. STATUTORY INCREASE IN DUTIES, TAXES ETC.

All the taxes and duties levied by the Central Govt., State Govt and by Local Bodies at the prevailing rates applicable on the date of receipt of tender, considering this contractor should quote his offer. Any increase in tax rates till completion of work shall be fully borne by the Contractor and shall not be reimbursed to him on any account.

56. INSPECTION, TESTING & FEES.

All material & equipment, irrespective whether specified or not, shall be tested at manufacturer's works laboratory and the Test Certificate thereof shall be furnished. The test shall be witnessed by the Engineer-in-charge as well as the third party designated by the Pradhikaran/ Council/Council.

57. MACHINERY REQUIRED

All machinery required for erection/execution purposes such as cranes, trucks, etc. shall be arranged by the Contractor. Department shall not take any responsibility for providing such machinery even on rental basis. No concreting shall be permitted unless centering and reinforcement is approved by the Engineer-in-Charge.

58. WORK ORDER BOOK

A well bound work order book shall be maintained on site and it shall be the property of MJP/Council/Council and the Contractor/ his agent shall

promptly sign orders given therein by the Executive Engineer of Maharashtra Jeevan Pradhikaran /Executive Engineer/Executive Engineer. officials or his superior officer, in token of having received them and comply them. This will be a permanent record The compliance shall be reported by the contractor to the Engineer in good time so that it can be checked. The blank work order book with machine numbered pages will be provided by the MJP/Council/Council free of charge for this purpose. The Contractor will be allowed to copy out the instruction therein from time to time. He will not record any remarks in the order book but may take up the matter recorded therein.

59. DISCREPANCIES AND OMISSIONS

The tender drawings and specifications, shall be considered as explanatory, of each other and together shall form the technical requirements and stipulations of tender documents. Detailed drawings shall have preference over small scale drawings. Similarly, detailed specifications shall have preference over general specifications. Should any discrepancy arise as to the meaning, intent or interpretation of any specification or drawing the decision of the Engineer- in-charge shall be final and binding on the Contractor.

60. PRICE VARIATION - AUTHORITY

Price variation is not applicable to this tender.

61. NO INTEREST ON DUES

No interest shall be payable by the Council on amounts, due to contractors pending final settlement of claim. Further, no interest shall be payable by Council/Council on any amount/payment.

62. Any recovery advised by the Council shall be recovered from any bill or money retained from this contract. All the recoveries either outstanding or dues under the contract or incidental there to as determined may be, stand recoverable.

Secured Advance will be granted as per provisions made in MPW Manual and MPW Account Code.

63. Mobilization Advance will not be granted.

64. The tenderer is entitled to avail exemption from central excise tax, to all items of machinery, including instruments, apparatus and appliances, auxiliary equipment and their components/parts required for setting up a water treatment plants intended to treat water to make it fit for consumption of humans or animals. Central excise duty will also be exempted on pipes of sizes 100 mm and above required for obtaining untreated (raw) water from its source to the plant and for supplying the treated (potable drinking) water to the storage place from which it would be further supplied for consumption of humans or animals. The concession would be subject to the certification by the Collector/District Magistrate/Deputy Executive Engineer of the District in which the water treatment plant is to be set-up. To avail exemption on duty the tenderer himself shall pursue the matter with different Government Departments. Any co-operation in this regard will be extended to the tenderer. The tenderer shall quote his offer taking into account above exemption which he may avail.

SPECIAL CONDITIONS

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MAHARSHTRA JEEVAN PRADHIKARAN DIVISION JALGAON
(Under Jal Jeevan Mission)

**Name of work : Simple Automation & Solar Work for various water supply schemes under JJM in
Jalgaon & Dhule District.**

SPECIAL CONDITIONS

1) Payment against Excess quantities of various items.

Before making payment of excess quantities as per rules, the concerned Executive Engineer/ Executive Engineer of Maharashtra Jeevan Pradhikaran shall get himself satisfied regarding genuineness of the claim and he should also exercise a compulsory check of minimum 10 % of measurements for a particular item. Responsibility of informing the excess quantities as per Schedule 'B' of the tender for approval of Competent authority of Maharashtra Jeevan Pradhikaran and also for correctness of claim to be submitted in future shall rest with Junior Engineer, a auditor and divisional Accountant also. While submitting the proposal for approval, concerned authorities should consider the exact position of the revised estimates, if necessary due to this excess.

For executing any quantity, the excess over the quantity specified in the tender, the contractor should be authorized by the Executive Engineer of Maharashtra Jeevan Pradhikaran in writing.

While asking the contractor to execute such excess quantity, the concerned Executive Engineer of Maharashtra Jeevan Pradhikaran should inform the Contractor in writing specifically that the payment in excess of quantities specified in the tender will be made after following concerned prescribed rules.

2) General

The quoted rate shall be total rate for the completed item of work as per the specification, and shall be inclusive of all incidental charges such as lifts, leads for materials, water for construction etc. The rates for excavation are inclusive of the edge of the excavation pit beyond foundation.

The tenderer must obtain on his own responsibility and his own expenses all the information which may be necessary for the purpose of making a tender and entering into a contract and must consider and satisfy himself with all local conditions, sites and quarries means of accesses, the nature of rock, material to be met with in all execution and all materials pertaining to work.

Specifications of item stipulated for other sub works shall be made applicable, where relevant.

3) Outline of works

The work will be on the lines of plans attached to the tender documents. The plans are however, liable to change and strata as shown there is approximate.

The item of work and their approximate quantities are given in schedule 'B' of the tender. The quantities are approximate and are liable to vary on plus or minus side.

4) Unit

The rates quoted for each item are for units mentioned in Schedule 'B' against each item.

5) Site conditions

1. It shall be presumed that the Contractor has satisfied himself as to the nature of the Contractor
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works, general and local conditions, particularly on those bearings on transport handling, storage of materials, availability of labour, weather conditions and has estimated the cost and quoted his rates accordingly Executive Engineer, Maharashtra Jeevan Pradhikaran will bear no responsibility for lack of such acquaintance with site conditions and consequences thereof.

2. Set of tender documents and conditions (up to a maximum of three sets) at the discretion of the Executive Engineer, Maharashtra Jeevan Pradhikaran will be supplied to the contractor after acceptance of tender.

6) Extras, Omissions and Discrepancies.

1. In all the cases of the omissions, doubts or discrepancies in the dimension in the drawing and items of works, reference shall be made to the Executive Engineer, Maharashtra Jeevan Pradhikaran, whose elucidation and elaboration shall be considered final.

7) Supply of material by the contractor.

The contractor should supply all the material mentioned in Schedule “B”. This shall be conforming to relevant IS & approved MJP vendors.. All types of pipes, valve and specials will be accepted only after due third party inspection and satisfactory inspection by the third party inspection agencies appointed by the MJP. (List of third party inspection agencies appointed is periodically circulated by the MJP central office). The charges for the same shall be borne by the contractor.

Other material such as cement, tor steel etc. shall be conforming to relevant ISS testing charges for cement, steel shall be borne by the contractor. Ultra Tech cement (Ultra tech) shall be preferably be used for water retaining structures.

In case of item of supply of pipes, valves, specials etc., 60% amount of supplied item will be paid to the contractor on receipt of material (after satisfactory third party inspection), 25% amount will be released after lowering, laying, jointing and remaining 15% amount will be released after satisfactory hydraulic testing.

The contractor shall provide, at the site of work, satisfactory storage for not less than one month's average consumption of works and shall keep the cement of storage and utilization of cement in the order of its arrival at the stores and the contractor shall maintain satisfactory records, which would at any time show the dates of receipt and proposed utilization of cement lying in the storage.

The Engineer of Council shall at all the times have access to the stores and sites, method of storage, records and securities provided by the contractor. The contractor shall comply with instruction that will be given by Engineer of Council , in this behalf.

The contractor shall further at all times satisfy the Engineer of Council on demand any production of books, of submissions of returns in Performa as directed, other proofs, that, the cement supplied is being used for the purpose for which it is supplied and available to the Engineer of Council .

7 TIME OF COMPLETION OF WORK:-

If at any stage of work, it is found that the execution of work is not as per the programme given in the Bar Chart, a fine shall be imposed on the contractor as mentioned in the agreement form.

9. APPOINTMENT OF ARBITRATOR:-

In case of any disputes raised between contractor and Executive Engineer during the course of contract regarding work, there shall be no provision for the appointment of an Arbitrator. The decision of the Member secretary MJP shall be held as valid and final. If the contractor files a case in appropriate court, the action of withdrawing the work and allotting it to any other agency shall be deemed to be continued as per the practice in vogue in the larger interest of implementation of work in time and as per original time schedule.

10. STRATA :

Strata for excavation are shown approximate based on trial pits and the Contractor shall have no right to claim extra if there is variations in the strata. The contractor will also have no claim if extra excavation is required to be done due to boulders and the Contractor will have to make such extra excavation good by filling the same by C.C. 1:3:6 (M-100) or by plum concrete with 60% plum in C.C.1:3:6 maximum

11. CHANGE IN SITE:

No claims shall be paid on account of reasonable change in site, alignment or orientation of the proposed work, within the work site marked on plan attached to the tender as the circumstances may call for.

12. TOOLS AND PLANT:

All tools, instruments and machinery and all other materials (not included in the Material Schedule 'A') shall be acquired by the Contractor. It is, however, open to the Engineer to lend or supply to the Contractor implements, machinery or other service not covered by the tender document which he can be and may consider desirable. For such tools, instruments, machinery and service provided, the Contractor will have to sign an agreement and pay Security Deposit and rental charges as may be fixed by the Engineer.

13. EXCAVATED MATERIALS:

All excavated stuff shall be MJP property and shall be disposed off at lead and lift by the Contractor in a manner as directed by the Engineer.

14. DAMAGES TO UNDER/ABOVE GROUND UTILITY

During the course of excavation and laying of the pipe line utmost care of existing main, electrical and telephone cables and private water connections/sewage connections shall be taken. Any damage to existing main electrical and telephone cable and private water/ sewage connection, etc, occurs during the course of execution, same shall be restored at the cost of the contractor. In case the repairs are done by owner, the cost of such repair will be recovered from the contractor.

Maintenance period (CMC) of 5 years after commissioning of the project for efficient running of the system.

For Simple Automation Work

The complete installation of Automation system shall be tested on full load and run for operation and maintenance for the period of 4 years (first year guarantee period) to be paid as per tender rate. Operation and maintenance shall be as per as per detailed specifications & as per instructions of Engineer In Charge and any fault/ defect shall be attended immediately so that there should not be any power interruption. The work shall be handed over to Gram Panchayat & is the responsibility of the contractor, without which the contract will not be finalized.

INSTRUCTIONS TO TENDERER

MAHARSHTRA JEEVAN PRADHIKARAN DIVISION JALGAON
(Under Jal Jeevan Mission)

Name of work : Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District.

INSTRUCTIONS TO TENDERER

1. AWARD CRITERIA

The Owner will award the contract to the successful bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the contract satisfactorily. The tender will be awarded after bid evaluation report approved by the appropriate competent authority.

2. ACCEPTANCE OF THE TENDER

The acceptance of the tender rests with the appropriate competent authority. The right to reject any or all the tenders without assigning any reason thereof is reserved by appropriate competent authority. . The tenderer whose tender is accepted will have to enter into regular agreement in the type and form prescribed in the tender and abides by all the rules embodied therein, cost of agreement etc. should also be borne by the tenderer.

- No corrections, additions or alterations in the tender document shall be made.No special stipulations in the tender document shall be permitted.

The tender shall be liable to be rejected outright if while submitting the same.

- i) The Tender is not submitted on E-tendering portal specified in the Tender Notice.
- ii) The Tenderer proposes any conditions and alterations in the obligatory conditions of the tender.
- iii) Any of the pages of the tender is removed/replaced or spoiled badly.
- iv) If the offer in words and in figures is not filled in appropriate place of B.1 Form.
- v) If the specified Earnest Money in specified form is not paid.
- vi) Any erasures are made in the tender documents.
- vii) The tenderer or in case of firm or company authorized person does not sign the tender documents in the place provided for the purpose, in B.1 Tender form.

If the tendering contractors are a firm or company, they shall in their forwarding letter should mention the names of all the partners of the firm or the company as the case may be and the names of the partners who hold the power of attorney authorizing him to conduct transactions on behalf of the Company/Firm.

- Rules and conditions of the contract are subject to amendment till the time of acceptance of tender.
- The notes and conditions stipulated in this notice will form a part of the agreement.

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3.0 **SIGNING OF CONTRACT**

At the same time as the Owner notifies the successful Bidder that the bid has been accepted, the Owner will send the Bidder an acceptance letter informing the Bidder, the further necessary line of action including signing of contract etc.

4.0 **FOR SPECIAL ATTENTION OF TENDERER**

The tenderer is expected to visit the site before quoting the tender and get himself acquainted with the site conditions and site requirements.

The contracting firm shall study the site and general conditions in respect of approaches, labour, water supply, climate, quarries and the data included in the tender papers and get verified from the actual inspection of site etc. before submitting the tender. In case of any doubt about any item or data included in the tender or otherwise, it shall be got clarified by applying in writing to the tender inviting authority at least 3 days before the date of pre-tender conference. Once the tender is submitted, it shall be concluded with all the details required for completing the work as per tender conditions and specifications.

Responsibility of Departmental staff will be nominal and limited to extending all possible help in solving local problems for obtaining permission, obtaining power supply etc.

5.0 **LOCAL ROADS**

The existing public roads that are near the site of work are shown in Drawing accompanying the Tender documents. The contractor may construct and maintain additional roads as required at his own expenses.

6.0 **MEDICAL AND SANITARY ARRANGEMENT TO BE PROVIDED FOR LABOUREMPLOYED IN THE CONSTRUCTION BY THE CONTRACTOR**

- a) The contractor shall provide an adequate supply of pure and wholesome water for the use of laborers on works and in camps.
- b) The contractor shall construct trenches, semi permanent latrines for the use of laborers, Separate latrine shall be provided for men and women.
- c) The contractor shall construct sufficient number of huts on a suitable plot of land for use of the laborers according to the following specifications.
 - i) Hut of Bamboos and Grass may be constructed.
 - ii) A good site not liable to submergence shall be selected on high ground remote from jungle but well provided with trees shall be chosen wherever it is available. The neighborhood of land, jungle s trees or woods should be particularly avoided . Camp should not be established close to large cutting of earth work.

- iii) The lines of huts shall have open space of at least 10 meters between rows. When a good natural site is not available in this case. Particular attention should be given to the drainage.
- iv) There should be no overcrowding , floor space at the rate of 3 sqm. (30 sq.ft) per head shall be provided . Care should be taken to see that the huts are kept clean and in good order.
- v) The contractor must find his own land and if he wants Govt. land he should apply for it. Assessment for it if demanded will be payable by contractor. However the department does not bind itself for making available the required land.
- d) The contractor shall construct a sufficient number of bathing places. Washing places should also be provided for the purpose of washing clothes.
- e) The contractor shall make sufficient arrangement for draining away the surface and sullage water as well as water from the bathing and washing places and shall dispose off this waste water in such a way as not to cause any nuisance.
- f) The contractor shall engage a medical officer with a traveling dispensary for a camp containing 500 or more persons, If there is no Govt. Or other private dispensary situated within 8 kilometers from the camp. In case of emergency the contractor shall arrange at his cost free transport for quick medical help to his sick workers.
- g) The contractor shall provide the necessary staff for erecting the satisfactory conservancy and cleanliness of the camp to the satisfaction of the Engineer-In-Charge. At least one sweeper per 200 persons should be engaged.
- h) The Assistant Director of Public Health shall be consulted before opening a labour camp and his instructions on matters such as Water Supply, sanitary, convenience for the camp site accommodation and food supply be followed by the contractor etc.
- i) The contractor shall make arrangement for all antimalarials measures to be provided for the labours employed on the work. The anti measures shall be as directed by Assistant Director of public health.
- j) In addition to above all provisions of the relevant labour Act pertaining to basic amenities to be provided to the labourer shall be applicable which will be arranged by the contractor.

7. MISCELLANEOUS

For providing electric wiring or water ling etc. Recesses shall be provided if necessary through walls, slabs, beams, etc. and later-on refilled it who out any extra cost.

In case it becomes necessary for the due fulfillment of contractor for the contractor to occupy land outside the department, limits the contractor will have to make his own arrangements with the land owners and pay such rents if any, which are payable as mutually/agreed between them.

The contractor shall duly comply with provisions of the Apprentices Act 1961 (III of 1961) and the rules and order made there under from time to time under the said rules and on this failure or neglect to do so he shall subject to all the liabilities and penalties provided by the said Act and Said Rules.

It is presumed that the contractor has gone carefully through the standard specification (Vol I and II 1981 edition) and the schedule of rates of the Division, and studies of site condition before arriving at rates quoted by him. The special provisions and detailed specification of wording of any item shall gain precedence over the corresponding contrary provisions (if any) in

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the standard specification given without reproducing the details in contract. Decision of Executive Engineer shall be final in case of interpretation of specification.

If the standard specifications fall short for the items quoted in the schedule of this contract, reference shall be made to the latest Indian standard specifications, I.R.C. code, if any of the item of this contract do not fill in reference quoted above the decision and specification as directed by the Engineer-In – Charge. Shall be final.

The stacking and storage of building materials at site shall be in such a manner as to prevent deterioration or inclusion of foreign material and to ensure the preservation of the quality. Properties and fitness of the work. Suitable precautions shall be taken by contractor to protect the materials against atmospheric action, fire and other hazards. The materials likely to be carried away by wind shall be stored, in suitable stores or with suitable barricades and where there is likelihood of subsidence of soil, heavy materials shall be stored on paved platforms. Suitable separation barricades and enclosure as directed shall be provided to separate materials brought by contractor and material issued by Govt. To contractor under Schedule- A. Same applies for the materials obtained from different source of supply.

8.0 HANDING OVER OF WORK

All work and material before taken over by MJP will be entire responsibility of the contractor for guarding, maintaining and making good, any damage of any magnitude. Interim payments made for such work will not alter this position. The handing over by the contractor and taking over by the Executive Engineer or his authorized agent will be always in writing, copies of which will go to the Executive Engineer, signed by authorized representative of MJP and the contractor. It is however understood that before taking over of such work MJP will not put the system into its regular use, casual or incidental one, except as specifically mentioned elsewhere in this contract or mutually agreed to.

9.0 G.S.T. will be applicable as per G.S.T. Act.

**ACQUAINTANCE WITH SITE CONDITIONS
AND WORK CONDITIONS**

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**MAHARSHTRA JEEVAN PRADHIKARAN DIVISION JALGAON
(Under JJM)**

**Name of work : Simple Automation & Solar Work for various water supply schemes under JJM in
Jalgaon & Dhule District.**

**ACQUAINTANCE WITH SITE CONDITIONS
AND WORK CONDITIONS**

1. The Contractor shall study the site conditions, general conditions and data included in the tender papers and get it verified from actual inspection of the site etc. before submitting the tender. In case of doubts about any items or data included in this tender or otherwise, it shall be got clarified by applying in writing to the Executive Engineer, 15 days in advance before date of submission of the tender. Once the tender is submitted, it shall be considered that the Contractor has verified and made himself conversant with all the details as required for quoting the rates and completing the work as per tender conditions and specifications.
2. Contractor shall not sell or otherwise dispose off or remove except for the purpose of this contract, the rubble, stone metal, sand or other material which may be obtained from any excavation made for the purpose of the contract. All such materials shall be Council's property and shall be disposed off in the manner and at place as may be directed by the Engineer-in-charge. Contractor may with the permission of the Engineer-in-charge in writing and when directed by him, use any of the materials free of cost.
3. Other unforeseen items to be done in the course of work will have to be done by the Contractor as per specifications in P.W.D. Hand book volume I and II and will be paid at mutually agreed rates, ISS and standard practice in vogue.
Extra charge of claims in respect of extra work shall not be allowed unless the work to which they relate are in the spirit and meaning of the specifications or unless such works are ordered in writing by the Engineer-in-charge and claimed for in the specified manner before the work is taken in hand.

MATERIALS:

4. The Contractor shall make his own arrangements for obtaining rubble, khandki, headers, metal, sand, murum etc. from Council or private quarry. Applications of the Contractor for reasonable area of Government land required for this purpose can be recommended to Revenue Authorities without any guarantee of making the land for quarry available.

All the materials involved in the construction shall be of best quality and specifications and shall be got approved from the Engineer-in-charge before use. If necessary, materials shall be got tested from the Laboratory at his cost. Samples requiring approval shall be submitted by the Contractor to the Engineer-in-charge in good time before the use of each material. The samples shall be properly marked to show the name of the materials place.

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Executive engineer

5. The Contractor shall provide all labour, skilled as well as unskilled, pages, lime, strings, site-rails (wooden as well as Steel etc.) as and when required as per approved design and make available such other materials for surveying, lining out, setting out, checking of work, taking measurements, testing of hydraulic and other structures, without any payment by the Council to him. He will also provide proper approach and access to all his works and stores without any extra cost over tendered rates for the items to be inspected.
6. Rates quoted include clearance of site (prior to commencement of work and its closure) in all respects and hold good for work under all conditions of sites, moisture, weather etc.
7. Failure to comply with any of the above instructions will result in the Council's doing the needful at the risk and cost of the contractor. These conditions are for all items and as such no extra payment shall be made for observing these conditions.
8. The contractor shall make his own arrangements for quarrying of rubble, stone, murum, sand, lime, metal etc.
9. Overburden in a quarry will have to be removed by the contractor at his own cost.
10. Unless a separate item is provided in Schedule 'B' minor dewatering of foundations in excavation and during the construction of foundation Masonry if required shall be done by the Contractor without claiming extra cost.
11. Masonry shall be kept wet for atleast 15 days and concrete work shall be kept wet for atleast 21 days commencing from the date of its final laying in position. In case during execution curing is found inadequate it will be carried out MJP/Council/Council's and the cost thereof shall be recovered from the contractor. The contractor shall make his own arrangements for getting water at site at his own cost.
12. The proportions of cement concrete specified in the Schedule 'B' are nominal and are only an indication of approximate proportion of cement, fine aggregate and coarse aggregate which may have to be altered suitably at site to obtain the desired strength and workability. However quantity of cement shall not be less than the one specified below.

NOMINAL MIX:

1:11/2:1	(M-300)	9.00 bags/one cum of cement concrete
1:1:5: 3	(M-200)	7.90 bags/one cum of cement concrete
1:2:4	(M-150)	6.30 bags/one cum of cement concrete
1:3:6	(M-100)	4.40 bags/one cum of cement concrete
1:4:8	(M-80)	3.40 bags/one cum of cement concrete

In case of major items of concrete for R.C.C. works, the Contractor shall prepare test blocks as per I.S. specifications for testing its tensile and compressive strength at his own cost. These block will be tested in any of the Government Test Laboratories at the cost of the Contractor. The number of test blocks, frequency etc. shall be directed by Engineer-In-Charge.

13. DAMAGE BY FLOODS OR ACCIDENT:

The Contractor shall take all precautions against damage by floods and from accidents. No compensation will be allowed to the contractor for his plant, material and work etc. Lost or damaged by floods or from other causes. The Contractor shall be liable to make good any part of material which is in charge of the Contractor and which is lost or damaged by floods or from any other cause. If the work executed is damaged, trenches filled due to any reason, Contractor shall have to make it good at his cost only.

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14. SUPPLY OF RATE-ANALYSIS IN CASE OF EXTRA ITEMS

In case of the EIRL the Contractor shall supply Rate Analysis based on labour and material in case he is called upon to do so.

15. WATER REQUIRED FOR CONSTRUCTION :-

The Contractor has to make his own arrangements at his cost for water required for construction, testing, filling, structures, etc. either from local bodies or from else where, by paying the charges directly and arranging tankers etc. as per necessity. No claim for extra payment on account of non-availability of water nearby, or extra lead for bringing water shall be entertained. All required piping arrangements and pumping if required for water shall be made by the Contractor at his cost.

If Contractor fails to pay the water charges to local bodies or private parties these shall be recovered by the Council from his bills. In case Council 's water supply is available, a connection at a suitable place may be sanctioned but all further arrangements of pumping if required, piping etc. shall be done by the Contractor at his cost, and water charges in such a case, shall be paid by the Contractor at the rates as decided by the Executive Engineer, which shall be final and binding on the Contractor.

Whenever Schedule 'B' provides for any dewatering item, payment shall be admissible under that item, but apart from that item no extra claims for dewatering required for executing various tender items, and for executing such items in wet condition shall be entertained as all these expenses are deemed to be included in the dewatering item.

16. LEADS AND LIFTS :-

Unless otherwise specifically mentioned in the tender item, the tendered rate for all items in tender shall cover all lifts and leads encountered for the executions of the work as directed.

17. Unless otherwise specifically provided for in the tender or a separate item is provided in Schedule 'B', all the sides of excavated trenches after the work is completed or in progress are to be filled by the Contractor to the original ground level from excavated stuff at no extra cost to the MJP.

18. Unless otherwise specifically mentioned in tender items, the net dimensions of RCC or CC members actually cast are only admissible for payment under RCC or Plain CC items. No increase in dimensions due to plastering or finishing shall be admissible for payment under RCC or plain CC items.

19. No claims for any desilting of trenches, foundation etc. filled due to floods, untimely rains, or any other reasons whatsoever shall be entertained and Contractor shall have to do this desilting operation together with dewatering operations entirely at his cost.

20. Electricity supply required for construction of work/labour camp, etc. shall be arranged by the contractor at his own cost.

FORM-B.1

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FORM B.1
PERCENTAGE RATE TENDER AND CONTRACT FOR WORKS
MAHARSHTRA JEEVAN PRADHIKARAN DIVISION JALGAON
(Under JJM)

**Name of work : Simple Automation & Solar Work for various water supply schemes under JJM in
Jalgaon & Dhule District.**

general rules and directions for the guidance of contractors

1. All works proposed to be executed by contractor shall be notified in a form of invitation to tender pasted on a Board hung up in the office of the Executive Engineer.

This form will state the works to be carried out as well as the date of submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tender and the amount of the security deposit to be deposited by the successful tenderer and the percentage, if any to be deducted from bills. It will also state whether a refund of quarry fees, royalties and ground rents will be granted. Copies of the specifications, designs and drawings and estimated rates, schedule rates and any other documents required in connection with the work which will be signed by the Executive Engineer/Engineer in charge for the propose of identification shall also be open for Inspection by contractors at the office of the Executive Engineer/Engineer in charge during office hours.

Where the works are proposed to be executed by the contractor according to the specifications recommended and approved by a competent authority on behalf of the Maharashtra Jeevan Pradhikaran, such specification with designs drawings shall form part of the accepted tender.

2. In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof, and in the event of the absence of any partner, it shall be signed on his behalf by a person holding a power – of - attorney authorizing him to do so.

i)The contractor shall pay along with the tender the sum, of as and by way of earnest money. The EMD shall be paid by Net Banking. The said amount of earnest money shall not carry any interest whatsoever.

ii)In the event of his tender being accepted, to the provision of sub-clause(below,

a) the said amount of earnest money shall be appropriated towards the amount of security deposit payable by him under conditions of General conditions of contract.

i) If, after, submitting the tender, the contractor withdraws his offer or modifies the same, or if after the acceptance of his Tender, the contractor fails or neglects

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to furnish the balance security deposit without prejudice to any other right and powers of the Pradhikaran hereunder, or in law, Pradhikaran shall be entitled to forfeit the full amount of the earnest money deposited by him.

ii) In the event of his Tender not being accepted, the amount of earnest money deposited by the contractor shall, unless it is prior thereto forfeited under the provision of sub-clause (iii) above, be refunded to him on his passing receipt therefore.

3. Receipts for payments made on account of any work, when executed by a firm should also be signed by all the partners except where the contractors are described in their tender as a firm. In which case the receipt shall be signed in the name of the firm by one of the partners or by some other person have authority to give effectual receipts of the firm.
 4. Any person who submits tender shall fill up the usual printed form stating at what percentage above or below the rates specified in Schedule - B (memorandum showing items of work to be carried out) he is willing to undertake the work. Only one rate or such percentage on all the Estimated rates/ Schedule rates shall be named. Tenders which propose any alteration in the work specified in the said form of invitation of tender, or in the time allowed for carrying out the work, or which contain separate percentage over estimated rates / schedule rates for different sub work or item, or which any other conditions of any sort which are not filled with the percentage as the space provided for the purpose and not signed at proper place in the printed B-1 Tender Form will be liable to rejection. No printed form of tender shall include a tender for more than one work. But, if contractors who wish to tender for more works, shall submit a separate tender for each work. Tenders shall have the name and the number of work to which they refer, written outside the envelopes.
 5. The competent authority shall open tenders in the presence of any intending contractors who have submitted tenders or their representatives who may be present at the time, and he will enter the amount of the several tenders in a comparative statement in a suitable form. In the event of a tender being accepted, the contractor shall for the purpose of identification, sign copies of the specifications and other documents mentioned in Rule 1. In the events of a tender being rejected, the Executive Engineer shall arrange / authorized to refund the amount of the earnest money deposited to the tenderer, on his giving a receipt for the return of the money.
 6. Competent authority is the final authority to reject all or any of the tender`
 7. No receipt for any payment alleged to have been made by a contractor in regard to any matter relating to this tender or the contract shall be valid and binding on Pradhikaran unless it is signed by the Executive Engineer.
 8. The memorandum of the work to be tendered for and the schedule of materials
- | | | |
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| Contractor | No of correction | Executive engineer |
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to be supplied by the Pradhikaran (herein before and after called as ...MJP) and their rates shall be filled in and completed by the office of the Executive Engineer/Engineer in charge before the tender form is issued. If a form issued to an intending Tender has not been so filled in and completed, he shall request the said office to have this done before he completes and delivers his tender.

9. All work shall be measured net by standard measure and according to the rules and customs of the PWD/MJP and without reference to any local custom.
10. Under no circumstances shall any; contractor be entitled to claim enhanced rates for items in this contract.
11. Every registered contractor should produce along with his tender certificate of registration, as approved contractor in the appropriate class and renewal of such registration with date of expiry.
12. Corrections and additions should be initialed.
13. The measurements of work will be taken according to the usual methods in use in the PWD/MJP and no proposals to adopt alternative methods will be accepted. The Engineer's decision as to what is the usual method in use will be final.
14. A tendering contractor shall furnish a declaration along with the tender showing all works for which he has already entered into contract, and the value of work that remains to be executed in each case on the date of submitting the tender. Such certificate shall be in the proforma attached in the tender documents.
15. In view of the difficult position regarding the availability of foreign exchange no foreign exchange would be released by the MJP for the purchase of plant and machinery or any other purpose for the execution of the work contracted for.
16. The contractor will have to construct shed, for storing controlled and valuable material issued to him under Schedule "A" of the agreement or brought him on work site, at work site having double locking arrangement. The materials will be taken for use in the presence of the department person. No. materials will be allowed to be removed from the site of works without written permission of the Engineer-in-charge.
17. The tenderer will have to produce to the satisfaction of the accepting authority a valid and current license issued in his favour under the provision of Contractor Labour Regulation and Abolition Act. 1973 before starting work, failing with acceptance of the tender will be liable for withdrawal and Earnest money / Security Deposit will be forfeited to the Corporation.
18. The contractor shall comply with the provision of the Apprentices Act. 1961 and the rules and orders issued there under from time to time. The contract shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the Act.
19. In this tender 14 sub-works are included. As per Government resolution the work

will be taken up in three phases. The work order will be issued accordingly by fixing time limit. Contractor has to complete the work within stipulated time for each phase. If he fails, action as per clause 2 will be initiated against the contractor.

20. As per clause 6 of B-1 form, extension of time limit will be governed. If contractor fails to apply for extension of time limit as per clause 6 to keep the tender alive, MJP will grant the extension considering the progress of work and in the light of clause 2.
21. As per Government Resolution Price Variation Clause is not applicable to tender.
22. The rates to be quoted by the contractor must be inclusive of all other relevant taxes except GST. No extra payment of this account will be made to the Contractor.
Contractor shall be deemed to have examined the work and site conditions including labour, the general and special conditions, specifications and drawings and shall be deemed to have visited the work site and to have fully informed himself regarding the local conditions and carried out his own investigations to arrive at rates quoted in the tender.
There shall be no corrections or overwriting and if any that shall be dully initialed by Contractor himself.

Note: The Commercial Offer must be filled online using individual's digital certificate. (An online form will be provided for this during online bid preparation stage).

I / We hereby, tender for the execution for the Maharashtra Jeevan Pradhikaran (hereinbefore and hereinafter referred to as MJP) for the work specified in the underwritten memorandum within the time specified in such memorandum at-----% above/below (in figures -----)the estimated rates entered in schedule 'B' memorandum showing items of work to be carried out and in accordance with all respects with the specifications, designs, drawings, and instructions in writing referred to in Rule hereof and in clause 12 of the annexed conditions of the contract and agree that what materials for the work are

provided by the Pradhikaran such materials are at the rates to be paid for them shall be as provided in schedule “A” here to.

Memorandum

- a) General description:- Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District. *a) if several sub works are included they should be detailed in a separate list*
- b) Estimated Cost. Put to tender Rs.96,07,824/-
- c) Earnest Money. Rs 96,100/- *c) The amount of earnest money to be deposited shall be in accordance with the provision of paras 206 and 207 of the M.P.W. Manual.*
- d) **Security Deposit.**
Total 4% of estimated cost put to tender or accepted tender cost whichever is higher *d) This deposit shall, be in accordance with paras 213 and 214 of the M.P.W. Manual.*
- i) **Initial Security Deposit**
2% of estimated cost put to tender or accepted tender cost whichever is higher shall be in form of FDR from any Nationalized / Scheduled Bank or Bank Guarantee
- ii) Balance 2% amount of Security deposit, will be recovered through each Running Bill at The rate of 5% of the gross amount of running bill till the required total amount of Security Deposit is recovered
- e) Percentage, if any, to be deducted from bills so as to make up the total amount required as security deposit by the time, half the work as measured by the cost is done. 5% (Five) Percent *e) This percentage where no security deposit is taken, will vary from 5 % to 10 % according to the requirement of case where security deposit is taken see note to clause 1 this conditions of contractor.*
- f) **Additional Security Deposit.**

Additional security Deposit will be Deposited as per Sr.no.2 of Detailed Tender noticed on page no.7 of this tender.

g)Time allowed for the work from date of written order to commence. **4 Months for completion of Works & 2 months for Trial Run of scheme(4+2=6) Calendar Months.** (Including monsoon)

I/We agree that the offer shall remain open for acceptance for a minimum period of 120 days from the date fixed for opening for the same and thereafter until it is withdrawn by me/ us notice in writing duly addressed to the authority opening the tenders and sent by registered post A.D. or otherwise delivered at the office of such authority. Term deposit Receipt No./Demand draft No. dated and date in respect of the sum of(in wards `.....) is herewith forwrded. The amount of earnest money shall not bear interest and shall be liable to be forfeited to the Pradhikaran should I/We fail to (i) abide by the stipulation to keep the offer open for the period mentioned above of (ii) sign and complete the contract documents as required by the Engineer and furnish the security deposit as specified in item. (d) of the memorandum contained in paragraph (1) above within the time limit laid down in clause (1) of the annexed General Conditions of contract, the amount of earnest money may be adjusted towards the security deposit or refunded to me/us in writing unless the same or any part thereof has been forfeited as aforesaid.

I/We have secured exemption from payment of earnest money after executing the necessary bond in favour of the Pradhikaran a true copy of which is enclosed herewith should any occasion for forfeiture of earnest money for this work arise due to failure on my/our part to abide by the stipulations to keep the offer open for the period mentioned above or to sign and complete the contract documents and furnish to security deposit as specified in item (d) of the Memorandum contained in paragraph (1) above within the time limit laid down in clause (i) of the annexed General Conditions of contract, the amount payable by me/us at the option of the Engineer, be recovered out of the amount deposited in lump sum for securing exemption in so far as the same may be extend in terms of the said bond and in the event of the deficiency out of any other moneys which are due to payable to me/us by the Pradhikaran under any other contract or transaction of any nature whatsoever or otherwise.

Should this tender be accepted I/We hereby agree to abide by and fulfill all the terms and provisions of the conditions of contract annexed hereto so far as applicable and in default thereof to forfeit and pay Pradhikaran the sum of money mentioned in the said conditions. Term Deposit Receipt No. Dated from

Strike out (a) such security deposit is to be taken.

Contractor

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The Bank..... at in respect of sum of ` Rs ----- (Rs-----)Is herewith forwarded representing the earnest money (a) the full value which is to be absolutely forfeited to the Pradhikaran should I/We not deposit in the full amount of security deposit specified in the above memorandum in Accordance with

(d) of clause (i) of the tender for works shall be refunded.

Signature of the
contractor
before submission of
tender.
Address date of
2024

Witness

Signature of witness to
contractor's signature.

The above tender is hereby accepted by me for and
one behalf of the MJP/.....
Dated

Executive Engineer

CONDITIONS OF CONTRACT

(Modification as per the GR PWD NO. CAT-1087/ CR- 94/Bldg-2, dated 14.6.1989) \

Clause 1 : The person / person whose tender may be accepted *Security Deposit* (hereinafter called the Contractor, which expression shall unless excluded by or repugnant to the context include his heirs, executors, administrators and assigns) shall (A) within ten days (which may be extended by the Executive Engineer concerned upto 15 days if the Executive Engineer thinks fit to do so) of the receipt by him of the notification of the acceptance of his tender deposit with the Engineer in-charge in Cash or Government securities endorsed to the Engineer in charge (if deposited for more than 12 months) of sum sufficient which will make up the full security deposit specified in the tender or (B) (permit Council at the time of making any payment to him for work done under the contract to deduct such sum as will amount to 4% of all moneys so payable; such deductions to be held by Council by way of security deposit). Provided always that in the event of the Contractor depositing a lumpsum by way of security deposit as contemplated at (A) above, then and in such case, if the sum so deposited shall not to 4% of the total estimated cost of work or tendered cost whichever is higher, it shall be lawful for Council at the time of making any payment to the contractor for work done under the contract to make-up the full amount of Four (4) percent by deducting a sufficient sum from every such payment as last aforesaid until the full amount to the security deposit is made up. All compensation or other sums of moneys payable the contractor to Council under the terms of his contract may be deducted from or paid by the sale of sufficient part of his security deposit or from the interest arising there from, or from any sums which may become due by Council to the contractor under any other contract or transaction on any account whatsoever and in the event of his security deposit being reduced by reason of any such deduction or sale as aforesaid, the contractor shall, within ten days thereafter, make good in cash or Government securities endorsed as aforesaid or Bank Guarantee issued by bank for any sum or sums which may have been deducted from or raised by sale of his security deposited or any part thereof. The Security deposit referred to, when paid in cash may, at the cost of the depositor, be converted into interest bearing securities provided that the depositor has expressly desired this in writing.

If the amount of the security deposit to be paid in a lump sum within the period specified at (A) above is not paid the tender/contract already accepted shall be considered as cancelled and legal steps taken against the Contractor for recovery of the amounts. 90% of security deposit of total tender cost shall be refunded along with payment of final bill, at the same time contractor will

Contractor

No of correction

Executive engineer

have to submit bank guarantee of 50% of security deposit amount for a period of five years after commissioning of Automation of scheme. Remaining 10% will be released after expiry of defect liability period. In the event of Contractor failing or neglecting to complete rectification work within the period upto, which the Contractor has agreed to maintain the work in good order then subject to provisions of Clause 17 and 20 hereof, the amount of security deposit retained by Council shall be adjusted towards the excess cost incurred by the Council on rectification work.

Clause 2 : The time allowed for carrying out the work as entered in the agreement 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 essence of the contract on the part of the Contractor) and the Contractor shall pay as compensation an amount equal to one percent or such smaller amount as the Executive Engineer (whose decision in writing shall be final) may decide of the amount of the estimated cost of the whole work as shown by the tender for everyday that the work remains uncommenced or unfinished after the proper dates. And further to ensure good progress during execution of the work, the Contractor shall be bound in all cases in which the time allowed for any work exceeds one month to complete, for complete minimum quantum of work as compared to accepted tender cost as stated below.

Compensation De- lay

¼ of the work in ¼ of the time.

½ of the work in ½ of the time.

¾ of the work in ¾ of the time.

Full work in 24 (Twenty four) months including monsoon

Note: The quantity of the work to be done within a particular time to be specified above shall be fixed by an Officer competent to accept the contracts after taking into consideration the circumstances of each case .and insert in the blank space kept for the purpose

In the event of the contractor failing to comply with these conditions he shall be liable to pay as compensation an amount equal to one percent or such smaller amount as Executive Engineer (whose decision in writing shall be final) may decide of the said estimated cost of the whole work for everyday that the due quantity of work remains incomplete provided always that the total amount of compensation to be paid under the provisions of this clause shall not exceed 10% of the estimated cost of the work as shown in the tender. Executive Engineer should be the final authority in this respect, irrespective of the fact that tender is accepted by State level technical Committee. However Executive Engineer shall seek the consent of the MJP and/or

approval of the State level technical committee.

Clause 3: If any clause in which under any clause 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 installment) or in the case of abandonment of the work owing to serious illness or death of the Contractor or any other cause, the Engineer in charge on behalf of the Council shall have power to adopt any of the following courses, as he may deem best suited to the interest of the Council

Action when whole of security deposit is forfeited.

To rescind the contract (for which rescission notice in writing to the Contractor under the hands of Engineer in-charge shall be conclusive evidence) and in that case the security deposit of the Contractor shall stand forfeited and be absolutely at the disposal of the Council

a) To carry out the work or any part of the work departmentally debiting the Contractor with the cost of the work, expenditure incurred on tools, plant and charges on additional supervisory staff including the cost of work-charged establishment employed for getting unexecuted part of the work completed and crediting him with the value of the work done departmentally in all respects in the same manner and at the same rates as if it has been carried out by the Contractor under the terms of his contract. The certificate of the Engineer in-charge as to the cost and other allied expenses so incurred and as to the value of the work so done departmentally shall be final and conclusive against the Contractor.

b) The order that work of the Contractor be measured up and take such part thereof as shall be unexecuted out of his hands and to give it to another contractor to complete in which case all expenses incurred on advertisement for fixing a new contracting agency, additional supervisory staff including the cost of work-charged establishment and the cost of the work executed by the new contract agency will be debited to other contractors and the value of the work done or executed through the new contractor shall be credited to the Contractor in all respects and 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 Engineer in-charge as to all the costs of the work and other expenses incurred as aforesaid for getting the unexecuted Work done by the new contractor and as to the value of the work so done shall be final and conclusive against the Contractor.

In case the contractor shall be rescinded under clause (a) above, the contractor shall not be entitled to recover or to be paid, any sum for any work therefore actually performed by him under this contract unless and until the Engineer in charge / Executive Engineer shall have certified in writing the performance of such work and the amount payable to him in

respect thereof and he shall only be entitled to be paid the amount so certified. In the event of either the courses referred to in clause (b) or (c) being adopted and the cost of the work executed departmentally or through a new contractor and other allied expenses exceeding the value of such work credited to the contractors, the amount of excess shall be deducted from any money due to the contractor by Council under the contract or otherwise however or from his security deposit or the sale proceeds thereof provided however that the contractor shall have to claim against Council event if the certified value of the work done departmentally or through a new contractor exceeds the certified cost of such work and allied expenses, provided always that whichever of the three courses mentioned in clauses (a), (b) and (c) is adopted by the Council the contractor shall have no claim to compensation for any loss sustained by him by reason of not having purchased or procured any materials, or entered into any engagements, or made any advance on account of or with a view to the execution of the work or the performance of the contract. The extra cost involved in the completion of the balance work carried out through the other contractor under

Amount of 3 (c) shall be recoverable from the contractor over and above the compensation levied under Clause 2 and the Security Deposit shall be apportioned against the total recoveries for this purpose also.

Clause 4 : If the progress of the any particular portion of the work is unsatisfactory, the Council shall notwithstanding that the general progress of the work is in accordance with the condition mentioned in clause 2 be entitled to take action under clause 3(b) after giving the contractor 10 days notice in writing. The contractor will have no claim for compensation, for any loss sustained by him owing to such action.

Action when the progress of any particular portion of the work is unsatisfactory.

Clause 5 : In any case in which any of the powers conferred upon Council by Clause 3 and 4 hereof shall have become exercisable and the same shall not have been exercised the non exercise thereof shall not constitute waiving of any of the conditions hereof the such powers shall not notwithstanding be exercisable in the event of any future case of default by the contractor for under any clauses hereof he is declared liable to pay compensation amounting to the whole of his security deposit and the liability of the contractor for past and future compensation shall remain unaffected. In the event of the Council taking action under Sub-Clause (a) or (c) of clause 3, he may, if he so desires, take possession of all or any tools and plants, materials and stores, in or upon the work or the site thereof or belonging to the contractor, or procured by him and intended to be used for the execution of the work or any part thereof paying or allowing for the same in account at the contract rates or in the case of

Contractor liable to pay compensation if action not taken under clause 3 and 4.

contract rates not being applicable at current market rates to be certified by the Council whose certificate thereof shall be final. In the alternative the Council may after giving notice in writing to the contractor or his clerk of the work, foreman or other authorized agent require him to remove such tools, plant, materials or stores from the premises within a time to do specified in such notice, and in the event of the contractor failing to comply with any such requisition, the Council may remove them at the contractor's expense 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 Council as to the expenses of any such removal and the amount of the proceeds and expense of any such shall be final and conclusive against the contractor

Clause 6 : If the contractor shall desire an extension of the time for **Extension of time** completion of work on the ground of his having been unavoidably hindered in its execution or on any other ground, he shall apply in writing to the Council before the expiration of the period stipulated in the tender on before the expiration of 30days from the date on which he was hindered as aforesaid or on which the cause for asking extension occurred, whichever is earlier and the Council or in the opinion of Executive Engineer, as the case may be, if in his opinion, there were reasonable grounds for granting the extension, grant such extension as he think necessary or proper. The decision of the Council in this matter shall be final.

Clause 7 : On the completion of the work the contractor shall be furnished with a certificate by the Council(hereinafter and hereinbefore called the Engineer-in-charge) of such completion but neither 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 have been executed, all scaffolding surplus materials and rubbish , tools, plants and equipments and shall have cleaned off the dirt from all woodwork, doors, windows, walls, floor or other parts of any building in or upon which the work has been executed or of which he may have had possession for the purpose of executing the work nor until the work shall have been measured by the Engineer-in-charge or where the measurements have been taken by his subordinate until they have received approval of the Engineer-in-charge the said measurements being binding and conclusive against the contractor, if the contractor shall fail to comply with the requirements of this clause as to the removal of scaffolding, surplus materials and rubbish and cleaning off the 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 and rubbish and dispose off the same as the thinks fit and clean off such dirt as aforesaid and the contractor shall forthwith pay the amount of all expenses so incurred but shall have no claim in respect of any such scaffolding tools and plants equipments or surplus materials as aforesaid except for any sum actually realized by the

Final Certificate.

sale thereof.

Clause 8 : No payment shall be made for any work estimated to cost less than Rupees one thousand till the whole of work shall have been completed and a certificate of completion given. But in the case of works estimated to cost more than Rupees one thousand the contractor shall on submitting a monthly bill therefore be entitled to receive payment proportionate to the part of the work then approved recommended by the Engineer-in-charge, whose certificate of such recommended and passing of the sum of payable shall be final and conclusive against the contractor. All such intermediate payments shall be regarded as payment by way of advance against the final payments only and not as payments for work actually done and completed and shall not preclude the Engineer-in-charge for requiring any bad, unsound, imperfect or unskillful work to be removed or taken away and reconstructed or re erected nor shall any such payment be considered as an admission of the due performance of the contract or any part thereof in any respect or the occurring of any claim nor shall it conclude determine or affect in any other way the powers of the Engineer-in-charge as to the final settlement and adjustment of the accounts or otherwise or in any other way very or affect the contract. The final bill shall be submitted by the contractor within one month of the date fixed for the completion of the work otherwise the Engineer-in-charge's certificate of the measurements and of the total amount payable for the work shall be final and binding on all parties.

Payment on intermediate certificate to be regarded as advance.

Clause 9: The rates for several items of works estimated to cost more than ` 1000/- agreed to within, shall be valid only when the item concerned is accepted as having been completed fully in accordance with the sanctioned specification. In cases where the items of are work not accepted as so completed by the Engineer-in-charge may make payment on account of such items at such reduced rates as he may consider reasonable in the preparation of final or on account bills.

Payment at reduced rates on account of items of work not accepted as completed, to be at the discretion of the Engineer-in-charge.

Clause 10 : A bill shall be submitted by the contractor in 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 measurements for the purpose of having the same verified and the claim, so far as it is admissible shall be adjusted and paid if possible within 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 or his duly authorized agent whose counter signature to the measurement list shall be sufficient warrant and the Engineer-in-charge may prepare a bill from such list which shall be binding on the contractor

Bills to be submitted monthly

Contractor

No of correction

Executive engineer

in all respects

Clause 11 : The contractor shall submit all bills on the printed forms to be had on application at the office of the Engineer-in-charge. The charges to be made in the bills shall always be entered at the rates specified in the tender or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the tender at the rates hereinafter provided for such work

Bills to be on printed form.

Clause 12 : If the specification or estimate of the work provides for the use of any special description of materials to be supplied from the store of the Council or if it is required that the contractor shall use certain stores to be provided by the Engineer-in-charge (such material and stores and the prices 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 or effect of this contract specified in the schedule or memorandum hereto annexed) the contractor shall be supplied with such materials and stores as may be required from time to time to be used by him for the purposes of the contract only and value of the full quantity of the materials and stores so supplied shall be set off or deducted from any sums then due, or thereafter to become due to the contractor under the contract or otherwise or from the security deposit or the proceeds of sale thereof if the security deposit is held in Government Securities, the same or a sufficient portion thereof shall in that case be sold for the purpose. All materials supplied to the contractor shall remain the absolute property of Council and shall not be removed from the site of the work and shall at all times be open to inspection by the Engineer-in-charge. Any such materials issued at cost but remained unused and in perfectly good condition at the time of completion or termination of the contract shall be returned to the Council, store if the Engineer-in-charge so required by a notice in writing given under his hand, but the contractor shall not be entitled to return any such material supplied to him as aforesaid but remaining unused by him or for any wastage in or, damage to any such materials. The contractor shall, however return all unused material at the time of completion, which was issued to him free of cost by the Engineer in charge and which has remained surplus with the contractor after accounting for the actual utilization of such material from the total quantity that was issued by the Engineer in charge. Cost of any material issued free of cost by the engineer and which has remained surplus with the Engineer from the contractor as mentioned in Schedule – ‘A’

Stores supplied by MJP

Clause 12 (A) : All stores of materials such as cement, steel etc. supplied to the contractor by Council should be kept by the contractor in a separate store near the work site under lock and key and will be accessible for inspection by the Council or his agent at all the times.

Storage of controlled material

Contractor

No of correction

Executive engineer

Clause 13 : 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 every other respect in strict order accordance. The contractor shall also conform exactly fully and faithfully to the designs, 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 for the purpose of inspection at such office or on the site of the work, during office hours. The contractor will be entitled to receive one sets of contract drawing and working drawings as well as one certified copy of the accepted tender along with the work order free of cost. Further, copies of the contract drawings and working drawings if requires by him shall supplied at the rate of ` 2000/- per set of contract drawings and ` 100/- per working drawing except where otherwise specified.

*Works to be executed
in accordance with
specifications
drawings.*

Clause 14 : The Engineer-in-charge shall have power to make any alterations in or additions to the original specifications, drawing, design and instructions that may appear to him to be necessary or contracts, advisable during the progress of the work and the contractor shall be bound to carry out the work in accordance with any instructions in this connection which may be given to him in writing signed by the Engineer-in-charge and such alterations shall not invalidate the contract and any additional 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 tender for the main work. And if the additional and altered 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 Schedule of Rates of the Division with due consideration for leads and lifts involved for materials and labour or at the rates mutually agreed upon between the Engineer-in-charge and the contractor, whichever are lower However, if the Engineer-in-charge is not empowered by Council to approve the rates of such additional or altered work then as far as possible he shall obtain prior approval to the changes and to the rates payable for such changes from competent authority of Council not entered in before ordering the Contractor to take up the alternation/ additional work. If the additional or altered work for which no rate is in the schedule or rates of the Division, is ordered to be carried out before the rates are agreed upon then the contractor shall within seven days of the date of receipt by him of the order to carry out the work, inform the Engineer-in-charge of the rate which it is his intention to charge for such class of work, and if the Engineer-in-charge does not agree to this rate he shall by notice in writing be at liberty to cancel his order carry out such class of work and arrange to carry out in such manner as he may consider advisable provided always that if the contractor shall commence the work

*Alteration in
specifications &
designs not to
invalidate*

or incur any expenditure in regard thereto before the rates shall have been determined as lastly hereinbefore mentioned then in such case he shall only be entitled to be paid in respect of the work or incur any expenditure in regard there to before the rates shall have been determined as lastly hereinbefore mentioned then 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 the determination of the rate as aforesaid according to such rate or rates as shall be fixed by the Engineer-in-charge. In the event of a dispute the decision of the Executive Engineer will be final.

Where, however, the work is to be executed according to the designs, drawings and specifications recommended by the contractor and accepted by the competent authority the alterations above referred to shall be within the scope of such designs, drawings and specifications appended to the tender. The time limit for the completion of the work shall be extended in the proportion that the increase in its cost occasioned by alterations or additions bears to the cost of the original contract work and the certificate of the Engineer-in-charge as to such proportion shall be conclusive.

*Extension of time in
consequences
additions or
alterations*

Clause 15 :

- i) If at any time after the execution of the contract documents the engineer shall for any reason what so ever (other than default on the of the contractor for which the Council is entitled to rescind the contract) desires that the whole or any part of the work specified in the tender should be suspended for any period of that the whole or part of the work should not be carried at all, he shall give to the contractor a notice in writing of such desire and upon the receipt of such notice the contractor shall forthwith suspend or stop the work wholly or in part as required after having due regard to the appropriate stage at which the work should be stopped or suspended so as not to cause any damage or injury to the work or any part of it could be or could have been safely stopped or suspended shall be final and conclusive against the Contractor. The Contractor shall have no claim to any payment or compensation whatsoever by reason of or in pursuance of any notice as aforesaid on account of any suspension, stoppage or curtailment except to the extent specified hereinafter.

*No claim to any
payment or
compensation for
alteration in or
restriction of Work
except specified in
this clause.*

- ii) Where the total suspension of work ordered as aforesaid continued for a continuous period exceeding 90 days the contractor shall be at liberty to withdraw from the contractual, obligations under the contract so far as it pertains to the unexecuted part of the work by giving a 10days prior notice in writing to the Engineer within 30days of the expiry of the said period of 90 days of such intention and requiring the Engineer to record the final measurements of the work already done and to pay final bill.

Upon giving such notice the Contractor shall be deemed to have been discharged from his obligation to complete the remaining unexecuted work under his contract. On receipt of such notice the Engineer shall proceed to complete the measurement and make such payment as may be finally due to the Contractor within a period of 90 days from the receipt of such notice in respect of the work already done by the Contractor. Such payment shall not in any manner prejudice the right of the Contractor to any further compensation under the remaining provisions of this clause.

- iii) Where the Engineer in-charge requires the Contractor to suspend the work for a period in excess of 30 days at any time or 60 days in the aggregate, the contractor shall be entitled to apply to the Engineer within 30 days of the resumption of work after such suspension for payment of compensation to the extent of pecuniary loss suffered by him in respect of working machinery rendered idle on the site or on the account of his having had to pay the salary or wages to labour engaged by him during the said period of suspension, provided always that the Contractor shall not be entitled to any claim in respect of any such working machinery, salary or wages for the first 30 days whether consecutive or in the aggregate of any suspension whatsoever occasioned by unsatisfactory work or other default on his part. The decision of the Engineer-in-charge in this regard shall be final and conclusive against the Contractor.

iv) In the event of

- a) any total stoppage of work on notice from the Engineer under sub-clause (1) in that behalf.
- b) Withdrawal by the Contractor from the contractual obligation to complete the remaining un-executed work under sub-clause (2) on account of continued suspension of work for a period exceeding 90 days.
- c) Curtailment in the quantity of item or items originally tendered on account of any alteration, omission or substitutions in the specifications, drawings, designs or instructions under Clause 14 where such curtailment exceeds 25% in quantity and the value of the quantity curtailed beyond 25% at the rates for the item specified in the tender is more than ` 5,000/-

It shall be open to the Contractor within 90 days from the service of

- i) the notice of stoppage of work or
 - ii) the notice of withdrawal from the contractual obligations under the contract on account of the continued suspension of work or
 - iii) notice under Clause 14(i) resulting in such curtailment
- to produce to the Engineer satisfactory documentary evidence that he had purchased or agreed to purchase material for use in the contracted work before receipt by him of the notice of stoppage, suspension or curtailment and required the Council to take over on payment such material at the rates determined by the Engineer, provided, however, that such rates shall in no case exceed the rates at which the same was acquired by the

Contractor. The Council shall thereafter take over the material so offered, provided the quantities offered are not in excess of the requirements of the unexecuted work as specified in the accepted tender and are of quality and specifications approved by the Engineer

Clause 15 A : The Contractor shall not be entitled to claim any compensation from MMC for the loss suffered by him on account of delay by Council in the supply of materials entered in Schedule 'A' where such delay is caused by.

No. claim to compensation on account of loss due to delay in supply of material by MMC.

i) Difficulties relating to the supply of railway wagons.

ii) Force majeure.

iii) Act of God.

iv) Act of enemies of the State or any other reasonable cause beyond the control of MJP/Council.

In the case of such delay in the supply of materials, Council shall grant such extension of time for the completion of the works as shall appear to the Council to be reasonable in accordance with the circumstances of the case. The decision of the Council as to the extension of time shall be accepted as final by the Contractor.

Clause 16 : Under no circumstances whatsoever shall the Contractor be entitled to any compensation from Council on any account unless the Contractor shall have submitted claim in writing to the Engineer-in-charge within one month of the case of such claim occurring.

Time limit for unforeseen claims.

Clause 17 : If at any time before the security deposit or any part of thereof is refunded to the Contractor it shall appear to the Engineer-in-charge or his subordinate –in-charge of the work that any work has been executed with unsound, imperfect or unskilled workmanship or with materials of inferior quality, or that any materials or articles provided by him for the execution of the work are unsound or quality is inferior to that contracted for, or are otherwise not in accordance with the contract, it shall be lawful for the Engineer-in-charge to intimate this fact in writing to the Contractor and then notwithstanding the fact that the work, materials or articles complained of may have been inadvertently passed, certified and paid for, the Contractor shall be bound forthwith to rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or if so required shall remove the 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 the written intimation aforesaid, the Contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimate for everyday not exceeding 10 days during which the failure so continues and in the event of any such failure the Engineer-in-charge may rectify or remove and re execute the work or remove and replace the materials or articles

Action and compensation payable in case of bad work.

complained of as the case may be at the risk and expense in all respects of the Contractor. Should the Engineer in charge consider that any such inferior work or materials as prescribed above may be accepted or made use of, it shall be within his discretion to accept the same reduced rates as he may fix therefore.

Clause 18 : All work under or in course of execution or executed in pursuance of the contract shall at all times be open to inspection and supervision of the Engineer-in-charge and his subordinates and the Contractor shall at all times during the usual working hours, and at all other times at which reasonable notice of the intention of the Engineer-in-charge and his subordinates 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 duly authorized agent shall be considered to have the same force and effect as if they had been given to the Contractor himself.

Work to be open to inspection.

Contractor or responsible agent to be present

Clause 19 : 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 measurement any work in order that the same may be measured and correct dimensions thereof 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, and if any work shall be covered up or placed beyond the reach of measurement, without such notice having been given or consent obtained, the same shall be uncovered at the Contractor's expense, and in default thereof no payment or allowance shall be made for such work or for the materials with which the same was executed.

Notice to be given before work is covered up

Clause 20 : If during the period as listed below, from the date of completion as certified by the Engineer-in-charge pursuant to Clause 7 of the Contract or for the period as mentioned below after commissioning the work whichever is earlier in the opinion of the

Contractor liable for damage done and for imperfections

Engineer in-charge, the said work is defective in any manner whatsoever the contractor, shall forthwith on receipt of notice in that behalf from the Council, duly commence execution and completely carry out at his cost in every respect all the work that may be necessary for rectifying and setting right the defects specified therein including dismantling and reconstruction of unsafe portion strictly in accordance with and in the manner prescribed and under the supervision of the Council. In the event of the Contractor failing or neglecting to commence execution of the said rectification work within the period prescribed therefore in the said notice and/ or to complete the same as

aforesaid as required by the same notice, the Council may get the same executed and carried out departmentally or by any other agency at the risk, on account and at the cost of the Contractor. The Contractor shall forthwith on demand pay to the Council the amount of such costs, charges and expenses sustained or incurred by the Council of which the certification of the Council shall be final and binding on the Contractor, Such costs, charges and expenses shall be deemed to be arrears of land revenue and in the event of the Contractor failing or neglecting to pay the same no demand as aforesaid without prejudice to any other rights and remedies of the Council, the same may be recovered from the Contractor as arrears of land revenue. The Council, shall also be entitled to deduct the same from any amount which may then be payable or which may thereafter become payable by the Council to the contractor either in respect of the said work or any other work whatsoever or from the amount of security deposit retained by the Council. During defect liability period, the work of daily maintenance and general repairs and expenses thereon would be out of scope of the tender. However, if any defects in the sub work or in the material are found, the same will be rectified by the Contractor at his cost and will be binding on him, failing to which legal action would be taken as per tender clauses. Ten percent amount will be withheld from security deposit depending upon the nature of work, till the defect liability period is over.

1. Pumping Machinery.

- | | |
|---|------------|
| a) Pumping machinery and other allied mechanical, electrical installation (excluding those in the treatment plant contract), surge arrestors, water hammer control devices, chlorinators (excluding those provided in the treatment plant contract) | Five Years |
|---|------------|

Repairs to the works at (a) above.	Five Years
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2. WTP/ESR/GSR/BPT, Sump and Pump House, Balancing Tank Etc. head works, approach bridge

- | | |
|--|------------|
| a) Based on Contractor's own design. | Five Year. |
| b) Based on Departmental design. | Five Years |
| c) Special repairs to ESR/ GSR/ BPT | Five Years |
| d) Ordinary repairs to ESR/GSR/BPT Sump and Pump House, etc. | Five Years |

3. Pipe Lines.

- | | |
|---|------------|
| i) Pumping Mains, Gravity Mains, Leading Mains including all the fixtures | Five Years |
| ii) Distribution system, laterals, branch sewers of sewerage system, etc. | Five Years |
| iii) Repairs to pipe lines under the works at (a) and (b) above. | Five Years |

The instructions contained in the Government of Maharashtra (Public Works

Contractor

No of correction

Executive engineer

Department) Resolution dated 14th June, 1989 shall henceforth be applicable to all the works for which defect liability periods have been specified as above

Clause 21 : The Contractor shall supply at his own cost all material (except such special materials, if any, as may in accordance with the contract be supplied from the Council stores), plant, tools, appliances, implements, ladders, tackles, scaffolding and temporary works requisite or proper execution of the work, in the original, altered or substituted from the whether included in the specification or other documents forming part of the contract of referred to in these conditions or not and which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer in charge as to any matter as to which under these conditions he is entitled to as satisfied or which he is entitled to require together with the carriage therefore to and from the work

Contractor to supply plant, ladders, scaffoldings, etc.

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 assisting in the measurement or examination at any time and from time to time of the work or the materials, Failing which the same may be provided by the Engineer-in-charge at the expense of the Contractor and expenses may be deducted from any money due to the Contractor under the contract or from his security deposit or the proceeds of sale thereof or a sufficient portion thereof. The Contractor shall provide all necessary fencing and lights required to protect the public from accident and shall also be bound to bear the expenses of defense of every suit, action or other legal proceedings that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit action or other legal proceedings that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit action or proceedings to any such person, or which may with consent of the Contractor be paid for compromising any claim by any such person.

And is liable for damages arising from non-provisions of lights, fencing, etc

List of machinery in contractors possession and which he proposes to use on the work should be submitted along with the tender.

Clause 21 A : The Contractor shall provide suitable scaffolds and working platforms, gangways and stairways and shall comply with the following regulations in connection herewith.

- a) Suitable scaffolds shall be provided for workmen for all works that cannot be safely done from a ladder or by other means.
- b) A scaffolds shall not be constructed, taken down or substantially allowed except

- i) Under the supervision of a competent and responsible person, and
 - ii) As far as possible by competent workers possessing adequate experience in this kind of work.
- c) All scaffolds and appliances connected herewith and ladders shall.
- i) be of sound material
 - ii) Be of adequate strength having regard to the loads and strains to which they will be subjected, and
 - iii) Be maintained in proper condition.
- d Scaffolds shall be so constructed that no part thereof can be displaced in consequence of normal use.
- e Scaffolds shall not be over – loaded and so far as practicable the load in consequence of normal use
- f Before installing lifting gear on scaffolds special precautions shall be taken to ensure the strength and stability of the scaffolds.
- g Scaffolds shall be periodically inspected by a competent person.
- h Before allowing a scaffold to be used by his workmen the Contractor shall whether the scaffold has been erected by his workmen or not, take steps to ensure that it complies fully with the regulations herein specified.
- i Working platform, gangway, stairways shall:-
- 1) be so constructed that no part thereof can sag unduly or unequally.
 - 2) be so constructed and maintained, having regard to the prevailing conditions as to reduce as far as practicable risks of persons tripping or slipping, and
 - 3) kept free from any unnecessary obstruction.
- j) In the case of working platform, gangways, working places and stairways at a height exceeding 2 meters (to be specified).
- a) every working platform, gangways shall be closely boarded unless other adequate measures are taken to ensure safety,
 - b) every working platform, gangway shall have adequate width, and
 - c) every working platform, gangway, working place and stairway shall be provided with railing/ barricading
 - k) Every opening in the floor of a building or in a working platform shall except for the time and to the extent required to allow the excess of persons or the transport or shifting of material be provided with suitable means to prevent the fall of persons or material.
 - l) When persons are employed on a roof where there is a danger of falling from the height exceeding 3 meters (to be specified) suitable precautions shall be taken to prevent the fall of persons or material
 - m) Suitable precautions shall be taken to prevent persons being struck by articles, which might fall from scaffolds or other working places.
 - n) Safe means of access shall be provided to all working platforms and other

Liability of

working places.

*contractors
for any damage done
in or outside the work
area*

- o) The Contractor will have to make payments to laborers as per Minimum Wages Act.

Clause 21 B : The Contractor shall comply with the following regulations as regards the Hoisting appliances to be used by him.

- a) Hoisting machines and tackles, including their attachments, anchorages and supports shall.
 - i) be of good mechanical construction, sound material and adequate strength and free from patent defect, and
 - ii) be kept in good repairs and in good working order.
- b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of suitable quality and adequate strength and free from patent defect.
- c) Hoisting machines and shackles shall be examined and adequately tested after erection on the site and before use and be re-examined in position at intervals to be prescribed by the Council.
- d) Every chain, ring, hook, shackle, swivel and pulley block used in hoisting or lowering materials or as means of suspension shall be periodically examined.
- e) Every crane driver or hoisting appliance operator shall be properly qualified.
- f) No person who is below the age of 18 years shall be in control of any hoisting machine, including any scaffold, which gives signals to the operator.
- g) In case of every machine and every chain, ring, hook, Shackle, swivel and pulley block used in hoisting or lowering or as a means of suspension, the safe working load shall be ascertained by adequate means.
- h) Every hoisting machine and all gear referred to in proceeding regulation shall be plainly marked with the safe working load
- i) In case of hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated.
- j) No part of any hoisting machine or any gear referred to in regulation (g) above shall be loaded beyond the safe working load except for the purpose of testing.
- k) Motors, gearing, transmissions, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards.
- l) Hoisting appliances shall be provided with such means, which will reduce to minimum, and the risks of the accidental descend of load.
- m) Adequate precaution shall be taken to reduce to a minimum the risk of any

*Employment of
female labor work on
Sunday*

part of suspended load becoming accidentally displaced

Clause 22 : The Contractor shall not set fire to any standing jungle, trees, brushwood or grass without a written permission from the Council. When such permission is given and also in all cases when destroying, cut or dug up trees, brushwood, grass, etc. by fire, the Contractor shall take necessary measures to prevent such fire spreading to or otherwise damaging surrounding property. The Contractor shall make his own arrangements for drinking water for the labor employed by him.

Measures for prevention of fire.

Clause 23 : Compensation for all damages done intentionally or unintentionally by Contractor's labour whether in or beyond the limits of the Council property including any damage caused by the spreading of fire mentioned Clause 22 shall be estimated by the Engineer-in-charge or such other officer as he may appoint and the estimate of the Engineer-in-charge subject to the decision of the Executive Engineer on appeal shall be final and the Contractor shall be bound to pay the amount of the assessed compensation on demand, failing which the same will be recovered from the Contractor as damage in the manner prescribed in Clause 1 or deducted by the Engineer-in-charge from any sums that may be due or become due from Council to Contractor under this contract or otherwise.

Liability of Contractor for any damage done in or outside work area.

The Contractor shall bear the expenses of defending any action or other legal proceedings that may be brought by any person for injury sustained by him owing to neglect of precautions to prevent the spread of fire and he shall pay any damages and cost that may be awarded by the court in consequence.

Clause 24 : The employment of female laborers on works in neighborhood of soldiers barracks should be avoided as far as possible.

Employment of female labor

Clause 25 : No work shall be done on Sunday without the sanction in writing of the Engineer-in-charge.

Work on Sunday.

Clause 26 : 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 proceedings to get himself adjudicated and insolvent or make any composition with his creditors or attempt so to do so or if bribe, gratuity, gift, loan, perquisite, reward of advantage, pecuniary or otherwise shall either directly or indirectly be given, promised or offered by the Contractor or any of his servants or agents to any public officer or person in the employment of Council in any relating to his office or employment or if any such officer or person shall become in any way directly or indirectly interested in the

Work not to be sublet.. Contract may be rescinded and security deposit forfeited for subletting it without approval or for bribing a Public Officer or if Contractor becomes

contract, the Engineer-in-charge may thereupon by notice in writing rescind the contract, and the security deposit of the *insolvent.*

Contractor shall thereupon stand forfeited and be absolutely at the disposal of Council and the same consequences 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 thereof actually performed under the contract.

Clause 27 : All sums payable by a Contractor by way of compensation under any of these conditions shall be considered as a reasonable compensation to be applied to the use of Council without reference to the actual loss or damage sustained, and whether any damage has or has not been sustained *Sum payable by way of compensation to be considered as reasonable without reference to actual loss*

Clause 28 : In the case of tender by partners, any change in the constitution of a firm shall be forthwith notified by the Contractor to the Engineer-in-charge for his information. *Changes in the constitution of the firm to be notified.*

Clause 29 : All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Executive Engineer, 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 out. *Directions and control of the Engineer in charge*

Clause 30: If the contractor is not satisfied with the order passed by the Executive Engineer as aforesaid, the contractor may, within thirty days of receipt by him of any such order, appeal against it to the Secretary UDD-2 who if convinced that prima facie, the contractors, claim rejected by Executive Engineer is not frivolous and that there is some substance in the claim of the contractor as would merit a detailed examination in the claim of the contractor and decision by Secretary Urban development department for suitable decision. The decision of the Secretary UDD-2 shall be final and binding on the contractor and the Engineer-in-charge.

Clause 30.1 : Except where otherwise specified in the contract and subject to the powers delegated to him by Council under the code, rules then in force, the decision of the Executive Engineer for the time being shall be final, conclusive and binding on all parties of the contract, upon all questions relating to the meaning of the specifications, designs, drawings and instruction hereinbefore mentioned and as to the quality of workmanship, or materials used on the work or as to any other question, claim, right, matter or thing whatsoever, in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders, or these *Directions and control of the Engineer in charge .*

conditions, or otherwise concerning the works, or the execution, or failure to execute the same, whether arising during the progress of work, or after the completion or abandonment thereof.

Clause 30.2 : The Contractor may within thirty days of receipt by him of any order passed by the Executive Engineer as aforesaid appeal against it to the Secretary UDD2 with the contract work or project provided that.

a) The accepted value of the contract exceeds ` 10 lakhs (Ten lakhs)

b) Amount of claim is not less than ` 1.00 lakh (One Lakh).

Clause 31 : Deleted

Clause 32 : When the estimate on which a tender is made includes lump sums in respect of parts of the work, the Contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for each item, or if the part of the work in question is not in the opinion of the engineer-in-charge capable of measurement, the Engineer-in-charge may at his discretion pay the lump sum amount entered in the estimate and the certificate in writing of the Engineer-in-charge shall be final and conclusive against the Contractor with regard to any sum or sums payable to him under the provisions of this clause.

Lump sums in estimates

Clause 33 : In the case of any class of work for which there is no such specification as is mentioned in Rule I of Form B-1, such work shall be carried out in accordance with the Divisional specifications and in the event of there being no Divisional specifications, the work shall be carried out in all respect in accordance with all instructions and requirements of the Engineer-in-charge.

Action where no specifications

Clause 34 : The expression 'Work' or 'Works' where used in these conditions, shall unless there be something in the subject or context repugnant to such construction, be constructed to mean the work or works contracted to be executed under or in virtue of the contract, whether temporary or permanent and whether original, altered, substituted or additional.

Definition of work

Clause 35 : The percentage referred to in the tender shall be deducted from/ added to the gross amount of the bill before deducting the value of any stock issued.

Contractor's percentage whether applied to net or gross amount of bill.

Clause 36 : All quarry fees, royalties, octroi duties and ground rent for stacking materials, if any should be paid by Contractor, which will not be entitled to a refund of such charges from the Council. (Please see special clause for royalty).

Quarry fees and royalties

Clause 37 : The Contractor shall be responsible for and shall pay any compensation to his workmen payable under the Workmen's Compensation Act., 1923 (VIII of 1923), (hereinafter called the said Act) for injuries caused to the workmen. If such compensation is payable/ paid by the Council as principal under sub-section (1) of Section 12 of the said Act on behalf of the Contractor, it shall be recoverable by the Council from the Contractor under the sub-section (2) of the said section. Such compensation shall be recovered in the manner laid down in Clause 1 above.

*Compensation under
Workmen's
Compensation Act.*

Clause 37 A : The Contractor shall be responsible for and shall pay the expenses of providing medical aid to any workman who may suffer a bodily injury as a result of an accident. If such expenses are incurred by Council, the same shall be recoverable from the Contractor forthwith and be deducted without prejudice to any other remedy of the Council from any amount due or that may become due to the Contractor.

Clause 37 B : The Contractor shall provide all necessary personal safety equipment and first aid apparatus available for the use of the persons employed on the site and shall maintain the same in condition suitable for immediate use at any time and shall comply with the following regulations in connection herewith.

- a) The workers shall be required to use the equipments so provided by the Contractor and the Contractor shall take adequate steps to ensure proper use of the equipment by those concerned
- b) When work is carried on in proximity to any place where there is a risk of drowning, all necessary equipment shall be provided and kept ready for use and all necessary steps shall be taken for the prompt rescue of any person in danger.
- c) Adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work.

Clause 37 C : The Contractor shall duly comply with the provisions of 'The Apprentices Act, 1961' (III of 1961), the rules made thereunder and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subjected to all the liabilities and penalties provided by said Act and said Rules.

Clause 38 : I) Quantities in respect of the several items shown in the tender are approximate and no revision in the tendered rate shall be permitted in respect of any of the items so long as subject to any special provision contained in the specifications prescribing a different percentage of permissible variation in the quantity of the item does not exceed the tender quantity to more than 25% and so long as the value of the excess quantity beyond this limit at the rate of the item specified in the tender, is not more than ` 5,000/- (Whichever is more)

*Quantities put to
tender are
approximate.
Excess quantity
beyond quantity put to
tender will be
governed as per Cl.38*

ii) the Contractor shall, if ordered in writing by the Engineer so to do, also

Contractor

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Executive engineer

carry out any quantities in excess of the limit mentioned above in sub –clause (1) hereof on the same conditions and in accordance with the specifications in the tender and the rates

- a) derived from the rates entered in Current Schedule of Rates and in the absence of such rates
- b) At the rates prevailing in the market. The said rates being increased or decreased as the case may be by the percentage which the total tendered amount upon the schedule of rates applicable to the year in which the tender were accepted

For the purpose of operation of this clause ,this cost shall be worked out from the DSR prevailing at the time of inviting of tender. The cost of Clause 38 is Rs /- (Rs.96,07,824/- **only**) as per MJP (M) 2023-24 & PWD DSR 2022-23.

iii) This clause is not applicable to extra items.

iv) Claims arising out of reduction in the tendered quantity of any item beyond 25% will be governed by the provision of Clause 15 only when the amount of such reduction beyond 25% at the rate of the item specified in the tender is more than ` 5,000/- This reduction is exclusively the reduction in Clause Nos. 14 & 15 of the work and site conditions.

v) There is no change in the rate if the excess is less than or equal to 25%. Also there is no change in the rate if the quantity of work done is more than 25% of the tendered quantity, but the value of the excess work at the tendered rates does not exceed ` 5,000/-

vi) The quantities to be paid at the tendered rates shall include,

- a) tendered quantity plus 25% excess of tendered quantity or the excess quantity of the value of ` 5,000/- at tendered rate whichever is more

Clause 38 A : The Executive Engineer of Council shall see that claim towards excess quantity under this clause 38 is submitted to higher authority immediately on its cropping up. The Executive Engineer of Council while making such payment shall see that the total expenditure shall not exceed sanctioned cost of the scheme. If the proposal of Clause 38 is submitted to competent authority for payment then interim 50% payment will be released as under

Interim payment for excess quantity

- a) At accepted tender rate or current schedule rate whichever is less subject to condition that total expenditure on the tender shall not exceed sanctioned cost of the scheme

Clause 38-B : If the rate entered in to schedule B for the work of excavation of pipeline is a combined rate for different strata then the rate entered in Schedule-B will be applicable for quantity 25% in addition to the quantity mentioned in schedule-B of all items of excavation for pipe line trenches and for excess over 25% of Schedule-B quantity ,the rate payable to the contractor shall be worked out from the CSR by considering following percentage of excavation in different strata irrespective of actual strata met at the site for the increased quantity.

Payment for average rate of excavation

- 1) Excavation in all types of soils, Sand, gravel and soft murum with lead up to 50 meter and lift as involved. Including dewatering, shoring and strutting etc. excluding refilling etc. 29.23% of average rate for lift 0.00 to 1.50 meter
- 2) Excavation in hard murum and boulders with lead up to 50 m and lead and lift as involved including dewatering, shoring and strutting etc. excluding refilling etc. 29.98 % of average rate for lift _0 to 1.50 meter
- 3) Excavation in soft rock and old cement and lime masonry with lead upto 50 m and lift as involved, including dewatering, shoring and strutting, excluding refilling etc. 24.66% of average rate for lift 0 to 1.50 meter.
- 4) Excavation in hard rock and concrete road by chiseling wedging linedrilling by mechanical means or by all means other than blasting with lead upto 50m and lift as involved, including dewatering, shoring and strutting etc. excluding refilling 15.43% of average rate for lift 0.00 to 1.50 m.

(Note-Sheet is attached separately)

Clause 39 : The Contractor shall employ any famine, convict or other labour of a particular kind or class if ordered in writing to do so by the Engineer-in-charge.

Employment of famine labour, etc

Clause 40: No compensation shall be allowed for any delay caused in the starting of the work on account of acquisition of land or, in the case of clearance works, on account of any delay in accordance to sanction of estimates.

Claim for compensation for delay in starting the work.

Clause 41: No compensation shall be allowed for any delays in the execution of the work on account of water standing in borrow pits or compartments. The rates are inclusive for hard or cracked soil, execution in mud, sub-soil, water standing in borrow pits and no claim for an extra rate shall be entertained unless otherwise expressly specified.

Claims for compensation for delay in execution of the work.

Clause 42 : The Contractor shall not enter upon or commence any portion of work except with written authority and instructions of the Engineer-in-charge of his subordinate in charge of the work. Failing such authority the Contractor shall have no claim to ask for measurements of or payment for work.

Entering upon or commencing any portion of work

Clause 43 :

- i) No Contractor shall employ any person who is under the age of 18 years.
- ii) No Contractor shall employ donkeys or other animals with breaching of string or thin rope. The breaching must be at least three inches wide and should be of tape (Nawar).
- iii) No animal suffering from sores, lameness or emaciation or which is immature shall be employed on the work.

Contractor

No of correction

Executive engineer

iv) The Engineer-in-charge or his agent is authorized to remove from the work, any person or animal found working which does not satisfy these conditions and no responsibility shall be accepted by the Council for any delay caused in the completion of the work by such removal.

Minimum age of persons employed, the employment of donkeys and other animals and the payment of fair wages.

v) The Contractor shall pay fair and reasonable wages to the workmen employed by him in the contract undertaken by him, In the event of the dispute arising between the Contractor and his workmen on the grounds that the wages paid are not fair and reasonable, the dispute shall be referred without delay to the Engineer in charge who shall decide the same. The decision of the Engineer in charge shall be conclusive and binding on the Contractor but such decision shall not in any way affect the conditions in the contract regarding the payment to be made by the Council at the sanctioned tender rates.

vi) Contractor shall provide drinking water facilities to the workers. Similar amenities shall be provided to the workers engaged on large work in urban areas

vii) Contractor to take precautions against accidents which taken place on account of labour using loose garments while working near machinery.

Clause 44: Payment to Contractors shall be made by cheque drawn on Executive Engineer's account provided the amount exceeds ` 1000/- Amounts not exceeding 1000/- will be paid in cash.

Method of payment

Clause 45: Any Contractor who does not accept these conditions shall not be allowed to tender for work.

Acceptance of conditions compulsory before tendering for work.

Clause 46 : If Government declares a site of scarcity or famine to exist in any village situated within 16 Kms of the work, the Contractor shall employ upon such parts of the work, as are suitable for unskilled labour, any person certified to him by the Engineer in charge Council, or by any person to whom the Council may have delegated this duty in writing to be in need on relief and shall be bound to pay to such person wages not below the minimum wages which Government may have fixed in this behalf. Any disputes which may arise in connection with the implementation of this clause shall be decided by the Engineer in charge whose decision shall be final and binding on the Contractor.

Employment of scarcity labour

Clause 47: The price quoted by the Contractor shall not in any case

Price not to exceed

exceed the control price, if any, fixed by Government or reasonable price which is permissible for him to charge a private purchaser for the same class and description, the control price or the price permissible under the provisions of Hoarding and Profiteering Preventing Ordinance, 1948 as amended from time to time. If the price quoted exceeds the controlled price or the price permissible under Hoarding and Profiteering Prevention Ordinance, the Contractor will specifically mention this fact in his tender along with the reasons for quoting such higher prices. The purchaser at his discretion will in such case exercise the right of revising the price at any stage so as to conform to the controlled price as permissible under the Hoarding and Profiteering Prevention Ordinance. This discretion will be exercised without prejudice to any other action that may be taken against the Contractor.

controlled price fixed by Govt.

Clause 47 A : The tender rates are inclusive of all taxes, rates, cess and are also inclusive of the livable tax in respect of sale by transfer of property in goods involved in the execution of work contract under the provision of Rule 58 of Maharashtra Value added Tax ACT 2005 for the purpose of levy of tax

The rates to be quoted by the contractor must be inclusive of all taxes including GST. No extra payment on this account will be made to the contractor

Rate inclusive of all taxes

Clause 48 : In case of materials that may remain surplus with the Contractor from those issued, the date of ascertainment of the materials being surplus will be taken as the date of sale for the purpose of Sales Tax and the Sales Tax will be recovered on such date.

Sale tax on surplus material

Clause 50 : The Contractor shall employ at least 80 percent of the total number of unskilled labour to be employed by him on the said work from out of the persons ordinarily residing in the district in which site of the said work is located. Provided, however, that if required number of unskilled labour from that district is not available, the Contractor shall in the first instance employ such number of persons as is available and thereafter may with the previous permission in writing of the Engineer-in-charge of the said work obtain the rest of the requirement of unskilled labour from outside of district.

Employment of local labour

Clause 51 : The Contractor shall pay the labourers – skilled and unskilled according to the wages prescribed by Minimum Wages Act applicable to the area in which the work of the Contractor is located. The Contractor shall comply with the provision of the Apprentices Act, 1961 and the Rules and Orders issued there under from time to time.. The Contractor shall be liable for any pecuniary liability arising on account of any violation by him of the provisions of the Act. The Contractor shall pay the

Wages to be paid to the skilled and unskilled labours employed by contractor.

labourers – skilled and unskilled- according to wages prescribed by Minimum Wages Act applicable to the area in which the work lies.

Clause 52 : All amounts whatsoever which the Contractor is liable to pay to the Council in connection with the execution of the work including the amount payable in respect of

i) materials and/ or stores supplied/ issued hereunder by the Council to the Contractor,

ii) hire charges in respect of heavy plant, machinery and equipment given on hire by the Council to the Contractor for execution by him of the work and/ or for which advances have been given by the Council to the Contractor shall be deemed to be arrears of the land revenue and Council without prejudice to any other rights and remedies of the Council recover the same from the contractor as a arrears of land revenue

Clause 53 : The Contractor shall duly comply with all the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 (37 of 1970) and the Maharashtra Contract Labour (Regulation and Abolition) Rules 1971 as amended from time to time and all other relevant statutes and statutory provisions concerning payment of wages particularly to workmen employed by the contractor and working on the site of the work. In particular and contractor shall pay wages to each worker employed by him on the site of the work at the rates prescribed under the Maharashtra Contract Labour (Regulation and Abolition) Rules 1971. If the contractor fails or neglect to pay wages at the said rates or makes short payment and the Council makes such payment of wages in full or part thereof less paid by the contractor, as the case may be, the amount so paid by the Council to such workers shall be deemed to be debt payable by the Contractor and the Council shall be entitled to recover the same as such from the contractor or deduct same from the amount payable by the Council to the contractor hereunder or from any other amounts payable to him by the Council.

Clause 54 : Where the work are required to work near Machine and are liable to accident they should not be allowed to wear loose clothes like Dhoti, Jhabba etc.

Clause 55 : The Contractor shall comply with the provisions of the Apprentices Act, 1961 and the Rules and Orders issued there under from time to time

Clause 56 : In view of the difficult position regarding the availability of the Foreign exchange, no foreign exchange, will be released by the Department for the purchase of the Plant and Machinery required for the

execution for the work concerned work.

Clause 58 (A) : Conditions of Malaria Eradication.

Anti-Malaria and other health measures.

- a) The anti malaria and the health measures shall be as directed by the Joint Director (Malaria and Filarial) of Health Service, Pune.
- b) Contractor shall see that most autogenic conditions are not created so as to keep vector population to minimum level
- c) Contractor shall carry out anti malaria measures in the area as per guidelines prescribed under National Malaria Eradication Programme and as directed by the Joint Director (M & F) of Health Services, Pune
- d) In case of default in carrying out prescribed anti malaria measures resulting in increase in malaria incidence contractor shall be liable to pay to Government the amount spent by Government on anti malaria measures to control the situation in addition to fine.
- e) Relations with Public Authorities.
The contractor shall make sufficient arrangements for draining away the sullage water as well as water coming from the bathing and washing places and shall dispose of this water in such a way as not to cause, any nuisance. He shall also keep the premises clean by employing sufficient number of sweepers.

The contractor shall comply with all rules, regulations, bye-laws and directions given from time to time by any local or public authority in connection with this work and shall pay fees or charge which are leviable on him without any extra cost to Government

Clause 58 (B) : The successful contractor will have to enter into agreement in form specified by Council on a stamp of required amount as per rules in force. The stamp charges shall be borne by the contractor

Clause 59 :.Deleted

Clause 60 :The contractor shall provide and maintain barricades, guards, guard rails, temporary bridges and walkways, watchmen, headlights and danger signals illuminated from sunset to sunrise and all other necessary appliances and safeguards to protect the work, life, property, the public excavations, equipment and materials. Barricades shall be substantial construction and shall be painted such as to increase their visibility at night. For any accident arising out of the neglect of above instructions, the contractor shall be bound to bear the expenses of defence of every suit, action or other legal proceedings, at law, that may

Insurance

be brought by any person for injury sustained owing to neglect of the above precautions and to pay all damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the contractor be paid in compromising any claim by any such person.

Clause 61 : The contractor shall take out necessary insurance policy /policies so as to provide adequate insurance cover for execution of the awarded work from the Director of insurance Maharashtra State Mumbai. However if contractor desire to effect insurance with local office of any insurance company same should be under the Co-insurance-come- servicing arrangement approved by the director of insurance if the policy taken out by the contractor is not Co – Insurance basis (GIF- 60% and insurance company -40%) the same will not be accepted and the amount of the premium calculated by director of insurance will be recovered directly from the amount payable to the contractors for the executed contract work.

- 1 Loss of or damage to the Civil and Mechanical and Electrical equipments supplied/installed including the materials such as pipes, valves, specials etc. brought on site

Loss of or damage to contractor's equipments including his vehicles.

Loss of or damage to property (except the works, Plant material and Equipment) in connection with the contractor, and :

Personal injury or death due to vehicles of the contractor and or due to any accident that may arise at or around the site to the Contractor personnel or to the Council staff or to any other person not connected with Council

- 2 Policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the date of actual starting of work. All such insurance shall provide for compensation to be payable in the types of proportions of currencies required to rectify the loss or damage incurred
- 3 If the contractor did not produce any of the policies and certificates required the Engineer may effect the Insurance for which the contractor should have produced the policies certificates and recover the premium it has paid from payment otherwise due to the contractor or, if no payments due to payment of the premiums shall be of debt due.
- 4 Alternations to the terms of an insurance shall not be made without the approval of the Engineer
- 5 The minimum insurance cover for loss damages to physical property, injury and death shall be 10% of the contract cost per occurrence with number of occurrences as 3(Three). After each occurrence the Contractor No of correction

Executive engineer

contractor shall pay additional premium necessary so as to keep the insurance police valid always till the defect liability period is over

- 6 No payment will be released to the contractor until the insurance coverage with the Govt. Insurance fund, Maharashtra State is provided and unless the proof of insurance coverage is produced by the Contractor to the Engineer-in-Charge

Clause 62: During execution of work excavation is required to be carried out for various sub-works for which royalty is required is to be paid by the contractor.

During execution of work and till completion if point of royalty is raised by collector office it will be sole responsibility of the contractor to pay royalty charges/compensation if any to concern. Until the certificate from the collector office regarding royalty charges is not submitted by the contractor, final bill and security deposit for such work will not be payable to the contractor.

Maharashtra Jeevan Pradhikaran Division Jalgaon

Jal Jeevan Mission

Name of Work : Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule District.

Contractor

No of correction

Cheif Officer

SCHEDULE-A

Contractor

No of correction

Cheif Officer

MAHARSHTRA JEEVAN PRADHIKARAN DIVISION JALGAON

UNDER JAL JEEVAN MISSION

**Simple Automation & Solar Work for various water supply schemes under JJM in Jalgaon & Dhule
District.**

MATERIAL TO BE ISSUED UNDER SCHEDULE 'A'

Statement showing the material to be supplied from the store for the work contracted to be executed and preliminary and ancillary works and the rate at which they are to be charged.

<i>Sr. No.</i>	<i>Particulars of Material</i>	<i>Approx. Quantity & Unit</i>	<i>Rate at which the material will be charged for</i>	<i>Place of delivery</i>
1	2	3	4	5
		NIL		

Contractor

No of correction

Cheif Officer

SCHEDULE-B

Name Of Work:- Simple Automation & Solar Work for various water supply scheme under JJM in Jalgaon & Dhule District.

<u>SW. No.</u>	<u>Name of Scheme</u>	<u>Amount</u>
1	Bahaderpur W.S.S. Tal.- Parola & Dist.-Jalgaon Solar Power plant at Jackwell & WTP premises	1014534.00
2	Kandari W.S.S. Tal.- Bhusawal & Dist.-Jalgaon Web based Energy Monitoring and WQ Monitoring	1926184.00
3	Kandari W.S.S. Tal.- Bhusawal & Dist.-Jalgaon Solar Power plant at WTP premises	1675232.00
4	Dhanora W.S.S. Tal.- Amalner Dist.-Jalgaon Web based Energy Monitoring and WQ Monitoring	1171590.00
5	Dhanora W.S.S. Tal.- Amalner Dist.-Jalgaon Solar Power Plant at Jackwell & WTP premises	3663504.00
6	Samode Ghodyamal W.S.S. Tal. Sakhari Dist. Dhule GSM /GPRS base pump operating system Monitoring	156780.00
	Total Rs.	9607824.00

Name of Scheme:- Bahaderpur water supply scheme Tal.- Parola Dist.-Jalgaon
Sub Work No. 01:- Solar Power plant

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	Item No. 1:Solar Power Plant at Jackwell				
15	Supplying, installing, testing and commissioning of on grid solar power pack with GI mounting structure and inter connecting wires / cables without battery bank SPV modules and solar power conditioning unit of required capacity complete, with 5 years on site performance warrantee. Specification no. ESD-RTONG Note:Rates are as per benchmark cost of Ministry of New and Renewable Energy (MNRE), inclusive of total system cost including PV solar module , inverter, balance of systems including cables, switces/ circuit breakers/connectors/ junction boxes, mounting structure, earthing, lightning arrestors, cost of meter(if any other than net meter), local connectivity cost, cost of civil works, foundation etc and it's installation, commissioning, transportation, insurance, capital cost of online monitoring, comprehensive maintenance charges for five years, applicable fees and taxes etc..	38236.00	Rupees thirty-eight thousand two hundred thirty-six and paise nil only	kWp	573540.00
	Item No. 2 : Net Meter				
1	Supplying and erecting AC three phase LT CT multifunction net meter vDLMS compliance of accuracy class 0.5, 3 x 240V, 50Hz, with backlit LCD display, optical port & RS 232 port (measures import kWh, kVAh, export kWh, vkVAh, Net kWh, kVAh, V, I, kW, 6 months history of energy, load survey, TOD, tamper detection & logging, power ON/OFF events, instantaneous parameters of rating 1/5A with display in absence of power) with wiring connections and mounting hardware on provided panels complete with calibration certificate from manufacturer.	15542.10	Rupees fifteen thousand five hundred forty-two and paise ten only	Nos	15542.00
	Item No. 3:Solar Power Plant at WTP				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
10	Supplying, installing, testing and commissioning of on grid solar power pack with GI mounting structure and inter connecting wires / cables without battery bank SPV modules and solar power conditioning unit of required capacity complete, with 5 years on site performance warrantee. Specification no. ESD-RTONG Note: Rates are as per benchmark cost of Ministry of New and Renewable Energy (MNRE), inclusive of total system cost including PV solar module ,inverter,balance of systems including cables,switches/circuit breakers/connectors/junction boxes,mounting structure,earthing,lightning arrestors,cost of meter(if any other than net meter), local connectivity cost, cost of civil works, foundation etc and it's installation, commissioning, transportation, insurance, capital cost of online monitoring, comprehensive maintenance charges for five years, applicable fees and taxes etc..	40991.00	Rupees forty thousand nine hundred ninety-one and paise nil only	kWp	409910.00
	Item No. 4 : Net Meter				
1	Supplying and erecting AC three phase LT CT multifunction net meter vDLMS compliance of accuracy class 0.5, 3 x 240V, 50Hz, with backlit LCD display, optical port & RS 232 port (measures import kWh, kVAh, export kWh, vkVAh, Net kWh, kVAh, V, I, kW, 6 months history of energy, load survey, TOD, tamper detection & logging, power ON/OFF events, instantaneous parameters of rating 1/5A with display in absence of power) with wiring connections and mounting hardware on provided panels complete with calibration certificate from manufacturer.	15542.10	Rupees fifteen thousand five hundred forty-two and paise ten only	Nos	15542.00
		Total of Sub Work No. 01		Rs.	1014534.00

Name of Scheme:- Kandari Water Supply Scheme, Tal. Bhusawal Dist Jalgaon

Sub Work No. 02: Web based Energy Monitoring and WQ Monitoring

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
RW Level and Pump Monitoring					
	Item No. 1: GSM /GPRS base pump operating system (specifications as below) (one for each pump)				
4	Supplying , Installing and Commissioning of SMS based ON / OFF operation of pumps at remote locations with test & trial including one year guaranty & two year comprehensive maintenance including SIM card & SMS charges. Wireless Motor Controller is suitable for all range of electrical motors and starters and pump sets. It shall protect pump set from dry run. Controller shall have inbuilt battery and charges automatically. Controller shall be controlled through SMS, Call, IVRS or Smart Phone application (All controlling modes are must). It shall have following features as standard- a. Auto Mode operation – Pump shall be operated with time inputs & limits. Pump shall be also programmed for the specific time pumping. b. Feedback - Shall produce feedback of Voltage, Current & power factor parameters. c. Cyclic timer – For daily operation d. Dry Run Protection e. Overload Protection. f. Phase fail – Phase imbalance / Low Voltage. g. It shall have RS 485 port for optional operations. h. High gain antenna for healthy reception of the signals. i. High durability PC-ABS-FR enclosure. j. Additional sensor interface. k. Shall have Pump house lamp control through remote signal.	50300.00	Rupees fifty thousand three hundred and paise nil only	No	201200.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	Item No. 2 : Pressure Transmitter				
2	Designing, Supplying, Installing, commissioning & testing of pressure transmitter CE markd with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output 4-20 mA Power supply - 24V DC ext. Display - 4" LED Accuracy - +/- 0.1 % of full scale or better Enclosure- IP 68	36774.00		No	73548.00
	Item No. 3: Ultrasonic Level Transmitter				
1	Designing, Supplying, Installing, commissioning & testing of Ultrasonic Raddar type level transmitter CE marked with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output-4-20 mA Power supply - 24V DC ext. Display - 4" LED Range-0-30m Accuracy - +/- 0.25% of Full Scale or better Enclosure- IP 68	69207.00	Rupees sixty-nine thousand two hundred seven and paise nil only	No	69207.00
	Item No. 4 : Power Analyser for Raw Water Pumping Station				
1	Designing, Supplying, Installing, commissioning & testing of Power Analyser interfacing to PLC Panel with modbus communicatuion port , as per IEC 62053 and in the prescribed format including mounting arrangement.	33265.00	Rupees thirty-three thousand two hundred sixty-five and paise nil only	Nos	33265.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	Item No. 5 : PLC Panel & web based monitoring system for RW pumps & Other instruments				
1	<p>Design, manufacture, supply, installation, testing and commissioning of indoor type PLC / Microcontroller panel of size approx. 800 mm X 700 mm X 800mm (LBH) , fabricated out of min. 2 mm thick CRCA sheet powder coated to Siemens gray color.</p> <p>The Panel shall be provided with reputed make PLC/ Microcontroller with following accessories as well as input output configuration. The PLC shall be programmed with IEC 61131 standards for control, web based monitoring and communication of equipments & instruments at RW Pumps</p> <p>PLC shall have Ethernet port & protocol for Modbus TCP communication with following IO</p> <p>DI –16 num DO – 16 num AI –4 num AO – 2 num.</p>	84202.00	Rupees eighty-four thousand two hundred two and paise nil only	No	84202.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	<p>The panel shall include all the accessories (not limited to following) to achieve purpose of smooth & trouble free operation at Raw Water functionality.</p> <p>Pump On/Off Indicator-1 No</p> <p>Digital Flow Indicator-1 num</p> <p>Digital Pressure Indicator-1 num</p> <p>Digital Power Indicator – 1 num</p> <p>Led Level Indicator – 5 levels</p> <p>MCB 4A DP – 4 num</p> <p>24 VDC Power Supply 10A – 1 num</p> <p>Push Buttons – 4 num</p> <p>Selector Switch - 1 num</p> <p>Control Relay –2 num</p> <p>Electronic Hooter – 1 num</p> <p>Control Transformer – 1 num</p> <p>Emergency PB – 1 num</p> <p>Panel Cooling Fan – 1 num</p> <p>Panel Light with Door Switch – 1 num Wiring +</p> <p>TB etc – 1 lot</p> <p>Hardware – 1 lot</p> <p>& Necessary web based Software, Web based system Controller, GPRS Modem, including Web server software subscription charges and annual sim card subscription charges etc complete.</p>				
PW and On line water quality monitoring system at WTP 1 & WTP 2					
	Item No.6: Ultrasonic Level Transmitter				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
2	Designing, Supplying, Installing, commissioning & testing of Ultrasonic Raddar type level transmitter CE marked with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output-4-20 mA Power supply - 24V DC ext. Display - 4" LED Range-0- 5m Accuracy - +/- 0.25% of Full Scale or better Enclosure- IP 68	52530.00	Rupees fifty-two thousand five hundred thirty and paise nil only	No	105060.00
	Item No.7:Pressure transmitter				
3	Designing, Supplying, Installing, commissioning & testing of pressure transmitter CE markd with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output 4-20 mA Power supply - 24V DC ext. Display - 4" LED Accuracy - +/- 0.1 % of full scale or better Enclosure- IP 68	36774.00	Rupees thirty-six thousand seven hundred seventy-four and paise nil only	No	110322.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	It. No 8 :-Residual Chlorine meter:				
2	Design, Supply, Installation,Testing of Residual chlorine analyser / meter must have automatic sensor cleaning facility at pure water sump and Interfacing with PLC panel. Residual Chlorine meter shall comprises of 3 components i.e. sensors,flow through assembly and transmitter with indicator and gives 2 outputs one to Local display & other to PLC including Mounting arrangement. Overall Range : 0 -5 mg/l (ppm) Accuracy : 2% of full scale Supply Voltage : 230 V ac Output : 4 20 mA Membrane free sensor of 2 gold plated electrodes for long term stability and reference electrode (ag/Agcl) must be provided to avoid maintenance. IP 65 Nema 4 housing protection class required.	274320.00	Rupees two lakhs seventy-four thousand three hundred twenty and paise nil only	No	548640.00
	Item No. 9 : Power Analyser for WTP				
2	Designing, Supplying, Installing, commissioning & testing of Power Analyser interfacing to PLC Panel with modbus communicatuion port , as per IEC 62053 and in the prescribed format including mounting	33265.00	Rupees thirty-three thousand two hundred sixty-five and paise nil only	Nos	66530.00
	Item No. 10 : PLC Panel & web based monitoring system for PW Pumps , WQ Monitoring & other instruments.				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
2	<p>Design, manufacture, supply, installation, testing and commissioning of indoor type PLC / Microcontroller panel of size approx. 800 mm X 700 mm X 800mm (LBH) , fabricated out of min. 2 mm thick CRCA sheet powder coated to Siemens gray color.</p> <p>The Panel shall be provided with reputed make PLC /Microcontroller with following accessories as well as input output configuration. The PLC shall be programmed with IEC 61131 standards for control, web based monitoring and communication of equipments & instruments at RW Pumps</p> <p>PLC shall have Ethernet port & protocol for Modbus TCP communication with following IO</p> <p>DI –16 num DO – 16 num AI –4 num AO – 2 num.</p>	84202.00	Rupees eighty-four thousand two hundred two and paise nil only	No	168404.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	<p>The panel shall include all the accessories (not limited to following) to achieve purpose of smooth & trouble free operation at Raw Water functionality.</p> <p>Pump On/Off Indicator-1 No</p> <p>Digital Flow Indicator-1 num</p> <p>Digital Pressure Indicator-1 num</p> <p>Digital Power Indicator – 1 num</p> <p>Led Level Indicator – 5 levels</p> <p>MCB 4A DP – 4 num</p> <p>24 VDC Power Supply 10A – 1 num</p> <p>Push Buttons – 4 num</p> <p>Selector Switch - 1 num</p> <p>Control Relay –2 num</p> <p>Electronic Hooter – 1 num</p> <p>Control Transformer – 1 num</p> <p>Emergency PB – 1 num</p> <p>Panel Cooling Fan – 1 num</p> <p>Panel Light with Door Switch – 1 num Wiring + TB etc – 1 lot</p> <p>Hardware – 1 lot</p> <p>& Necessary web based Software, Web based system Controller, GPRS Modem, including Web server software subscription charges and annual sim card subscription charges etc complete.</p>				
	Item No. 11: Annual Maintenance Charges				
	Providing AMC for complete monitoring system along with GPRS and necessary Web service providers charges with calibration on site and on web etc.complete for 1 year free guarantee and 3 years comprehensive maintenance				
1	First year comprehensive maintenance	0.00	Rupees nil and paise nil only	Job	0.00
1	2nd year comprehensive maintenance	43811.00	Rupees forty-three thousand eight hundred eleven and paise nil only	Job	43811.00
1	3rd year comprehensive maintenance	73019.00	Rupees seventy-three thousand nineteen and paise nil only	Job	73019.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
1	4th year comprehensive maintenance	102226.00	Rupees one lakhs two thousand two hundred twenty-six and paise nil only	Job	102226.00
	Item No. 12 : Laptop or Computer station with programming software (web based)				
1.00	Providing, installing, testing and commissioning of Laptop or computer station with programming software (web based) run time version along with required cables and communication devices for PLC and programming (HTML /PHP based) PC configuration shall not be less than Intel i5 12th Gen CPU, 16 GB Ram, 128 GB SDD, 500 GB HDD, Rs232 & Rs485 port, 2 RJ45 ports, Keyboard, Optical Mouse, 32 inch color TFT Monitor, Latest Windows Pro OS, Microsoft Office & Antivirus software for 3 years license.	75450.00	Rupees seventy-five thousand four hundred fifty and paise nil only	No	75450.00
	Item No.13 :- Cables				
300	a) Supplying and erecting armoured cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner.-4 x 1.5 sq mm Copper conductor PVC insulated, armoured cable.	155.00	Rupees one hundred fifty-five and paise nil only	Mtr	46500.00
300	b) Supplying and erecting armoured cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner.-4 x 2.5 sq mm Copper conductor PVC insulated, armoured cable.	216.00	Rupees two hundred sixteen and paise nil only	Mtr	64800.00
300	c) Supplying, Installing, commissioning & testing with Terminating & Interfacing of 2 Pair x 1 sq.mm as per IS 694 copper Shielded twisted, multistranded armoured cable on wall in GI tray or on ground.	200.00	Rupees two hundred and paise nil only	Mtr	60000.00
		Total of Sub Work No. 02		Rs.	1926184.00

Name of Scheme:- Kandari Water Supply Scheme, Tal. Bhusawal Dist Jalgaon

Sub Work No. 03 : Solar Power plant at WTP premises

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	Item No. 1:Solar Power Plant at 1.5 MLD WTP				
18	<p>Supplying, installing, testing and commissioning of on grid solar power pack with GI mounting structure and inter connecting wires / cables without battery bank SPV modules and solar power conditioning unit of required capacity complete, with 5 years on site performance warrantee. Specification no. ESD-RTONG</p> <p>Note:Rates are as per benchmark cost of Ministry of New and Renewable Energy (MNRE), inclusive of total system cost including PV solar module , invertor, balance of systems including cables, switces/ circuit breakers/ connectors/ junction boxes, mounting structure,earthing, lightning arrestors, cost of meter (if any other than net meter), local connectivity cost, cost of civil works, foundation etc and it's installation, commissioning, transportation, insurance, capital cost of online monitoring, comprehensive maintenance charges for five years,applicable fees and taxes etc..</p>	38236.00	Rupees thirty-eight thousand two hundred thirty-six and paise nil only	kWp	688248.00
	Item No. 2 : Net Meter				
1	<p>Supplying and erecting AC three phase LT CT multifunction net metervDLMS compliance of accuracy class 0.5, 3 x 240V, 50Hz, with backlit LCD display, optical port & RS 232 port (measures import kWh, kVAh, export kWh,vkVAh, Net kWh, kVAh, V, I, kW, 6 months history of energy, load survey, TOD, tamper detection & logging, power ON/OFF events, instantaneous parameters ofvrating 1/5A with display in absence of power) with wiring connections and mounting hardware on provided panels complete with calibration certificate from manufacturer.</p>	15542.10	Rupees fifteen thousand five hundred forty-two and paise ten only	Nos	15542.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	Item No. 3:Solar Power Plant at 2.5 MLD WTP				
25	<p>Supplying, installing, testing and commissioning of on grid solar power pack with GI mounting structure and inter connecting wires / cables without battery bank SPV modules and solar power conditioning unit of required capacity complete, with 5 years on site performance warrantee. Specification no. ESD-RTONG</p> <p>Note:Rates are as per benchmark cost of Ministry of New and Renewable Energy (MNRE), inclusive of total system cost including PV solar module ,invertor,balance of systems including cables, switces/circuit breakers/ connectors / junction boxes, mounting structure,earthing, lightning arrestors, cost of meter (if any other than net meter), local connectivity cost, cost of civil works, foundation etc and it's installation, commissioning, transportation, insurance, capital cost of online monitoring, comprehensive maintenance charges for five years,applicable fees and taxes etc..</p>	38236.00	Rupees thirty-eight thousand two hundred thirty-six and paise nil only	kWp	955900.00
	Item No. 4 : Net Meter				
1	<p>Supplying and erecting AC three phase LT CT multifunction net meter vDLMS compliance of accuracy class 0.5, 3 x 240V, 50Hz, with backlit LCD display, optical port & RS 232 port (measures import kWh, kVAh, export kWh,vkVAh, Net kWh, kVAh, V, I, kW, 6 months history of energy, load survey, TOD, tamper detection & logging, power ON/OFF events, instantaneous parameters of vrating 1/5A with display in absence of power) with wiring connections and mounting hardware on provided panels complete with calibration certificate from manufacturer.</p>	15542.10	Rupees fifteen thousand five hundred forty-two and paise ten only	Nos	15542.00
			Total of Sub Work No. 03	Rs.	1675232.00

Name of Scheme:- Dhanora Water Supply Scheme, Tal. Amalner Dist Jalgaon

Sub Work No. 04: Web based Energy Monitoring and WQ Monitoring

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
RW Level and Pump Monitoring					
	Item No. 1: GSM /GPRS base pump operating system (specifications as below) (one for each pump)				
2	Supplying , Installing and Commissioning of SMS based ON / OFF operation of pumps at remote locations with test & trial including one year guaranty & two year comprehensive maintenance including SIM card & SMS charges. Wireless Motor Controller is suitable for all range of electrical motors and starters and pump sets. It shall protect pump set from dry run. Controller shall have inbuilt battery and charges automatically. Controller shall be controlled through SMS, Call, IVRS or Smart Phone application (All controlling modes are must). It shall have following features as standard- a. Auto Mode operation – Pump shall be operated with time inputs & limits. Pump shall be also programmed for the specific time pumping. b. Feedback - Shall produce feedback of Voltage, Current & power factor parameters. c. Cyclic timer – For daily operation d. Dry Run Protection e. Overload Protection. f. Phase fail – Phase imbalance / Low Voltage. g. It shall have RS 485 port for optional operations. h. High gain antenna for healthy reception of the signals. i. High durability PC-ABS-FR enclosure. j. Additional sensor interface. k. Shall have Pump house lamp control through remote signal.	50300.00	Rupees fifty thousand three hundred and paise nil only	No	100600.00
	Item No. 2 : Pressure Transmitter				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
1	Designing, Supplying, Installing, commissioning & testing of pressure transmitter CE markd with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output 4-20 mA Power supply - 24V DC ext. Display - 4" LED Accuracy - +/- 0.1 % of full scale or better Enclosure- IP 68	36774.00	Rupees thirty-six thousand seven hundred seventy-four and paise nil only	No	36774.00
	Item No. 3: Ultrasonic Level Transmitter				
1	Designing, Supplying, Installing, commissioning & testing of Ultrasonic Raddar type level transmitter CE marked with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output-4-20 mA Power supply - 24V DC ext. Display - 4" LED Range-0-30m Accuracy - +/- 0.25% of Full Scale or better Enclosure- IP 68	69207.00	Rupees sixty-nine thousand two hundred seven and paise nil only	No	69207.00
	Item No. 4 : Power Analyser for Raw Water Pumping Station				
1	Designing, Supplying, Installing, commissioning & testing of Power Analyser interfacing to PLC Panel with modbus communicatuion port , as per IEC 62053 and in the prescribed format including mounting arrangement.	33265.00	Rupees thirty-three thousand two hundred sixty-five and paise nil only	Nos	33265.00
	Item No. 5 : PLC Panel & web based monitoring system for RW pumps & Other instruments				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
1	<p>Design, manufacture, supply, installation, testing and commissioning of indoor type PLC / Microcontroller panel of size approx. 800 mm X 700 mm X 800mm (LBH) , fabricated out of min. 2 mm thick CRCA sheet powder coated to Siemens gray color.</p> <p>The Panel shall be provided with reputed make PLC/ Microcontroller with following accessories as well as input output configuration. The PLC shall be programmed with IEC 61131 standards for control, web based monitoring and communication of equipments & instruments at RW Pumps</p> <p>PLC shall have Ethernet port & protocol for Modbus TCP communication with following IO</p> <p>DI –16 num DO – 16 num AI –4 num AO – 2 num.</p>	84202.00	Rupees eighty-four thousand two hundred two and paise nil only	No	84202.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	<p>The panel shall include all the accessories (not limited to following) to achieve purpose of smooth & trouble free operation at Raw Water functionality.</p> <p>Pump On/Off Indicator-1 No</p> <p>Digital Flow Indicator-1 num</p> <p>Digital Pressure Indicator-1 num</p> <p>Digital Power Indicator – 1 num</p> <p>Led Level Indicator – 5 levels</p> <p>MCB 4A DP – 4 num</p> <p>24 VDC Power Supply 10A – 1 num</p> <p>Push Buttons – 4 num</p> <p>Selector Switch - 1 num</p> <p>Control Relay –2 num</p> <p>Electronic Hooter – 1 num</p> <p>Control Transformer – 1 num</p> <p>Emergency PB – 1 num</p> <p>Panel Cooling Fan – 1 num</p> <p>Panel Light with Door Switch – 1 num Wiring + TB etc – 1 lot</p> <p>Hardware – 1 lot</p> <p>& Necessary web based Software, Web based system Controller, GPRS Modem, including Web server software subscription charges and annual sim card subscription charges etc complete.</p>				
PW and On line water quality monitoring system					
	Item No.6: Ultrasonic Level Transmitter				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
1	Designing, Supplying, Installing, commissioning & testing of Ultrasonic Raddar type level transmitter CE marked with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output-4-20 mA Power supply - 24V DC ext. Display - 4" LED Range-0- 5m Accuracy - +/- 0.25% of Full Scale or better Enclosure- IP 68	52530.00	Rupees fifty-two thousand five hundred thirty and paise nil only	No	52530.00
	Item No.7:Pressure transmitter				
3	Designing, Supplying, Installing, commissioning & testing of pressure transmitter CE markd with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement. Output 4-20 mA Power supply - 24V DC ext. Display - 4" LED Accuracy - +/- 0.1 % of full scale or better Enclosure- IP 68	36774.00	Rupees thirty-six thousand seven hundred seventy-four and paise nil only	No	110322.00
	It. No 8 :-Residual Chlorine meter:				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
1	Design, Supply, Installation, Testing of Residual chlorine analyser / meter must have automatic sensor cleaning facility at pure water sump and Interfacing with PLC panel. Residual Chlorine meter shall comprises of 3 components i.e. sensors, flow through assembly and transmitter with indicator and gives 2 outputs one to Local display & other to PLC including Mounting arrangement. Overall Range : 0 -5 mg/l (ppm) Accuracy : 2% of full scale Supply Voltage : 230 V ac Output : 4 20 mA Membrane free sensor of 2 gold plated electrodes for long term stability and reference electrode (ag/Agcl) must be provided to avoid maintenance. IP 65 Nema 4 housing protection class required.	274320.00	Rupees two lakhs seventy-four thousand three hundred twenty and paise nil only	No	274320.00
	Item No. 9 : Power Analyser for WTP				
1	Designing, Supplying, Installing, commissioning & testing of Power Analyser interfacing to PLC Panel with modbus communicatuion port , as per IEC 62053 and in the prescribed	33265.00	Rupees thirty-three thousand two hundred sixty-five and paise nil only	Nos	33265.00
	Item No. 10 : PLC Panel & web based monitoring system for PW Pumps , WQ Monitoring & other instruments.				

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
1	<p>Design, manufacture, supply, installation, testing and commissioning of indoor type PLC / Microcontroller panel of size approx. 800 mm X 700 mm X 800mm (LBH) , fabricated out of min. 2 mm thick CRCA sheet powder coated to Siemens gray color.</p> <p>The Panel shall be provided with reputed make PLC /Microcontroller with following accessories as well as input output configuration. The PLC shall be programmed with IEC 61131 standards for control, web based monitoring and communication of equipments & instruments at RW Pumps</p> <p>PLC shall have Ethernet port & protocol for Modbus TCP communication with following IO</p> <p>DI –16 num DO – 16 num AI –4 num AO – 2 num.</p>	84202.00	Rupees eighty-four thousand two hundred two and paise nil only	No	84202.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	<p>The panel shall include all the accessories (not limited to following) to achieve purpose of smooth & trouble free operation at Raw Water functionality.</p> <p>Pump On/Off Indicator-1 No</p> <p>Digital Flow Indicator-1 num</p> <p>Digital Pressure Indicator-1 num</p> <p>Digital Power Indicator – 1 num</p> <p>Led Level Indicator – 5 levels</p> <p>MCB 4A DP – 4 num</p> <p>24 VDC Power Supply 10A – 1 num</p> <p>Push Buttons – 4 num</p> <p>Selector Switch - 1 num</p> <p>Control Relay –2 num</p> <p>Electronic Hooter – 1 num</p> <p>Control Transformer – 1 num</p> <p>Emergency PB – 1 num</p> <p>Panel Cooling Fan – 1 num</p> <p>Panel Light with Door Switch – 1 num Wiring + TB etc – 1 lot</p> <p>Hardware – 1 lot</p> <p>& Necessary web based Software, Web based system Controller, GPRS Modem, including Web server software subscription charges and annual sim card subscription charges etc complete.</p>				
	MJP MECH SSR 22-23 SA 7.2 P.No.144				
	Item No. 11: Annual Maintenance Charges				
	Providing AMC for complete monitoring system along with GPRS and necessary Web service providers charges with calibration on site and on web etc.complete for 1 year free guarantee and 3 years comprehensive maintenance				
1	First year comprehensive maintenance	0.00	Rupees nil and paise nil only	Job	0.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
1	2nd year comprehensive maintenance	26361.00	Rupees twenty-six thousand three hundred sixty-one and paise nil only	Job	26361.00
1	3rd year comprehensive maintenance	43934.00	Rupees forty-three thousand nine hundred thirty-four and paise nil only	Job	43934.00
1	4th year comprehensive maintenance	61508.00	Rupees sixty-one thousand five hundred eight and paise nil only	Job	61508.00
	Item No. 12 : Laptop or Computer station with programming software (web based)				
1	Providing, installing, testing and commissioning of Laptop or computer station with programming software (web based) run time version along with required cables and communication devices for PLC and programming (HTML /PHP based) PC configuration shall not be less than Intel i5 12th Gen CPU, 16 GB Ram, 128 GB SDD, 500 GB HDD, Rs232 & Rs485 port, 2 RJ45 ports, Keyboard, Optical Mouse, 32 inch color TFT Monitor, Latest Windows Pro OS, Microsoft Office & Antivirus software for 3 years license.	75450.00	Rupees seventy-five thousand four hundred fifty and paise nil only	No	75450.00
	Item No.13 :- Cables				
150	a) Supplying and erecting armoured cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner.-4 x 1.5 sq mm Copper conductor PVC insulated, armoured cable.	155.00	Rupees one hundred fifty-five and paise nil only	Mtr	23250.00
150	b) Supplying and erecting armoured cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner.-4 x 2.5 sq mm Copper conductor PVC insulated, armoured cable.	216.00	Rupees two hundred sixteen and paise nil only	Mtr	32400.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
150	c) Supplying, Installing, commissioning & testing with Terminating & Interfacing of 2 Pair x 1 sq.mm as per IS 694 copper Shielded twisted, multistranded armoured cablew on wall in GI tray or on ground.	200.00	Rupees two hundred and paise nil only	Mtr	30000.00
			Total of Sub Work No. 04	Rs.	1171590.00

Name of Scheme:- Dhanora Water Supply Scheme, Tal. Amalner Dist Jalgaon

Sub Work No. 05: Solar Power Plant at Jackwell & WTP premises

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	Item No. 1:Solar Power Plant at Jackwell				
60	<p>Supplying, installing, testing and commissioning of on grid solar power pack with GI mounting structure and inter connecting wires / cables without battery bank SPV modules and solar power conditioning unit of required capacity complete, with 5 years on site performance warrantee. Specification no. ESD-RTONG</p> <p>Note:Rates are as per benchmark cost of Ministry of New and Renewable Energy (MNRE), inclusive of total system cost including PV solar module , invertor, balance of systems including cables, switces/circuit breakers /connectors /junction boxes, mounting structure, earthing, lightning arrestors, cost of meter (if any other than net meter), local connectivity cost, cost of civil works, foundation etc and it's installation, commissioning, transportation, insurance, capital cost of online monitoring, comprehensive maintenance charges for five years,applicable fees and taxes etc..</p>	38236.00	Rupees thirty-eight thousand two hundred thirty-six and paise nil only	kWp	2294160.00
	Item No. 2 : Net Meter				
1	<p>Supplying and erecting AC three phase LT CT multifunction net metervDLMS compliance of accuracy class 0.5, 3 x 240V, 50Hz, with backlit LCD display, optical port & RS 232 port (measures import kWh, kVAh, export kWh,vkVAh, Net kWh, kVAh, V, I, kW, 6 months history of energy, load survey, TOD, tamper detection & logging, power ON/OFF events, instantaneous parameters ofvrating 1/5A with display in absence of power) with wiring connections and mounting hardware on provided panels complete with calibration certificate from manufacturer.</p>	15542.00	Rupees fifteen thousand five hundred forty-two and paise nil only	Nos	15542.00

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
	Item No. 3:Solar Power Plant at WTP				
35	<p>Supplying, installing, testing and commissioning of on grid solar power pack with GI mounting structure and inter connecting wires / cables without battery bank SPV modules and solar power conditioning unit of required capacity complete, with 5 years on site performance warrantee. Specification no. ESD-RTONG</p> <p>Note:Rates are as per benchmark cost of Ministry of New and Renewable Energy (MNRE), inclusive of total system cost including PV solar module , invertor, balance of systems including cables, switces/circuit breakers /connectors /junction boxes, mounting structure, earthing, lightning arrestors, cost of meter (if any other than net meter), local connectivity cost, cost of civil works, foundation etc and it's installation, commissioning, transportation, insurance, capital cost of online monitoring, comprehensive maintenance charges for five years,applicable fees and taxes etc..</p>	38236.00	Rupees thirty-eight thousand two hundred thirty-six and paise nil only	kWp	1338260.00
	Item No. 4 : Net Meter				
1	<p>Supplying and erecting AC three phase LT CT multifunction net metervDLMS compliance of accuracy class 0.5, 3 x 240V, 50Hz, with backlit LCD display, optical port & RS 232 port (measures import kWh, kVAh, export kWh,vkVAh, Net kWh, kVAh, V, I, kW, 6 months history of energy, load survey, TOD, tamper detection & logging, power ON/OFF events, instantaneous parameters ofvrating 1/5A with display in absence of power) with wiring connections and mounting hardware on provided panels complete with calibration certificate from manufacturer.</p>	15542.00	Rupees fifteen thousand five hundred forty-two and paise nil only	Nos	15542.00
			Total of Sub Work No. 05	Rs.	3663504.00

Name of Scheme:- Samode Water Supply Scheme, Tal . Sakri Dist Dhule

Sub Work No.06: GSM /GPRS base pump operating system Monitoring

Qty.	Description	Rate		Unit	Amount
		In Figures	In Words		
RW Level and Pump Monitoring					
	Item No. 1: GSM /GPRS base pump operating system (specifications as below) (one for each pump)				
3	Supplying , Installing and Commissioning of SMS based ON / OFF operation of pumps at remote locations with test & trial including one year guaranty & two year comprehensive maintenance including SIM card & SMS charges. Wireless Motor Controller is suitable for all range of electrical motors and starters and pump sets. It shall protect pump set from dry run. Controller shall have inbuilt battery and charges automatically. Controller shall be controlled through SMS, Call, IVRS or Smart Phone application (All controlling modes are must). It shall have following features as standard- a. Auto Mode operation – Pump shall be operated with time inputs & limits. Pump shall be also programmed for the specific time pumping. b. Feedback - Shall produce feedback of Voltage, Current & power factor parameters. c. Cyclic timer – For daily operation d. Dry Run Protection e. Overload Protection. f. Phase fail – Phase imbalance / Low Voltage. g. It shall have RS 485 port for optional operations. h. High gain antenna for healthy reception of the signals. i. High durability PC-ABS-FR enclosure. j. Additional sensor interface. k. Shall have Pump house lamp control through remote signal.	52260.00	Rupees fifty-two thousand two hundred sixty and paise nil only	No	156780.00
			Total of Sub Work No. 06	Rs.	156780.00

MECHANICAL/ELECTRICAL WORKS SPECIFICATIONS

General Conditions for Simple Automation & Solar Work

The scope in this work includes providing approved make Solar power plant equipments & Simple Automation Instruments, Various Analysers, Level/Pressure Transmitters & Web based Software mentioned in Schedule B as per the essential design features and detailed specifications of each and every item as mentioned below & requirement of the Department. The essential design features and detailed specifications of each and every item are mentioned below. The procurement of Solar plant equipments & automation instruments are to be planned as per the progress of Civil works. A current approved make list of various equipment's is also attached separately. This approved make list is revised time to time. The Contractor has to provide the equipment's from the attached approved list which is valid at the time of approval of the equipment's. The decision of Superintending Engineer (Mech), in this matter will be final & bounded on the Contractor.

The make of product, design, GA drawing, MOC, CSD, **the details Solar power plant, make of equipments ,Pv Panels,Inverter,Structure etc., the details of complete automation system, make of equipments/PLCs/ sensors / software etc.** inspection schedule of items mentioned in BOQ shall have to be submitted for approval & got approved from Superintending Engineer (Mech.)/Executive Engineer (As per MJP Circular No 227), before actual procurement.

The Contractor has to take the required permission from Electrical Inspector & MS&EDCL authorities before installation & charging of power supply electrical system.

Third Party Inspection

The Contractor shall have to arrange third party inspection of equipment's as mentioned in the respective item at Manufacturers works as per Third Party inspection Schedule attached separately. This inspection is to be done in presence of Superintending Engineer (Mech.)/Executive Engineer (Mech) or his representative & third party inspection agency approved by MJP and shall bear all expenses including testing fee etc. as the same is included in the respective item cost.

Important Note :-

The Contractors are requested to visit the site & get acquainted with the scope of work in the tender before quoting the offer. Any doubts arrived regarding this work shall be submitted in writing well in advance before Pre-Tender conference meeting & the clarification for these queries will be given by Department. The defect liability period for all pumping machinery is of 5 years & it will be counted after the Trial Run period of complete pumping machinery for 3 months. During this defect liability period, the Contractor has to carry out repair works occurred due to manufacturing defects & Rectification of any defects during guarantee period of all executed items shall be carried out immediately, so that water supply should not be hampered. The expenses for the same shall also have to be borne by Contractor. The Contractor shall quote his offer considering all this total scope of work & 5 years defect liability period as mentioned above.

Mode of Payment for simple automation system

- a) 70 % against supply of Material as per approval
- b) 15% after completion of erection at site of work.
- c) 10 % after satisfactory commissioning of Automation Plant
- d) 5% remaining payment after satisfactory operation of Automation work for 1 month trial period after commissioning.
- e) O & M charges of Automation work to be paid after completion of 1 month trial period after commissioning, against separate Bank Guarantees of amount equal to O&M charges for 2nd, 3rd and 4th year of O&M period.
- f) Bank Guarantee of amount equal to O&M charges to be returned to the contractor every year after successful completion of O&M activities of that year and duly certified by the engineer-in-charge.

Mode of Payment for Solar power plant

- A) 60% against supply & installation of the solar plant.
- B) 20% against
 - a. commissioning of solar plant
 - b. submission of 1 month performance reports generated automatically through remote monitoring system. If the generated units are found below expected energy performance ratio, then penalty of Rs.6 /unit will be levied. The overall energy performance ratio of the system shall exceed 75%. (Sum total of the system energy losses shall not exceed 25%). For global solar insolation in the Plane of Array (PoA) of 5

kWh/ m₂ (5 Peak Sun Hours) for the day. For example: 10kW PV power plant AC energy output shall be minimum of 37.5 kWh (10 kW x 0.75 x 5 hrs.) for the day.

- c. Submission of following documents
 - i. complete Project Insurance policy documents effective from date of commissioning of the project for period of 05 years covering damage by natural calamities, fire, forceful damage of project, theft, etc.
 - ii. Warranty/Guaranty Certificate of materials used in project.
 - iii. Serial Wise Test Reports of Panel comprising I-V curve and detail parameters of each panel.
 - iv. Test Report of inverter

- C) 20% against submission of next 2 month performance reports generated automatically through remote monitoring system and against Bank Guarantee of 10% of the subwork cost. Bank guarantee submitted by the contractor shall be returned after successful completion of 5 years CMC period as mentioned in the Technical Specification of SOLAR Solar Plant.

DETAILED SPECIFICATIONS

GENERAL CONDITIONS FOR SOLAR PLANTS

Scope of Work-

The Scope of works is as below:

- A) Design, fabrication, supply, installation, testing, commissioning with remote monitoring system of rated capacity grid-connected solar PV power plant under roof-top/Ground mounted net metering system at various water supply schemes under MJP Division Jalgaon
- B) The solar plant capacity totally depends on land available and sanctioned electricity load. Hence while execution Selected Bidder has to work out actual solar plant capacity as per land available nearby load @ PW/RW/WTP area and actual solar plant capacity should be got approved from Engineer In Charge before execution.
- C) Free replacement of defective components of systems within Comprehensive Maintenance period (CMC) of 5 years after commissioning of the project for efficient & agreed generation of electricity from the power system.
- D) Detailed planning with milestone chart for smooth execution of project.
- E) Selected Bidder(s) shall be bound by operation and management arrangements and rules, regulations and modalities as per MNRE and as established by MJP and mutually agreed between MJP and the contract or for effective implementation of the project.
- F) Selected Bidder shall be bound to operate and maintain the system as per the rules, regulations and modalities as prescribed by MNRE and MJP for the effective functioning of the project.
- G) Time is the essence in completing the Works:** The bidder shall ensure that Solar PV Power Generation Plant should be installed within 90 Days and Net metering installation should be completed within next 90 Days after installation of SPV plants. However total project completion period should not exceed 180 days.
- H) Bids shall be complete and cover all works described in the tender. However if any item of works required for completing the project shall be deemed to be included in bidder's scope, irrespective of whether it is specifically mentioned or not in the tender document, bidder has to get it done.
- I) Bidder should obtain the statutory permissions from statutory bodies wherever required for execution of works at his own cost.
- J) Selected Bidder is bound to carry out all the procedure related to installation of Net Meter on the Project and has to ensure installation of Net Meter with successful generation of first billing cycle as per site requirement clubbing of energy meters at one place in same premises.
- K) The bidder must acknowledge that all the work of the project must be in the observance of licensed electrical contractor. The responsibility of electrical works, safety precautions and safety parameters of the project will be of licensed electrical contractor and awarded bidder, which must as per Standards specified.

- L) Remote Monitoring System (RMS) with 5 years recharge of Wi-Fi /GSM is necessary to install at the location and provide quarterly generation report up to 5 years after commissioning at MJP Division Jalgaon.
 - M) Civil Structure must be authorized by Chartered Engineer (Civil) and provide structure certificate.
 - N) The Supplier will supply and install required size of Water Tank, pump, pipe etc. for cleaning the PV modules.
 - O) Each panel assembly shall incorporate one bird repellent spike at a level higher than the panel upper edge. The location of the spike should be selected for minimum shadow effect.
 - P) Selected bidder should provide MNRE Declared/ Approved list of present year 2021-22 for the installation of solar system with indicating the equipment in the Approved list for approval from division office.
 - Q) Installed inverter capacity should be equivalent to the solar DC power of plant capacity.
 - R) Selected bidder should submit the SLD of project, Cable Layout, Panel Layout, structural layout and material specifications within 7-10 days from the date of allotment of work order for approval from the DGM Office, hence After approval selected bidder will allowed to start the installation work for the same.
 - S) Selected bidder should follow the MNRE Declared/ Approved list of equipments like inverter, solar panels etc of latest year 2021-22 for the installation of solar system.
2. **PRE-DISPATCH INSPECTION-** Successful bidder shall inform MJP for pre dispatch inspection at their manufacturing facility or storage place by prior intimation of 15 days. After getting clearance from MJP supplier may dispatch the material at site. And after the pre dispatch inspection bidder can start the work of installation.
 3. All EPC work including the transportation of material and machinery to and from the project site will be the responsibility of the Bidder. Bidder shall bear all risks of loss and damage to any part of the solar power plant due to conditions not on account of MJP and should comply with the standard safety guidelines for all the activities at site.
 4. The panel assembly should have at least 4 pedestal supports. The minimum spacing between pedestals is 2.0 m c/c in any direction. Each pedestal is made of cement concrete. Each pedestal can transmit at most 200 kg load on roof. The plan dimension of pedestal does not exceed 4119 mm x 4119 mm, and height does not exceed 300 mm.
 - 5) Bidder shall be responsible for any damage occurred, if any, to other installations of the existing office building / establishment / area at site during the course of work.
 - 6) The Bidder should provide appropriate tools and equipment's to the workmen and ensure that those are in proper working condition and the workmen use the appropriate tools and take precaution "PLEASE NOTE THAT ANY ACCIDENT TO THE WORK MEN / PUBLIC / ANIMALS / PROPERTY BOTH MOVABLE AND IMMOVABLE SHALL BE ENTIRE AND SOLE RESPONSIBILITY OF THE BIDDER AND ANY PROCEEDING ARISING OUT OF THE SAME SHALL BE AT THE BIDDER'S RISK AND COST, MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MJP) OR ITS

EMPLOYEES WILL NOT BE RESPONSIBLE FOR ANY SUCH INCIDENT”.

- 7) Bidder should provide necessary manufacture's test certificates for materials being used for the work. Power curve of all the panels erected by manufacturers shall be provided to the MJP.
- 8) The selected Bidder is bound to work on the guideline provided by MJP from time to time. Guidelines if issued in future by MJP, the changes proposed will also be applicable without augmentation in project cost till the completion of 5 years period.
- 9) The Bidder shall carry out the work strictly according to the specifications as per given in Section-IV and complete the work within stipulated time.
- 10) It is the responsibility of Bidder to submit the reports for systems installed & commissioned and certificates for undertaking the responsibility of maintenance of the systems to MJP. Bidder shall also impart training to the user for regular Operation & Maintenance of the system and certificate in this respect should be submitted.
- 11) Bidders should give Guarantee against any manufacturing defects from the date of commissioning up to CMC period. For any manufacturing defects, Supplier shall **replace defective parts at free of cost** during the CMC period and shall keep the system functional.
- 12) MJP officials will do inspection as and when necessary, during the execution of work and thereafter subsequent to installation and commissioning of the work for the purpose of issuing final completion certificate.
- 13) In the event of any discrepancy observed in specifications, the specifications given by MJP will be final. In the event of dispute arising any time, related to this work and document, decision of the Executive Engineer, MJP or his nominee shall be final.
- 14) MJP at its discretion may visit supplier's factory for testing / inspection at any time during the period of supply and installation of the systems.
- 15) During the inspection, if any deviations in Technical Specifications are observed, MJP reserves right to test any solar module / system at any authorized test centre of MNRE. Bidder shall provide the facilities for getting the sample tested & the supplier shall bear the cost for the same.
- 16) At the time of inspection of MJP, manufacturer or supplier has to submit the I.V. curves and test reports of supplied PV modules to respective officer.
- 17) The Wiring must be carried out in casing-capping / conduit which are suitable as per site condition.
- 18) It will be responsibility of the Bidder to ensure the satisfactory performance of the system.
- 19) The Bidder shall provide the display board of size 3ft x 3ft that gives detailed information of system along with the contact details of manufacturer. This will help the beneficiary during 5 years CMC period.
- 20) In the event of dispute during installation & commissioning of the systems related to the work and documents, decision of the Executive Engineer, MJP shall be final.
- 21) At the time of placing work order and during the implementation MJP can revise the technical terms and conditions if revised by MNRE, which will be binding on the Bidder.

Communications

- Wherever provision is made for the giving or issue of any notice, instruction, consent, approval,

certificate or determination by any person, unless otherwise specified such communication shall be in writing and shall not be unreasonably withheld or delayed.

- Project review coordination meetings between the MJP's Representative and Contractor shall be conducted on a regular basis or as and when required by the MJP, at locations decided by the MJP, for Contractor's progress and plans for completing the remaining Works, to deal with matters affecting the progress of the Works, and to decide on responsibility for actions required to be taken. Decisions taken and instructions issued during the coordination meetings, as recorded in the Minutes, shall have the same force and effect as if they were written communications issued in this accordance.

Manner of Execution

Execution of work shall be carried out in the approved manner as outlined in the technical specifications or where not outlined, in accordance with relevant MNRE / MEDA / BIS / Indian Standard Specifications, to the reasonable satisfaction of The Employer.

- The Contractor/Agency should successfully complete the project within timeframe set out by the employer and mutually agreed between Contractor / Agency and Employer.
- MJP shall not be responsible for any loss or damage of any material when installing SPV power plants.
- Undertake necessary activities during the warranty period as set out in this Contract.
- It is the responsibility of successful bidder to make the insurance of SPV system from the date of commissioning for the CMC period by following standard procedure.

Standards

The design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/ Indian Standards and as detailed in the Technical specifications Section as per the MNRE / MEDA requirements of the bid document and Annexure- A. The goods supplied under this contract shall confirm to the Standards mentioned, where appropriate Standards and Codes are not available, other suitable standards and codes as approved by the authoritative Indian Standards shall be used.

Inspection:

- Successful bidder to submit the design engineering documents, Calculations & Drawings within weeks time after issue of work order for review & approve by MJP &/OR Appointed consultant by MJP.
- The projects will be inspected for quality at any time during commissioning or after the completion of the project by MJP &/OR Appointed consultant by MJP.
- Bidder shall inform MJP in writing when any portion of the work is ready for inspection (site wise) giving sufficient notice to enable MJP to depute officials to inspect the same without affecting the further progress of the work. The work shall not be considered in accordance with the terms of the contract until the competent person from / for MJP certifies in writing to that effect.
- The cost of Inspection shall be borne by Bidder only.
- Bidder has to strictly follow the specifications given in the work order while carrying out the execution of work. During inspection if it is found that Bidder has deviated from the specifications, Bidder has to do the alteration / modification / reconstructions as per the given

specifications at his own cost & risk.

Spares & tools-tackles:

The bidder shall provide / supply its own necessary tools-tackles for erection & testing and required for CMC, along with sufficient quantity for consumable items / spares for replacement, if any.

Danger plates:

The bidder shall provide at least 8 Danger Notice Plates at each project site of 200 mm X 150 mm made of mild steel sheet, minimum 2 mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required. The inscription shall be in English and local language.

Grid Connectivity

Successful bidder has to process the application & obtain grid connectivity. Applicable fees shall be paid by Successful bidder. Also, clubbing of existing meters, increase the sanctioned load, shall be in the scope of Successful bidder. Successful bidder has to review & confirm type & capacity of existing CT/PT & transformer for compatibility with type & capacity of proposed Solar Power Generation System during design engineering, well before placing orders for system components, however, such changes/replacement for CT/PT, transformer shall be done by the successful bidder.

Successful bidder to make sure/do the follow-up for such changes/replacement within stipulated time. Also, Successful bidder to arrange attends inspection by representative of DISCOM, if any.

Energy meter / bidirectional net-meter shall be supplied as per specification by DISCOM & shall be installed at location/fed-injection point, indicated in consent received for grid connectivity by DISCOM. Charges regarding net meter for successful grid connectivity shall be paid by the successful bidder.

Warranties and Guarantees:

The Bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The bidder shall provide warrantee covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of 5 years from the date of commissioning of project. The successful bidder has to transfer all the Guarantees/ Warrantees of the different components to the Owner of the project. The responsibility of operation of Warrantee and Guarantee clauses and Claims/ Settlement of issues arising out of said clauses shall be joint responsibility of the Successful bidder and the owner of the project and MJP will not be responsible in any way for any claims whatsoever on account of the above.

Energy meter/bidirectional net-meter shall be supplied as per specification by DISCOM & shall be installed at location/fed-injection point as indicated in consent received for grid connectivity by DISCOM also charges regarding net-meter for successful grid connectivity should be paid by the successful bidder as cost of net-meter included in tender cost.

TECHNICAL SPECIFICATION OF SPV POWER PLANT

1. Brief Information About Site Address:

Sr.No.	Scheme name (Location)	Capacity of Grid-Connected Solar PV Plant		
		@ RW Area	@ WTP Area	@sump
1.	Bahaderpur W.S.S. Tal. Parola & Dist. Jalgaon	15 kWp	10 kWp	
2.	Kandari W.S.S., Tal. Bhusawal Dist Jalgaon		18 kWp & 25 kWp	
3.	Dhanora W.S.S., Tal. Amalner Dist Jalgaon	60 kWp	35 kWp	

2. Technical & General Specifications -Grid Connected SPV System) Definition

A Grid Tied Solar Rooftop Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, Net-meter and Controls & Protections, interconnect cables and switches. PV Array is mounted on a suitable structure. Grid tied SPV system is without battery and should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

General System

1. The operating life of the plant shall be minimum 25 years.
2. The plant shall feed AC power to the Low Tension (LT) / High Tension (HT) distribution grid power supply through adjacent substation.
3. The plant shall monitor solar generated energy using plant DC / AC energy meter/Bidirectional energy meter independent of load energy monitoring. Remote monitoring facility must be made available.
4. The plant shall consist of PV array, fixed PV array support structure, String/Array combiner boxes, if required; DC cabling, DC distribution box, if required; Inverter, AC cabling, AC distribution box, plant AC energy meter, load energy meter and data acquisition system.
5. The individual Solar PV array shall be installed on existing roof top/ Ground Mounted of the building using **fixed PV array support structure with necessary foundations**.
6. The individual string / array combiner boxes and DC cabling shall be installed on roof top of the building/Ground.
7. The inverter shall be installed in the control room / open space provided in the building.
8. The DC and AC distribution boxes, DC and AC cabling, energy meters and data acquisition system shall be installed in the control room / open space provided in (or near) the building.

PV Array

The total solar PV array capacity should not be less than --kWp; comprise of solar polycrystalline modules with minimum capacity of 300 Wp and above wattage. Module capacity less than minimum 300Wp should not be supplied. The module type must be qualified as per IEC 61215 latest edition for polycrystalline silicon or IEC 61646 for other latest

technology. SPV module conversion efficiency should be equal to or greater than 16% under STC. Modules must qualify to IEC 61730 Part I and II for safety qualification testing. Certificate for module qualification from IEC or equivalent should be uploaded. Self undertaking must be submitted from manufacturer/ supplier that the modules being supplied are as per above.

1. The PV modules used should be made in India.
2. The peak power rating of the Solar PV array under Standard Temperature Conditions (STC) shall be equal to the peak power rating of the plant.
3. The PV array shall consist of framed multi-crystalline.
4. Individual PV modules rating should be of minimum 300 Wp at STC.
5. The rated maximum power rating of PV modules should have positive tolerance in range of 0 to +2%. And negative temperature co-efficient of power for PV modules should be less than or equal to 0.40% per degree C.
6. The peak power point voltage and the peak-power point current of any supplied module and / or any module string (series connected modules) shall not vary more than 3 (three) percent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
7. A suitable number of Solar PV modules shall be connected in a series string. A suitable number of series strings shall be connected in parallel to formulate a series parallel array.
8. The PV Array shall be designed to match the inverter input specifications.
9. The module shall be provided with junction box with provision of min. 3 Nos. of by-pass diodes and external MC4 type or equivalent plug-in connectors. The junction box should have hinged / clamping, weatherproof lid with captive screws and cable gland entry points & should be IP 65 rated.
10. The front surface of the module shall consist of impact resistant, low iron and high transmission toughened glass.
11. The module frame shall be made of corrosion resistant material electrically compatible with structural material used for mounting the modules.
12. Each PV module manufactured in India must have RF identification tag (RFID) compatible with MNRE requirements. (Traceability requirement)
13. DC negative conductor shall be bonded to the ground via Ground Fault Detector Interrupter (GFDI). Inverter shall be equipped with GFDI. The grounding point shall be as close as possible to the PV Array.
14. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged / clamping, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP65 rated.
15. Necessary I-V curves at 25°C, 45°C, 60°C and at NOC are required to be furnished. Offers to provide PV module warranty of 25 years with not more than 20% degradation in performance/output over 25 years.
16. The PV module must have 10 years free replacement guarantee against material defect or craftsmanship. Guarantee warranty certificate / document shall be issued by OEM to end user / client; and not issued to / by Bidder.
17. Name of the manufacturer of PV module; name and manufacturer of the solar cell; month and

year of manufacture; I-V curve, wattage, I_m , V_m , FF for the module; unique serial no & model no; date & year of obtaining IEC PV module qualification certificate are required to be furnished.

Warranties:

Material Warranty:

- i. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of sale to the original customer ("Customer")
- ii. Defects and/or failures due to manufacturing
- iii. Defects and/or failures due to quality of materials
- iv. Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners soleoption

Performance Warranty:

The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

Inverter

The PCU required shall not be less than rated capacity to convey DC power produced by SPV modules into AC power and adjust the voltage & frequency levels to meet the local grid conditions.

Common Technical Specification Type: Grid connected

Control Type: Voltage source, microprocessor assisted, output regulation.

Output voltage: 3 phase, 415 V AC / 230V AC (+20%, -20% V AC) site specific **Frequency:** 50 Hz (+3 Hz, -3 Hz)

Continuous rating: KV (rated +10%) with Import/Export net metering

Normal Power: +KVA

Total Harmonic Distortion: less than 3% **Operating temperature Range:** 0 to 60 deg C

Humidity: 95 % Non-condensing

Housing cabinet: PCU to be housed in suitable switch cabinet, IP- 20(Minimum) for indoor IP-65(Minimum) for outdoor

outdoor

PCU efficiency: 98% and above at full load.

PF: > 0.9

Other important Features/Protections of PCU:

1. Mains (Grid) over-under voltage and frequency protection.
2. Over load capacity (for 10 sec) should be 200% of continuousrating.
3. The PCU shall be self commuted and shall utilize a circuit topology and components suitable for meeting the specifications listed above at high conversion efficiency and with high reliability.
4. The PCU shall be provided with MPPT (Maximum Power Point Tracing) features, so that

maximum possible power can be obtained from the PV module.

5. The PCU shall be self commuted and shall utilize a circuit topology/ DSP technology to meet the specifications listed above at high conversion efficiency and with high reliability. The PCU shall feed the Loads from Solar Energy being produced. And it should feed the solar power to the Grid if the load is less than the solar energy generated.
6. Full proof protection against grid islanding which ensures that the PV power and the grid power get disconnected immediately in the event of grid failure.
7. The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068- 2(1,2,14,30) /Equivalent BIS Std.
8. The MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
9. The PCU / inverters should be tested from the MNRE approved test centres / NABL / BIS / IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.
10. The PCU shall be capable of operating in parallel with the grid utility service and shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents.
11. The PCU shall be able to withstand an unbalanced output load to the extent of 50%.
12. The PCU shall go to the shut down/standby mode with its contacts open under the following conditions before attempting and automatic restart after an appropriate time delay in insufficient solar poweroutput.
- 13.(a) Utility-Grid Over or Under Voltage
The PCU shall restart after an over or under voltage shutdown when the utility grid voltage has returned to within limits for a minimum of two minutes.
- (b) Utility-Grid Over or Under Frequency
The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned to the within limits for minimum of two minutes. The permissible level of under/over voltage and under/over grid frequency is to be specified by the tenderer.
- (c) The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.
14. Communication Modbus protocol with LAN / WAN options along with remote access facility and SCADA package with latest monitoringsystems.
15. The inverter with MPPT shall be used with the powerplant.
16. The sine wave output of the inverter shall be suitable for connecting to 415V, 3 phase AC LT voltage grid.
17. The inverter shall incorporate grid islanding protection disconnection of grid & PV power in case of failure of Grid supply suitable DC / AC fuses / circuit breakers and voltage surge protection. Fuses used in the DC circuit shall be DCrated.
18. The inverter shall have internal protection against any sustained faults and/or lightening in DC and mains AC grid circuits.
19. The peak inverter efficiency inclusive shall exceed 94%. (Typical commercial inverter efficiency

normally more than 97%, and transformer efficiency is normally more than 97%)

20. The kVA ratings of inverter should be chosen as per the PV system wattage.
21. The output power factor should be of suitable range to supply or sink reactive power.
22. Inverter shall provide panel for display of PV array DC voltage, current and power, AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency. Remote monitoring of inverter parameters should also be available.
23. The inverter shall include adequate internal cooling arrangements (exhaust fan and ducting) for operation in a non-AC environment.

Factory Testing:

1. The PCU shall be tested to demonstrate operation of its control system and the ability to be automatically synchronized and connected in parallel with a utility service, prior to its shipment.
2. Operation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that can not be directly tested.
3. Special attention shall be given to demonstration of utility service interface protection circuits and functions, including calibration and functional trip tests of faults and isolation protection equipment.
4. Operation of start up, disconnect and shutdown controls shall also be tested and demonstrate. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.
5. Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also include all other necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25%, 30%, 75% & 100% of the rated nominal power.
6. A Factory Test Report (FTR) shall be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested qualified and warranted. OR Manufactures shall have manufacturing & testing facilities as per norms in IEC standards, product shall be delivered along with such test reports / certificates.

PROTECTIONS:

LIGHTNING PROTECTION

The SPV power plants shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc the entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per NFC 17-102:2011 standard. The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

SURGE PROTECTION

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and -ve terminals to earth (via Y arrangement)

Earthing

1. PV array, DC equipment, Inverter, AC equipment and distribution wiring shall be earthed as per IS: 3043 - 1987.
2. Equipment grounding (Earthing) shall connect all non-current carrying metal receptacles, electrical boxes, appliance frames, chassis and PV panel mounting structures in one long run. The grounding wire should not be switched, fused or interrupted.
3. The complete earthing system shall be electrically connected to provide return to earth from all equipment independent of mechanical connection.
4. The equipment grounding wire shall be connected to PV power plant.
5. A separate grounding electrode shall be installed using earth pit per power plant. Test point shall be provided for each pit.
6. An earth bus and a test point shall be provided inside each control room.
7. Earthing system design should be as per the standard practices.

CABLES & WIRES

Cabling in the yard and control room: Cabling in the yard shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers, or in conduits.

- Wires: Only FRLS copper wires of appropriate size and of reputed make shall have to be used.
- Cables Ends: All connections are to be made through suitable cable/lug/terminals; crimped properly & with use of Cable Glands.
- Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified. Any change in cabling schedule/sizes if desired by the bidder/supplier be got approved after citing appropriate reasons, All cable schedules/layout drawings have to be got approved from the purchaser prior to installation. All cable tests and measurement methods should confirm to IEC 60189.

Electrical Safety, Earthing Protection Electrical Safety

- Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.
- Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations and internal faults in the power conditioner, operational errors and switching transients.
- Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.
- Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.
- Fast acting semiconductor type current limiting fuses at the main bus bar to protect from the

grid short circuit contribution.

- The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.
- The PCU shall include ground lugs for equipment and PV array grounding.
 - All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years design life of the unit.
- The PCU enclosure shall be weatherproof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The INVERTER shall be located indoor and should be either wall / pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.
- Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.
- All doors, covers, panels and cable exits shall be gasket or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm. (about 3x8 inch).
- In the design and fabrication of the PCU the site temperature (5° to 55°C), incident sunlight and the effect of ambient temperature on component life shall be considered carefully. Similar consideration shall be given to the heat sinking and thermal for blocking diodes and similar components.

EARTHING PROTECTION

Each array structure of the PV yard should be grounded properly. In addition the lighting arrester/masts should also be provided inside the array field. Provision should be kept be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian electricity Act. /IE Rules. Earth resistance should be tested in presence of the representative of NRHM after earthing by calibrated earth tester. PCU ACDB & DCDB should be earthed properly.

Danger boards should be provided as and where necessary as per IE Act/IE rules as amended up to date. Three signage shall be provided one each at battery –cum- control room, solar array area and main entry from administrative block

Balance of Systems (BoS)

1. String / Array combiner boxes, if required, shall incorporate DC string circuit breakers, DC array disconnect switch, lightning and over voltage protectors, any other protection equipment, screw type terminal strips and strain-relief cable glands.
2. All DC and AC cables shall be terminated using suitable crimped cable lugs/sockets and screw type terminal strips. No soldered cable termination shall be accepted.
3. Only terminal cable joints shall be accepted. No cable joint to join two cable ends shall be accepted.
4. Suitable Ground Fault Detector Interrupter (GFDI) shall be incorporated either with the inverter or with the array combiner box.
5. String/Array combiner boxes shall be secured onto walls or metal structures erected separately on the terrace.
6. Conduits / concealed cable trays shall be provided for all DC cabling on the Roof top. Conduits /

concealed cable trays shall be adequately secured onto the roof top / wall.

7. The AC cable type shall be PVC / XLPE insulated, suitably armoured, 1100V grade multi-stranded copper conductor. Appropriate colour coding shall be used.
8. For the DC cabling, XLPE or, XLPO insulated and sheathed, UV-stabilized single core multi-stranded flexible copper cables shall be used; Multi-core cables shall not be used.
9. The DC and AC cables of adequate electrical voltage and current ratings shall be also rated for 'in conduit wet and outdoor use'.
10. The total DC cable losses shall be maximum of 2% of the plant rated DC capacity over the specified ambient temperature range.
11. The DC and AC cable size shall be selected to maintain losses within specified limits over the entire lengths of the cables.
12. DC cables from array combiner box on the rooftop to DC distribution box in the control room and DC/ AC cabling between inverter and distribution boxes shall be laid inside cable duct where available or secured with conduits/concealed cable trays where duct is not available.
13. The DC and AC distribution boxes shall be wall mounted inside control room/open space.
14. DC distribution box shall incorporate DC disconnect switch, lightning surge protectors, any other protection equipment, screw type terminal strips and strain-relief cable glands.
15. AC distribution box shall incorporate AC circuit breaker, surge voltage protectors, any other protection equipment, plant energy meter, screw type terminal strips and strain-relief cable glands.
16. The total AC cable losses shall be maximum of 1% of the plant AC output over the specified ambient temperature range.
17. All cable conduits shall be GI/HDPE type.
18. All cable trays shall be powder coated steel or GI or equivalent.

Civil

1. Bidders are required to visit the site & collect required data for workout estimates for such site specific structure, if any.
2. For structural purpose, the panels plus support system that works as a distortion-free integral structural unit.
3. The panel assembly should at most 5m x 5m in plan area. The max height of panel above roof surface does not exceed 1.2 m.
4. The vertical projection area of the longer side of the panels does not exceed $W/100$ in sq m where W is the gross load of the panel assembly in kg (weight of panels, connections, frames, bracings, pedestals, wiring, circuitry etc.).
5. PV array shall be installed in the space free from any obstruction and / or shadow.
6. Drainage and roof treatment should not be affected by the installation.
7. PV array shall be installed utilizing maximum space to minimize effects of shadows due to adjacent PV panel rows. The gross weight of the panel assembly should at most 45 kg/sq m (W divided by the plan area).
8. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection ease of installation, replacement, cleaning of panels and electrical

maintenance. There is at least 1m clear spacing all around the panel assembly (panel edge to panel edge between assemblies, and panel edge to parapet wall / room on sides).

9. The maximum column spacing should be 8.5 m c/c or less. The pedestal is placed directly on the roof or Ground Mounted.
10. The panel assembly should have at least 4 pedestal supports. The minimum spacing between pedestals is 2.0 m c/c in any direction. Each pedestal is made of cement concrete. Each pedestal can transmit at most 200 kg load on roof. The plan dimension of pedestal does not exceed 450mm x 450 mm, and height does not exceed 300mm.
11. Ample clearance shall be provided in the layout of the inverter and DC / AC distribution boxes for adequate cooling and ease of maintenance.
12. The Supplier will supply and install required size of Water Tank, pump, pipe etc. for cleaning the PV modules. Client will provide water piping from source to inlet of such water tank.
13. The supplier shall specify installation details of the PV Panel assembly with appropriate diagrams and drawings. Such details shall include, but not limited to, the following;
 - a) Determination of true south at the site;
 - b) Array tilt angle to the horizontal, with permitted tolerance;
 - c) Details with drawings for fixing the modules;
 - d) Details with drawings of fixing the junction/terminal boxes;
 - e) Interconnection details inside the junction/terminal boxes;
 - f) Structure installation details and drawings;
 - g) Electrical grounding (earthing);
 - h) Inter-panel / Inter-row distances with allowed tolerances; and
 - i) Safety precautions to be taken.

The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the roof top columns properly. All nuts and bolts shall be of very good quality stainless steel. The panel support and panel-to- support connection both must be designed by vendor to withstand adequately high wind forces. Civil Works permission does not guarantee safety against flying/falling panels in the event of a storm or any other accident.

Mechanical

1. PV panel assembly may consist of different number of modules with maximum of 10 PV modules.
2. Each panel assembly shall incorporate one bird repellent spike at a level higher than the panel upper edge. The location of the spike should be selected for minimum shadow effect.
3. Support structure of panel assembly shall be fabricated using corrosion resistant GI of 80 micron thickness of Zn coating or anodized aluminium or equivalent metal sections.
4. Array support structure welded joints and fasteners shall be adequately treated to resist corrosion.
5. The support structure shall be free from corrosion when installed.
6. PV modules shall be secured to support structure using screw fasteners and/or metal clamps. Screw fasteners shall use existing mounting holes provided by module manufacturer. No additional holes shall be drilled on module frames.

Module fasteners / clamps shall be adequately treated to resist corrosion/ stainless steel.

7. The support structure shall withstand wind loading of up to 150 km/hr.
8. Adequate spacing shall be provided between any two modules secured on panel assembly for improved wind resistance.
9. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.
10. It is required to design the grid structure (on which PV module will be installed) in such a way that all loads are transferred to the existing columns of the buildings. Such grid design should be presented to MJP, which will be certified by structural engineers.
11. The panel assembly structure should be installed in a manner to leave sufficient space for repair and maintenance aspects of the roof tops, particularly for leakages.
12. Installation of panel assembly should not tamper with the water proofing of roofs.

ARRAY STRUCTURE

- a) Hot dip galvanized (minimum of 80 Microns) MS mounting structures may be used for mounting the modules / panels / arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.
- b) The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
- c) The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
- d) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Aluminium structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.
- e) The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels
- f) The bidder need to supply suitable structures based on the quality of roof and considering the load bearing capacity of the roof / civil structures of the proposed building.

Electrical:

1. LT distribution grid specifications 415V +/- 5%, 50Hz and frequency variation as per IE rules.
2. The output of the inverter shall be fed into 415V, 3 phase AC LT grid supplied via LT MCCB.
3. The inverter output shall be connected to LT line prior to the LT/DG changeover switch. The mandatory islanding protection provided by inverter shall isolate the Solar PV power plant.
4. Two time of day (TOD) 3 phase, digital AC load energy meter shall be installed one in the Main Distribution Box to monitor energy drawn by building load and other in the AC distribution box

to monitor energy generated by Solar PV power plant.

5. The load energy meter operation shall be completely independent of the plant AC energy meter.

Data Acquisition System

1. Data Acquisition System shall be provided for solar PV plant.
2. Computerized DC String / Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
3. String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.
4. The time interval between two sets of data shall not be more than 3 minutes. (A minimum of 20 samples of data shall be recorded per hour)
5. Data Acquisition System shall have real time clock, internal reliable battery backup and data storage capacity to record data round the clock for a period of minimum one year.
6. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
7. The date shall be recorded in a common work sheet chronologically date wise.
The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
8. All instantaneous data shall be shown on the computer screen.
9. Software shall be provided for USB download and analysis of DC and AC parametric data for the plant.
10. Provision for internet monitoring and download of data shall be also incorporated.
11. Software for centralized internet monitoring system shall be also provided for download and analysis of cumulative data of the plant and the data of the solar radiation and environment monitoring system.
12. A data logging system (Hardware and Software) for plant control and monitoring shall be provided.
13. Remote Supervisory Control and data acquisition through SCADA or equivalent software at the purchasers location with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier.
14. Disconnection and Islanding: Disconnection of the PV plant in the event of loss of the main grid supply is to be achieved by in built protection within the power conditioner; this may be achieved through rate of change of current, phase angle, unbalanced voltage or reactive load variants.
15. Operation outside the limits of power quality as described in the technical data sheet should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are : Neutral voltage displacement Over current Earth fault and reverse power in case of the above, cases, tripping time should be less than (15 seconds Response time in case of grid failure due to switch off or failure based shut down should be well within seconds. In case of use of two PCUs capacity suitable equipment for synchronizing the AC out put of both the PCUs to the ACDB/Grid should be provided.
Automatic reconnection after the grid failure should restore.

16. PCU shall have the facility to reconnect the PCU automatically to the grid, following restoration of grid, subsequent to grid failure condition. And also the facility to connect the system with load at grid failure condition for essential power supply.

Operating Environment

1. Temperature: 0 to 60 Deg. C.
2. Relative Humidity : 100% @ 40 Deg. C
3. Precipitation : 2.46 mm per day (Annual average)
4. Clearness Index : 0.62 (Annual average)
5. Wind Speed: up to 150 km/hr.
6. Corrosion : high
7. Dust : moderate to high
8. Bird Interference : high
9. Bird Droppings : frequent and large
10. Trees: large and in abundance.

CONNECTIVITY

The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the Distribution Code/Supply Code of the State and amended from time to time. Following criteria have been suggested for selection of voltage level in the distribution system for Ready reference of the solar suppliers.

Plant Capacity	Connecting voltage
Up to 10 kW	240V-single phase or 415V-three phase at the option of the consumer
Above 10kW and up to 100 kW	415V – three phase
Above 100kW	At HT/EHT level (11kV/33kV/66kV) as per DISCOM rules

Utilities may have voltage levels other than above; DISCOMS may be consulted before Finalization of the voltage level and specification is made accordingly.

Testing, Certification and Approval Schedule

All components, sub-assemblies and system test parameters shall be verified on site to ensure they meet the specifications.

Plant Power Performance Ratio Testing

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance to qualify for release of applicable incentive. Minimum CUF of 15% should be maintained for a period of 5 years. Correction shall be applied based on available solar radiation.

Plant Energy Performance Ratio Testing

The overall energy performance ratio of the system shall exceed 75%. (Sum total of the system energy losses shall not exceed 25%). For global solar insolation in the Plane of Array (PoA) of 5

kWh/ m² (5 Peak Sun Hours) for the day. For example: 10kW PV power plant AC energy output shall be minimum of **37.5 kWh** (10 kW x 0.75 x 5 hrs.) for the day.

Operation and Maintenance (O&M)

1. Cleaning of solar PV modules with water, wet and dry mops :Weekly
2. DC String / Array and AC Inverter monitoring: Continuous and computerized.
3. AC Energy monitoring: Continuous and computerized.
4. Visual Inspection of the plant : Monthly
5. Functional Checks of Protection Components and Switchgear: Quarterly.
6. Spring Clean PV Array and Installation Area:Quarterly.
7. Inverter, data acquisition, energy meters and power evacuation checks: Half Yearly.
8. Support structure and terrace water-proofing checks: Yearly.
9. O & M log sheet shall be provided and maintained.
10. The repair/replacement work shall be completed within 48 hours from the time of reporting the fault.
11. A half yearly performance report of the plant inclusive of energy generation data shall be provided as per approved format.
12. All recorded data for the first 5 years shall be preserved in both manual and computer format and submitted at hand over.

2. COMPREHENSIVE MAINTENANCE CONTRACT (CMC)

- (i) The complete Solar PV Power Plant must be guaranteed against any manufacturing / design/ installation defects for a minimum period of 5 years.
- (ii) PV modules used in Solar PV Power Plant must be guaranteed for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.
- (iii) During the CMC period, MJP will have all the rights to cross check the performance of the Solar PV Power Plant. MJP may carry out the frequent inspections of the Solar PV Power Plant installed and randomly pick up its components to get them tested at Govt. / MNRE approved any test centre. If during such tests any part is not found as per the specified technical parameters,
MJP will take the necessary action. The decision of MJP in this regard will be final and binding on the bidder.

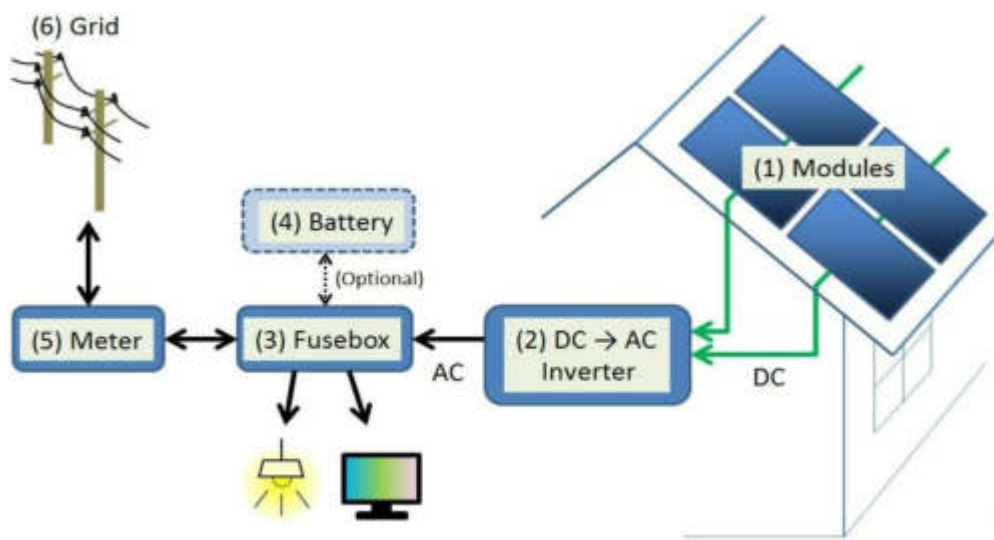
Warranties and Guarantees

1. Solar Modules: Workmanship/ product replacement for 10years.
2. Solar Modules: 90% power output for 10 years & 80% power output for 25 years.
3. Inverter: Workmanship/product replacement for 5 years, service for 25 years
4. Power Evacuation and Metering Equipment: Workmanship/product replacement for 10 years, service for 25 years
5. BoS: Parts and Workmanship for 10 years, service for 25years.

6. Power Plant Installation : Workmanship for 10 years, service for 25years
7. PV Array Installation : Structural for 25 years
8. Power plant power performance ratio-min 75%
9. Power plant energy performance ratio-min. 75%

Standards and Compliance

1. IEC 60364-7-712: Electrical Installations of Buildings: Requirements for Solar PV power supply systems.
2. IEC 61727 or similar: Utility Interface Standard for PV power plants > 10 kW.
3. IEC 62103, 62109 and 62040 (UL 1741): Safety of Static Inverters – Mechanical and Electrical safety aspects.
4. IEC 62116: Testing procedure of Islanding Prevention Methods for Utility- Interactive PV Inverters.
5. PV Modules : IEC 61730- Safety qualification testing, IEC 61701 – Operation in corrosive atmosphere
6. IEC 61215 : Crystalline Silicon PV Modules qualification
7. String/array junction boxes : IP65, Protection Class II, IEC 60439-1, 3.
8. Surge Protection Devices: Type 2, DC 1000V rated.
9. PV module / string / string combiner box interconnects: MC4 compatible. DC 1000V rated.
10. The central inverter shall be rated for IP54.
11. The DC/AC distribution boxes shall be rated IP54.
12. The data acquisition systems shall be rated for IP54.
13. All DC and AC cables, conduits, cable trays, hardware: relevant IS.
14. Earthing System: relevant IS.
15. PV array support structure: relevant IS.
16. Quality Certification, Standards and Testing for Grid-Connected Rooftop Solar PV Systems/ Power Plants should be maintained as per Annexure- A.



QUALITY CERTIFICATION, STANDARDS AND TESTING

FOR GRID- CONNECTED ROOFTOP / GROUND MOUNTED SOLAR PV SYSTEMS/ POWER PLANTS

Quality certification and standards for grid-connected rooftop solar PV systems are essential for the successful mass-scale implementation of this technology. It is also imperative to put in place an efficient and rigorous monitoring mechanism, adherence to these standards. Hence, all components of grid-connected rooftop solar PV system/ plant must conform to the relevant standards and certifications given below:

Solar PV Modules/Panels

IEC 61215/ IS 14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
IEC 61701	Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
IEC 61853- Part 1 /IS 16170: Part 1	Photovoltaic (PV) module performance testing and energy rating -: Irradiance and temperature performance measurements, and power rating
IEC 62716	Photovoltaic (PV) Modules – Ammonia (NH ₃) Corrosion Testing (As per the site condition like dairies, toilets)
IEC 61730-1,2	Photovoltaic (PV) Module Safety Qualification – Part 1: Requirements for Construction, Part 2: Requirements for Testing

Solar PV Inverters

IEC 62109-1, IEC 62109-2	Safety of power converters for use in photovoltaic power systems – Part 1: General requirements, and Safety of power converters for use in photovoltaic power systems Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)
IEC/IS 61683 (as applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
IEC 62116/ UL1741/ IEEE 1547 (as applicable)	Utility-interconnected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures
IEC 60255-27	Measuring relays and protection equipment – Part 27: Product safety requirements
IEC 60068- 2 /IEC 62093 (as applicable)	Environmental Testing of PV System – Power Conditioners and Inverters

Fuses

IS/IEC 60947(Part 1, 2 & 3), EN50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): a) Low-voltage Switchgear and Control-gear, Part 1: General rules
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	b) Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers c) Low-voltage switchgear and Control-gear, Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units EN 50521: Connectors for photovoltaic systems – Safety requirements and tests
EC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
Surge Arrestors	
BFC 17 -102: 2011	Lightening Protection Standard
IEC 60364-5-53/ IS 15086-5 (SPD)	Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control
IEC 61643- 11: 2011	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
Cables	
IEC 60227 /IS694, IEC 60502 /IS1554 (Part 1 & 2) / IEC 69947 (as applicable)	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation)
BS EN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables
Earthing /Lightning	
IEC 62561 Series (Chemical earthing) (as applicable)	IEC 62561-1 Lightning protection system components (LPSC) - Part 1: Requirements for connection components IEC 62561-2 Lightning protection system components (LPSC) - Part 2: Requirements for conductors and earth electrodes IEC 62561-7 Lightning protection system components (LPSC) - Part 7: Requirements for earthing enhancing compounds
Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermoplastic type with IP 65 protection for outdoor use, and IP 54 protection for indoor use
Energy Meter	
IS 16444 or as specified by the DISCOMs	A.C. Static direct connected watt-hour Smart Meter Class 1 and 2 — Specification (with Import & Export/Net energy measurements)
Solar PV Roof Mounting Structure	
IS 2062/ IS 4759	Material for the structure mounting

Note- Equivalent standards may be used for different system components of the plants.

SIMPLE AUTOMATION DETAILED SPECIFICATIONS

Name of Scheme:-	Kandari W.S.S. Tal.- Bhusawal & Dist.-Jalgaon
	Dhanora W.S.S. Tal.- Amalner Dist.-Jalgaon
	Samode Ghodyamal W.S.S. Tal. Sakhari Dist. Dhule

NAME OF WORK: Providing, installing, testing, Commissioning & giving satisfactory test & trial of **Simple Automation** for Raw & Pure Water Pumping Machinery @ various water supply Schemes

General Conditions for Simple Automation works

The scope in this work includes providing approved make Simple Automation Instruments, Various Analysers, Level/Pressure Transmitters & Web based Software mentioned in Schedule B as per the essential design features and detailed specifications of each and every item as mentioned below & requirement of the Department. The essential design features and detailed specifications of each and every item are mentioned below. The civil works of this project are in progress & the procurement of automation instruments is to be planned as per the progress of Civil works. A current approved make list of various equipments is also attached separately. This approved make list is revised time to time. The Contractor has to provide the equipments from the attached approved list which is valid at the time of approval of the equipments. The decision of Superintending Engineer (Mech), in this matter will be final & bounded on the Contractor.

The make of product, design, GA drawing, MOC, CSD, inspection schedule of items mentioned in BOQ shall have to be submitted for approval & got approved from Executive Engineer (Mech.).

The details of complete automation system, make of equipments/PLCs/ sensors / software etc. shall be submitted to the Executive Engineer (Mech) & shall be got approved before actual execution of work.

DETAILED SPECIFICATIONS

Item: GSM /GPRS base pump operating system (one for each pump)

Supplying , Installing and Commissioning of SMS based ON / OFF operation of pumps at remote locations with test & trial including one year guaranty & two year comprehensive maintenance including SIM card & SMS charges. Wireless Motor Controller is suitable for all range of electrical motors and starters and pump sets. It shall protect pump set from dry run. Controller shall have inbuilt battery and charges automatically. Controller shall be controlled through SMS, Call, IVRS or Smart Phone application (All controlling modes are must). It shall have following features as,

- a. Auto Mode operation – Pump shall be operated with time inputs & limits. Pump shall be also programmed for the specific time pumping.
- b. Feedback - Shall produce feedback of Voltage, Current & power factor parameters.
- c. Cyclic timer – For daily operation
- d. Dry Run Protection
- e. Overload Protection.
- f. Phase fail – Phase imbalance / Low Voltage.
- g. It shall have RS 485 port for optional operations.
- h. High gain antenna for healthy reception of the signals.
- i. High durability PC-ABS-FR enclosure.
- j. Additional sensor interface.
- k. Shall have Pump house lamp control through remote signal.

Item: Pressure Transmitter

Designing, Supplying, Installing, commissioning & testing of pressure transmitter CE markd with

following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement.

Output 4-20 mA

Power supply - 24V DC ext.

Display - 4" LED

Accuracy - $\pm 0.1\%$ of full scale or better

Enclosure- IP 68

1.0 General Requirement

The scope of this work includes design, sizing, supply, erection and commissioning of ultrasonic transmitters. The pressure transmitters are to be installed on the individual delivery of Pumps one each & one transmitter on common manifold of pipe line

Transmitter design:- Transmitter design, Sizing & selection is based on process data, process requirement, general requirement and specification as mentioned below.

Erection of transmitter: Erection includes mounting with mounting structure and process isolation valve, erection of impulse piping, mounting of transmitter support and rack, laying of electrical cable from PLC to transmitter, mounting of junction box, glanding, termination and interfacing of transmitter with control system.

Commissioning: Commissioning of transmitter includes, calibration checking, loop checking, testing of transmitter from PLC and open / closed loop checking from sub control system & main control system.

The pressure Transmitter shall be Micro-processor based 2 wire transmitters & shall have an impressed output signal of 4 - 20 mA corresponding to zero to full range input. A two-wire transmitter shall be used with accuracy of $\pm 0.1\%$ or better of span. Transmitter shall have external zero and span adjustment with self-diagnostics feature. Transmitter shall have temperature sensor for process compensation. The transmitters shall be of the SMART-type with HART protocol. The transmitter shall be indicating type & shall have LCD display of Min 4" with engineering units.

Turn Turndown Ratio of all the transmitter shall be 100:1 for pressure transmitters and 50:1 for very low pressure applications. Load impedance shall be 600 ohm (min). The repeatability shall be within a range of 0.1% of full span. Over Pressure of the transmitter shall be 150% or more of the Maximum Range of the pressure transmitter or maximum working pressure of equipment / pipe line.

The output signal of transmitter must be independent of the burden of the transmitter output circuit including cable resistance over a wide range.

All transmitters shall be suitable for field installation and shall have strong, moisture and dust proof cases of Aluminium housing with epoxy coating suitable for IP 67 or equivalent degree of protection or better to be envisaged.

All wetted parts of the transmitters shall be SS316 or special material for corrosive applications. Accessories like snubbers for pump discharge applications and chemical diaphragm of 10 m PVC covered SS armoured capillary for remote services shall be considered. Diaphragm seals shall be of the flanged type, suitable for the same conditions as those for the transmitter. The material selection shall be according to the requirements of the fluids to be measured. The seal shall be provided with a flushing connection.

Transmitter shall be provided with Mounting bracket, mounting stand & nameplate. Material of accessories shall be SS or better.

Process connection shall be $-1/2"$ NPT (F). 2 valve manifold to be considered for absolute pressure, 3 valve manifold for gauge pressure and 5 valve manifold to be considered for DP / level / flow measurements. Mounting bracket, mounting stand & name plate to be envisaged. The material of accessories shall be SS or better.

Transmitter shall be capable of driving an output Impedance of 600 ohms at 24 VDC, shall be generally powered from the control system I/O cards and provided with integrated digital display in percentage and engineering units.

The removal of connected devices must not open the transmitter output circuit or cause malfunction of this circuit. In the case of failure and return of the supply voltage within a measuring circuit, no false signals endangering the system shall be issued. All transmitters shall be individually fused.

2.0 Detailed Technical Specifications

Sr. No.	Features	Minimum requirement for electronic transmitter
1	Type of transmitter	Loop powered Microprocessor based 2 wire type, SMART, HART protocol compatible.
2	Sensor type	Capacitance
3	Material	Measuring Capsule - AISI 316 SS or better; Body – CS / Stainless Steel as per fluid application.
4	Ambient Temp.	0 - 50 Deg. C
5	Accuracy	$\pm 0.1\%$ of span
6	Output signal range	4-20 mA DC (Analog), Linear, along with superimposed digital signal (based on HART protocol)
7	Range	About 1.5 times normal value (min.)
8	Turn down ratio	100:1 for High pressure & 50:1 for Low pressure
9	Repeatability	$\pm 0.05\%$ of span or better
10	Stability	$\pm 0.1\%$ of calibrated span for 6 months up to 70 Kg/cm ² and $\pm 0.25\%$ for range more than 70 Kg/cm ²
11	Sensitivity	0.05% of span or better
12	Zero and span drift	$\pm 0.015\%$ per deg C at Max Span and 0.11% per deg. C at min. span.
13	Load impedance	500 ohm (min.)
14	Body / Element Rating	1.5 times the maximum span / Full static Pressure on one side with other side venting for DPT.
15	Housing & Enclosure Class	Weather proof as per IP- 67 with durable corrosion resistant coating. Die cast aluminium
16	Over pressure	150% of max. operating pressure
17	Connection (Electrical)	Plug and socket type
18	Process connection	1/2 inch NPT/BSP will be accepted
19	Instrument Valve Manifold	2-Valve for PT / 5-Valve for DPT (Stainless Steel)
20	Output Indicator	LCD type.
21	Span and Zero adjustability	Continuous, tamper proof, non-interacting remote as well as local manual from instrument with zero suppression and calibration facility.
22	Accessories	a. Diaphragm seal, pulsation dampers, siphon etc As required by service & operating conditions b. Two valve manifold for absolute pressure transmitters Three valve transmitters & Five valve manifold for DP transmitters
23	Mounting Bracket	Required
24	Diagnostic	Self indicating feature
25	Power Supply	24V DC $\pm 10\%$
26	Adjustment/calibration/maintenance	Total five (5) no. of handheld calibrators shall be provided.
27	Response time	Suitable to meet closed loop control reaction time specified else where

Item: Ultrasonic Level Transmitter

Designing, Supplying, Installing, commissioning & testing of Ultrasonic Radar type level transmitter CE marked with following technical parameters at Raw Water Pump House and Interfacing with PLC panel including mounting arrangement.

Output-4-20 mA

Power supply - 24V DC ext.

Display - 4" LED

Range- 0 to 30 mtrs

Accuracy - +/- 0.25% of Full Scale or better

Enclosure- IP 68

Mounting - On Top of Jack well

1.0 General Requirement

The scope of this work includes design, sizing, supply, erection and commissioning of ultrasonic transmitters.

Transmitter design:- Transmitter design, Sizing & selection is based on process data, process requirement, general requirement and specification as mentioned below.

Erection of transmitter: Erection includes mounting of process isolation valve, erection of impulse piping, mounting of transmitter support and rack, laying of electrical cable from PLC to transmitter, mounting of junction box, glanding, termination and interfacing of transmitter with control system.

Commissioning: Commissioning of transmitter includes, calibration checking, loop checking, testing of transmitter from PLC and open / closed loop checking from sub control system & main control system.

Ultrasonic type level transmitters shall be provided with 4-20 mA DC output. All necessary amplifiers, Zener isolations, signal distribution & associated electronics / hardware / housing / mounting accessories shall have to be provided. The transmitters shall be able to drive at least 600 ohms load. The power supply to the transmitters shall be derived from the control system.

Accuracy of the transmitters shall be 0.25 % of calibrated span (minimum). Transmitter housing shall be Weather proof as per IP-67 with durable corrosion resistant coating.

Ultrasonic level transmitters, consisting of a transducer, a display / transmitter unit, and manufacturer's cable, shall be provided as specified below. Stainless steel tags for ultrasonic level transmitters shall be provided as specified. The transmitter shall have built in temperature compensation, digital level indicator and any other item required to complete the level measuring system. The level measuring system shall be suitable for mounting on the top of the Water trench, pump sump pit, water channel and Filter bed as required

The level sensor material shall be non-corrosive. Contractor shall arrange for the installation of the level transmitter on top location at suitable location. Accuracy of the level transmitter shall not deteriorate even if suspended solids are present in the service fluid.

Level transmitter shall be suitable for field mounting in safe area. Transmitter output shall be isolated and shall be suitable for transmitting over long distance.

2.0 Transducer Required Features

Ultrasonic level transducers and manufacturer's cable assembly shall be provided with at least the features specified below:

Measuring Principle	Ultrasonic, time-to-flight / Pulse Time of flight
Range	As indicated on the data sheet
Level Resolution	Better than 1 mm
Beam angle	6 Degrees

Process connection	Suitable for the Reservoir
Cable	As indicated on the datasheet
Temperature compensation	Full, automatic
<u>Mounting</u>	<u>As indicated on the datasheet</u>
Nominal frequency range	Manufacturer's Standard suitable for the application
Operating conditions	- 40 to + 95°C or As indicated on the datasheet
Max Pressure	4 Kg / cm ² (g)
Range	Liquids 0 to 25 m Refer process data
Sensor materials	corrosion resistant PVDF wetted material
Principle	Pulse Time of flight
Agency listings	UL listed or FM approved

3.0 Display/Transmitter Unit Required Features

Display / transmitter units shall be furnished for use with the transducers specified above and shall include at least the features specified below. At least two programming key pads shall be included per project unless directed otherwise:

Display	Yes-External Display Required, 4/5 line LCD display. Menu <u>guided operation</u>
Configuration	Using Keypad on display OR suitable field configuration tool
Memory	Parameters held in non volatile memory
Display Location	Local / Sensor mounted
<u>Temperature compensation</u>	Automatic , built in transmitter
Outputs	4 to 20 mA analog, two wire, linear with process engineering units. One Form C SPDT relay contacts, 5 amperes at 250 volts ac, non-inductive
Output Variables	Level, Distance, Volume, Open Channel Flow
Supply voltage	24 VDC, loop powered
Accuracy	0.25% full scale measuring distance OR 4mm (+/- 2 mm) which-ever is better
Radio Frequency Interference (RFI)effect & Electromagnetic <u>compatibility</u>	Less than 0.1 percent of span for frequencies 27 to 1,000 MHz and field intensity of 30 V/m Interference emission to EN 61326;Equipment class B, Interference immunity to EN 61326;Appendix A (Industrial)
Voltage transient immunity	Up to 1000 volts common mode and 500 volts normal mode with output shift less than 1.0 percent
Surge suppression	On board transmitter compartment. Compatible with HART or Foundation Field bus communications as applicable. Compliant with IEEE C62.41 Cat. B and IEEE C37.90.1.
Housing & Ingress Protection	Aluminium, rated NEMA 6P (IP68)
Operating conditions	-20 to +50°C
Agency listings	As per approved makes
Hazardous area classification	Safe Area

4.0 Typical data sheet for transmitter

GENERAL	1	Tag Number	During detail engineering
	2	<u>Service</u>	<u>Raw / Dam water</u>
	3	Location	At the Jack well pump floor above pump suction pit
	4	<u>Quantity</u>	<u>As per BOM</u>
	5	Mounting	A special arrangement of SS structure to be fabricated & mounted to install the USLT on River. Flange structure to be fabricated to install the USLT on pump pit
	6	Area classification	NA
	7	Certification	Required
	8	<u>Enclosure</u>	<u>IP 65</u>
	9	Pipe Line number	Vendor to confirm during detail Engineering
PROCESS CONDITIONS	10	Fluid	Raw / Dam water
	11	Fluid State	Liquid
	12	Operating Pressure	Atmospheric
	13	Operating Temperature	50 Deg C
	14	Operating specific gravity	Suitable for water
	15	Operating Viscosity	Suitable for water
	16	Min./ Max Pressure	Atmospheric
	17	Design Pressure	Vendor Standard
TRANSMITTER	18	Design Temperature	75 Deg C
	19	Application	1) Dam water level measurement before trash rack & after trash rack and 2) Raw water sump pit level measurement
	20	Type	Ultrasonic
	21	<u>Principle</u>	<u>time-to-flight / Pulse Time of flight</u>
	22	Housing	Aluminium
	23	Paint	Epoxy or polyurethane- coated
	24	Protection	IP 68 NEMA 6P (IP68)
	25	<u>Power Supply</u>	<u>24 V DC</u>
	26	Output	Loop powered at 750 Ω 4-20 mA, 2 wire linear with process (HART)
	27	Level Resolution	Better than 1 mm
	28	Transmitter Location	Local/Sensor mounted
	29	Process Flanges and Mounting <u>arrangement</u>	Mtl Wet-side
	30	Material	SS 316 Corrosion resistant PVDF wetted material
	31	Body Material & Bolt & accessories Material	SS 316
	32	<u>Beam Angle</u>	<u>6 Degree</u>
	33	Instrument Span	Vendor to size the transmitter based on

COMMUNICATION AND SOFTWARE			<u>process data & submit for Approval</u>
	34	Calibration Range	Vendor to confirm
	35	Alternate Range	NA
	36	Process connection	Manufacturer's standard
	37	<u>Electrical Connection</u>	<u>Manufacturer's standard</u>
	38	Accuracy	± 0.2% of span, 0.2% full scale measuring distance OR 4 mm (+/- 2 mm) which ever is better
	39	Allowable Temp.	Later* DISPLAY
	40	Display	4/5 line LCD <u>Display</u>
	41	Display Scale Required,	External Display ,Menu guided operation Match Calibration
	42	<u>Hydrostatic</u>	<u>Certificate to be provided</u>
	43	Testing Memory	Parameters held in non volatile memory
	44	Mounting Brackets	50 mm Pipe mounting
	45	Lightning Protection	YES Required
	46	Communication Type	HART
47	Communication with:	PLC –SCADA	
48	Configuration from:	Factory	
49	Internal Diagnostics	Required	
PURCHASE	50	Approved Manufacturer	As per approved make
	51	<u>Model</u>	<u>Vendor to confirm</u>
	52	Purchase Spec	Datasheet is a part of Specification
	53	Serial Number	During detail engineering

RADAR WATER LEVEL SENSOR

Display Type	:	4" LCD Display
Input Supply	:	24 VDC
Out Put	:	4-20 mA.
Range:	:	0 to 30 m
Accuracy	:	< 0.03%
Power, Linearity, Repeatability	:	01 ft (± 3mm)
Resolution	:	1 mm
Power	:	Sleep mode 7.6 mA typical Active (measuring) 12 mA typical
Ambient Temperature	:	45 Degree C
Relative Humidity	:	0 to 100 % Non condensing

Item: Power Analyser

Designing, Supplying, Installing, commissioning & testing of Power Analyser interfacing to PLC Panel with modbus communicatuion port , as per IEC 62053 and in the prescribed format including mounting arrangement.

Power Analyzer

General Requirement

The scope of this work includes sizing, design, supply, erection and commissioning of Energy meters, communication cable and software.

Power Analyser design: Design & selection of Power Analyser shall be based on electrical consumption, mounting arrangement, interface requirement with control system, general requirement and specifications below.

Erection of Power Analyser : Erection includes mounting of energy meter on existing switchgear panel, wiring from CT and PT to energy meter. Laying of communication cable from energy meter to communications switch es mounted in PLC based control panel. Mounting of junction box, glanding, termination and interfacing go f energy meter with control system.

Commissioning: Commissioning of Power Analyser includes, calibration checking, loop checking, testing of energy meter locally from switchgear panel, remotely from PLC based SCADA system and from Historian station.

System description:

Energy Audit shall be part of automation of water treatment plant. To accomplish this requirement Digital Power Analyser shall be mounted on followings switchgear panel, Incomer and outgoing breakers, PCC, MCC.

Raw water system–For each pump feeder , Incomer feeder , transformer feeder pure water system–For each pump feeder, Incomer feeder, transformer feeder

Power Analyser falls under particular master PLC based control system section shall be interfaced on Ring topology /Daisy chain network with each other and this network finally shall be interfaced with that particular master PLC. All the electrical parameters available in the Power Analyser shall be made available in the associated master PLC and SCADA.

These parameters shall be further made available in Historian server for data base management, Alarm management and Energy Audit. Contractor shall design, supply, develop and program energy management software in the historian server. Contractor shall develop the commercial analysis of energy audit and represent it in the graphical, tabular and widget form for management reference.

Technical specifications:

Power Analyser shall have following minimum specifications but not limited to:

- a. Selectable for system, 1Ph, 3Ph 3 W and 3 Ph 4W. (The Input CT and PT shall be ratio programmable)
- b. 21st Harmonics of voltages and currents (selectivity)
- c. Import and Export Energy measurement
- d. THD factors for currents and voltages
- e. Measurement of power network parameters in balanced & unbalanced systems
- f. Configured watt-hour meter for the selected harmonic
- g. Backlit LCD 4.5 " screen, mono chromatic with backlight
- h. Ingress protection : IP 65
- i. Digital transmission to the master system through the RS-485 interface (MODBUS)

- j. Inbuilt Real Time Clock (RTC)
- k. Configurable analog, alarm and pulse outputs (energy)
- l. A programmable current output shall be 4 to 20 mA, programmable relay output, potential free contacts, load capacity 250V~/0.5
- m. Output : 1 Analog, 1 Relays, 1 OC, RS485 Modbus
- n. Accuracy Class shall be : 0.2 for Voltage and current, 0.5 for power, energy & Phase Angle
- o. Universal Auxiliary Power supply , power consumption shall be not more than 7 Volt Ampere
- p. Temperature withstand shall be 55 Deg.C and Relative Humidity withstand capacity shall be 95%
- q. The transmission baud rate shall be 38.4 Kbits/second.

Data sheet of the Power Analyser :

List of parameters to be measured and their Ranges

Sr. No.	Measured value	Display range	Measuring range	Basic error
1	Current L1, L2 & L3	0 to 60 KA	To be confirmed by Contractor	(+/-)0.2%
2	Voltage phase	0 to 1.1 MV	To be confirmed by Contractor	(+/-)0.2%
3	Voltage line	1.0 to 1.9 MV	To be confirmed by Contractor	(+/-)0.5%
4	<u>Frequency</u>	<u>47 to 63 HZ</u>	To be confirmed by Contractor	<u>(+/-)0.2%</u>
5	Active power	(-)9999 MW to 9999	To be confirmed by Contractor	(+/-)0.5%
6	Reactive power	(-)9999 Mvar to 9999 Mvar	To be confirmed by Contractor	(+/-)0.5%
7	Apparent power	0 VA to 9999 MVA	To be confirmed by Contractor	(+/-)0.5%
8	Power factor	(-)1.0 to 1.0	To be confirmed by Contractor	(+/-)1.0%
9	Tangent of phase angle	(-)1.2 to 1.2	To be confirmed by Contractor	(+/-)1.0%
10	Cosine of phase angle	(-)1.0 to 1.0	To be confirmed by Contractor	(+/-)1.0%
11	Phase angle	(-)180 to 180	To be confirmed by Contractor	(+/-)0.5%

12	Imported active energy	0 to 99999999.99 KWH	To be confirmed by Contractor (+/-)0.5%
13	Exported active energy	0 to 99999999.99 KWH	To be confirmed by Contractor (+/-)0.5%
14	Reactive inductive energy	0 to 99999999.99 Kvarh	To be confirmed by Contractor (+/-)0.5%
15	Reactive capacitive energy	0 to 99999999.99 Kvarh	To be confirmed by Contractor (+/-)0.5%

List of output parameters and their properties

1	Analog output	Programmable current output in terms of 4-20 mA, Programmable relay output, potential free contacts, load capacity shall be 250 VAC/0.5 Amp
2	Pulse output for Active or Reactive energy	Required
3	Retransmitted output	All the above listed parameters shall be made available on RS-232/RS-485/ modbus communication in view of interfacing the energy meters with PLC based SCADA system
Note: Contractor shall provide memory mapping of all the electrical parameters those are listed above in view of available these parameters in PLC based SCADA and further to Historian for various analysis purpose.		

Item: PLC Panel & web based monitoring system for RW pumps & Other instruments.

Designing, Supplying, Installing, commissioning & testing of PLC Panel. Including PLC with CPU & Power supply unit, power supply cables interfacing cards, interfacing cables, wireless modules with 25% extra quantity of all accessories.

PLC Panel

1. It shall be a proven, intelligent PLC having local memory, processor, power supply unit & communication cards. The main processor shall employ a minimum of 32 bit or higher word length for CPU processing. The PLC memory shall take care of the I/O count requirement including serial points.
2. The supplied PLCs shall be microprocessor based, programmable and with erasable ROM / RAM Memory. Each of the PLCs shall have its own processor, memory, power supply unit & communication processor and I/O cards complete in all respects. All PLCs shall be modular & from the same model product line with identical capacities.
3. All field instrumentation signalling from Field Instruments shall be cabled up- to the respective Hardware panels.
4. The PLC hardware shall have following basic features.
5. PLC shall be programmable in a structured programming language for ease of programming and ease of de-bugging.

- a. The I/O cards shall not be combined for the functionalities i.e. each card shall be used to perform its own functionality with respect analog inputs, digital inputs, digital outputs.
 - b. The PLC's shall have a dual processor. The changeover in case of a dual processor shall be bump less and should be fail-safe. Redundancy should be provided for complete processor subsystem including CPU memory and power supply
 - c. The PLC should be completely unaffected by a momentary loss of Power of the order of 20 milliseconds.
 - d. The PLC's shall be configured such that failure of an individual module shall not affect the integrity of the unit as a whole.
 - e. The high performance PLC must be designed to log the parameters with time stamping.
 - f. The parameter logging interval can be set locally remotely from the central control station. The logged data can then be downloaded to the central station PC.
 - g. LED indication on the front panel shall be provided for the indication of the present mode of operation and for alarm status along with its simultaneous display on the MCS.
 - h. The PLC shall be battery backed-up so as to maintain time stamping during power failure of the monitored Field Instruments parameters which can be used in further analysis
 - i. The PLC shall be designed to have communication compatibility for wire/ wireless mode viz. for Radio, GSM / GPRS, VSAT or wired mode viz. OFC and serial to transmit data and receive commands remotely. A total of 3 communication ports shall be required in the SURVEILLANCE Hardware considering:
 Port 1: Host port for 3rd party communication
 Port 2: Remote communication
 Port 3: For acquisition of stored data through local hand held terminal
 - j. Above ports exclude the HMI panel to be provided on the PLC fascia.
- PLC at each location shall be interfaced with communication equipment through RS232 /RS 485 serial bus/ industrial Ethernet using standardized communication protocol.
- The complete PLCs shall be supplied with all its components including the cabinets.
- All the supplied PLCs shall be with same make & model no., differing only in number of PLC I / O cards.

PLC Minimum Specifications:

The PLC shall comply with following in addition to the other requirements.

1	Power Supply	Input	230V AC (170-270VAC), 50 Hz
		Output	As required by Processor & IO modules
2	Central Processing Unit (CPU)	Type	Microprocessor based Programmable Logic Controller (PLC) 32 bit Ethernet or higher
		Memory	Minimum Program - 512 Kb (spare 50% after commissioning) Minimum Data - 2 GB (capable of holding 3 year station data)
		Clock	Battery backed RTC with max. 1 minute drip per year
		Display	Colour touch-screen HMI 10" minimum with Ethernet interface mounted on front panel.
		ADC	16 bit minimum
		Watch-dog	to reset CPU in any abnormal

			function
		Peripheral Communication	Using standard I/O Bus
		Time Synchronization	Should accept external GPS Clock Pulse
3	I/O Modules	Self Diagnostics Type	Required Rack mount plug-in with base
		I/O Count	As per station requirement plus 25% spare to each type duly wired up to terminal board.
		Analog Module	8 CH (Max.) 16 bit, with LED indicator, Max load 500 Ω , cross talk attenuation,
4	Relay Boards	Digital Module Communication Module	16 CH (Max), opto- isolated, ADN with Ethernet & Serial connectivity using MODBUS or any other standard <u>communication protocol</u> All Digital outputs in the PLC will drive Relays 24V DC 2 C/O and field signals routed through relay contacts

PLC Panel & web based monitoring system.

Designing, Supplying, Installing, commissioning & testing of PLC based control monitoring and communication software as per IEC 61131 at Raw water Jack well suitable for monitoring and control of Raw water Pumps, Pressure Transmitters, Level Transmitter, Load manager ,Flow Transmitter complete & web based system Controller, GPRS Modem, Display LCD , RS 485 Convertor, suitable for Flow Meter, Totalizer 8 digit with Analog input, 4-20mA ,including Web server software subscription charges and annual sim card subscription charges.

Bidders shall carry out detailed survey of the proposed web-based system for all sites along with the MJP representative before starting the work and then procure the required materials as per tender. The tentative detailed item wise technical specifications are mentioned below. The work is to be carried out under supervision of Executive Engineer (Mech)

The proposed system will have following parameters to be monitored, Data stored and archived on centralized server.

Accessories –

Controller in panel at head works / Pure water Sump .

Sensor Integration:-

Flow Meter sensor for data acquisition on Rising Main near head works.

Level Sensor for data acquisition in head works / Pure water Sump .

Pressure Transmitter for data acquisition in Pump house.

Power Analyzer for data acquisition in Pump house Panel.

Cable – Copper Cables of suitable size ,pair and accessories required for connecting meters / sensors to central computer are included in the item. While installing the system, all mounting materials to be used shall be of SS .

Web based Software - Commissioning to all above system connecting to central computer with

required hardware.)

Controller: Microcontroller 80 X MEGA 128 A4U . Memory: Minimum 128MB FLASH & 32MB SDRAM or to store data for 15 days. Display: Minimum 20 X 40 pixel LCD, LED back-light with key pad. With automatic scrolling of parameters. Input: keypad or windows base setting software. Tactile Key pad with proper insulation cover to avoid dust & water. Inbuilt Real time Clock (RTC) with battery backup. Power supply: 220-440V 50Hz AC Three Phase. The system shall communicate 24x7 with Web based software and continuously send data to server & must be capable of updating the data to central server at duration of 1 -15 Minutes. It shall also have sufficient buffer memory for 15 days in case the remote connection with the server could not be established. Remote web communication: GPRS/2G /3G/4G as per Indian telecom standards as per availability of network. Additional 8 hrs battery backup for complete controller in case of power failure. System shall be capable of expanding and incorporating additional modules for plant automation with provision for 50 % standby arrangement. System should Capable of remote reset facility like clear logs , change date -timing , Synchronization with operators timing to avoid time lag, must have automatic time synchronization with server. All Energy Meters, External Sensor interface circuit, control and communication circuits should be housed in a Enclosure with suitable size powder coated MS box including all necessary electrical accessories. The box should be suitable for incoming & outgoing cable with proper glands. All wiring shall be secured with casing capping. Level Measurement functionality provided for level measurement of Jack well & Sump. Operating Temperature: 0°C ~ 50°C; Humidity: 10% ~ 90% (non-condense). Storage Environment Temperature: -20°C ~ 60°C; Humidity: 5% ~ 95% (non-condense).

Power Analyser :- Capture detailed electrical parameters available for power analysis. Detailed measurement of Voltage, Current, Power Factor, Frequency, Demand, Consumption data for each phase minimum 1 record per 15 minute. Measured parameters RMS Voltage per phase (V1,V2,V3), RMS Voltage (V12,V23,V31) , RMS Current per phase (I1,I2,I3), Total kW , Total kVA, Frequency, Neutral Current , Power Factor per phase. Energy parameters:- Total kWh Import , Total kWh , Total kWh Net, kWh Import per phase.

Remote communication :- GPRS/4G/3G/2G for remote web communication as per Indian telecom standards. communication shall be established between Controller and Web based Software via GPRS/4G/3G as well as SMS. It should send all meter & sensor data through GPRS communication to server.

Security system :- In case of communication failure between hardware and software the hardware should send an alert in terms of SMS. Only authorized person shall be able to make changes to the settings in the controller. The system should be password protected and allow access to settings to authorized person only. Control panel shall have security lock

Software :- The application software should be controllable through a web browser via Internet. This centralized application to provide access to users/ Managers to browse thru the history reports, and current Dashboards for the Efficiency of the pump stations. Web Based software Solution Provider's proposed solution should be based on industry standard. The software should be purely web based and does not need any client installation. The system should very reliable data collection mechanisms from the field and have provision to support large number of meters on the field .

Reporting :- Online display of Graphical Charts for various Process Parameters. Select individual sensor/equipment for Remote Monitoring. Define Reports on the basis of Quality of Power supply like Voltage imbalance, Current imbalance, Voltage fluctuations etc. System should generate reports for following parameters :- RMS Voltage per phase (V1,V2,V3), RMS Voltage (V12,V23,V31), RMS Current per phase (I1,I2,I3), Total kW , Total kVA , Frequency, Neutral Current, Total kWh Import ,

KWH /ML report , totalised flow , KWH / Running hour report, Water Level @ Sump/Jack well, Pressure @ rising main.

Dash board for analysis whole day data on a single screen :- Pump status ON /OFF , Running hour report with chart & graph , Minimum & Maximum voltage on a same day , Minimum & Maximum KVA on a same day, Minimum & Maximum KWH on a same day, totalized flow, Water Level @ Sump/Jack well, Pressure @ rising main.

Sensor Integration :-

Flow Meter sensor data acquisition :- Acquire data continuously from upto 4 Flow meters as per site requirements. Directly capture Flow Rate & Totalized flow values from existing Flow meters. Shall support Electro-Magnetic & Ultrasonic flow meters. All data of flow rate & cumulative flow should be displayed in form of graphs & charts.

Level Sensor data acquisition :- Acquire data continuously from upto 4 Level meters as per site requirements. Directly capture Level panel values from existing level sensors. All data of Level should be displayed in form of graphs & charts. Provision for additional sensors like pressure, Temperature, pH, Turbidity, Vibration etc.

Pressure Transmitter data acquisition :- Acquire data continuously from upto 4 Level meters as per site requirements. Directly capture Level panel values from existing level sensors. All data of Level should be displayed in form of graphs & charts. Provision for additional sensors like pressure, Temperature, pH, Turbidity, Vibration etc.

Power Analyser data acquisition :- Acquire data continuously from upto 4 Power analysers as per site requirements. Directly capture Power values values from Power analysers All data of Power Analyser should be displayed in form of graphs & charts. Provision for additional sensors like pressure, Temperature, pH, Turbidity, Vibration etc.

Cable :- Designing, Providing ,Erecting ,Testing & Commissioning of six core cable for web based Energy Monitoring system of Pump including cable glands & lugs etc complete. The cable should have Higher resistance to moisture, Better resistance to surge currents, Proper conducting should be provided for underground cable so that it should be damaged, Proper lugs should be provided for cables in termination box., Cable should not be keep open at any place.

Working Voltage	Up to 1100 volts
Temperature range	-15 deg C to +70 deg C or +85 deg C in HR VC,
Conductor Sizes	2.5 sq mm
Numbers of core	SIX core
Colour code	Red ,Yellow ,Blue ,Black ,Grey ,Green
Relevant Indian Standard	IS-694
Packing	500/1000 meters on drum
Conductor Material	Copper
Type of Inner sheathing	PVC Wrapped/PVC Extruded
Type of Outer heathing	PVC Wrapped/PVC Extruded

Design, manufacture, supply, installation,testing and commissioning of indoor type PLC panel of size approx. 800 mm X 700 mm X 800mm (LBH) , fabricated out of min. 2 mm thick CRCA sheet powder coated to Siemens grey color.

The Panel shall be provided with reputed make PLC with following accessories as well as input

output configuration. The PLC shall be programmed with IEC 61131 standards for control, web based monitoring and communication of equipments & instruments at RW Pumps

PLC shall have Ethernet port & protocol for Modbus TCP communication with following IO

DI –16 num

DO – 16 num

AI –4 num

AO – 2 num.

The panel shall include all the accessories (not limited to following) to achieve purpose of smooth & trouble free operation at Raw Water functionality.

Pump On/Off Indicator-1 No

Digital Flow Indicator-1 num

Digital Pressure Indicator-1 num

Digital Power Indicator – 1 num

Led Level Indicator – 5 levels

MCB 4A DP – 4 num

24 VDC Power Supply 10A – 1 num

Push Buttons – 4 num

Selector Switch - 1 num

Control Relay –2 num

Electronic Hooter – 1 num

Control Transformer – 1 num

Emergency PB – 1 num

Panel Cooling Fan – 1 num

Panel Light with Door Switch – 1 num Wiring +

TB etc – 1 lot

Hardware – 1 lot

& Necessary web based Softwar, Web based system Controller, GPRS Modem, ,including Web server software subscription charges and annual sim card subscription charges.

PW and On line water quality monitoring system

Item: Level Transmitter

Designing, Supplying, Installing, commissioning & testing of Ultrasonic level transmitter CE marked with following technical parameters at pure Water Pump House and Interfacing with PLC panel including Mounting

accessories.

Range- 0 - 5 mtrs

Output-4-20 mA

Power supply - 24V DC ext.

Display - 4" LED

Accuracy - +/- 0.25% of Full Scale or better

Temp.- With Inbuilt temp compensation

Enclosure- IP 68

Mounting - Top/above FSL of Tank

1.0 General Requirement

The scope of this work includes design, sizing, supply, erection and commissioning of ultrasonic transmitters.

Transmitter design:-Transmitter design, Sizing & selection is based on process data, process requirement, general requirement and specification as mentioned below.

Erection of transmitter: Erection includes mounting of process isolation valve, erection of impulse piping, mounting of transmitter support and rack, laying of electrical cable from PLC to transmitter, mounting of junction box, glanding, termination and interfacing of transmitter with control system.

Commissioning: Commissioning of transmitter includes, calibration checking, loop checking, testing of transmitter from PLC and open / closed loop checking from sub control system & main control system.

Ultrasonic type level transmitters shall be provided with 4-20 mA DC output. All necessary amplifiers, Zener isolations, signal distribution & associated electronics / hardware / housing / mounting accessories shall have to be provided. The transmitters shall be able to drive at least 600 ohms load. The power supply to the transmitters shall be derived from the control system.

Accuracy of the transmitters shall be 0.2 % of calibrated span (minimum). Transmitter housing shall be Weather proof as per IP-67 with durable corrosion resistant coating.

Ultrasonic level transmitters, consisting of a transducer, a display / transmitter unit, and manufacturer's cable, shall be provided as specified below. Stainless steel tags for ultrasonic level transmitters shall be provided as specified. The transmitter shall have built in temperature compensation, digital level indicator and any other item required to complete the level measuring system. The level measuring system shall be suitable for mounting on the top of the Water trench, pump sump pit, water channel and Filter bed as required

The level sensor material shall be non-corrosive. Contractor shall arrange for the installation of the level transmitter on top location at suitable location. Accuracy of the level transmitter shall not deteriorate even if suspended solids are present in the service fluid.

Level transmitter shall be suitable for field mounting in safe area. Transmitter output shall be isolated and shall be suitable for transmitting over long distance.

2.0 Transducer Required Features

Ultrasonic level transducers and manufacturer's cable assembly shall be provided with at least the features specified below:

Measuring Principle	Ultrasonic, time-to-flight / Pulse Time of flight
Range	0 – 5 Mtr
Level Resolution	Better than 1 mm
Beam angle	6 Degrees
Process connection	Suitable for the Reservoir
Cable	As indicated on the datasheet
Temperature compensation	Full, automatic
Mounting	As indicated on the datasheet
Nominal frequency range	Manufacturer's Standard suitable for the application
Operating conditions	45 – 50 Deg. C
Max Pressure	4 Kg / cm ² (g)
Range	Liquids 0 to 5 m
Sensor materials	Corrosion resistant PVDF wetted material
Principle	Pulse Time of flight
Agency listings	UL listed or FM approved

3.0 Display/Transmitter Unit Required Features

Display / transmitter units shall be furnished for use with the transducers specified above and shall include at least the features specified below. At least two programming key pads shall be included per project unless directed otherwise:

Display	External Display 4" LCD.
Configuration	Using Keypad on display OR suitable field configuration tool
Memory	Parameters held in non volatile memory
Display Location	Local / Sensor mounted
Temperature compensation	Automatic , built in transmitter

Outputs	4 to 20 mA analog, two wire, linear with process engineering units. One Form C SPDT relay contacts, 5 amperes at 250 volts ac, non-inductive
Output Variables	Level, Distance, Volume, Open Channel Flow
Supply voltage	24 VDC, loop powered
Accuracy	+/-0.25% full scale or better
Radio Frequency Interference (RFI)effect & Electromagnetic compatibility	Less than 0.1 percent of span for frequencies 27 to 1,000 MHz and field intensity of 30 V/m Interference emission to EN 61326;Equipment class B, Interference immunity to EN 61326;Appendix A (Industrial)
Voltage transient immunity	Up to 1000 volts common mode and 500 volts normal mode with output shift less than 1.0 percent
Surge suppression	On board transmitter compartment. Compatible with HART or Foundation Field bus communications as applicable. Compliant with IEEE C62.41 Cat. B and IEEE C37.90.1.
Housing & Ingress Protection	Aluminium, rated NEMA 6P (IP68)
Operating conditions	-20 to +50°C
Agency listings	UL listed and FM approved
Hazardous area classification	Safe Area

4.0 Typical data sheet for transmitter

GENERAL	1	Tag Number	During detail engineering
	2	Service	Raw / Dam water
	3	Location	At the Jack well pump floor above pump suction pit
	4	Quantity	As per BOM
	5	Mounting	A special arrangement of SS structure to be fabricated & mounted to install the USLT on River. Flange structure to be fabricated to install the USLT on pump pit
	6	Area classification	NA
	7	Certification	Required
	8	Enclosure	IP 65
	9	Pipe Line number	Vendor to confirm during detail Engineering
PROCESS CONDITIONS	10	Fluid	Raw / Pure water
	11	Fluid State	Liquid
	12	Operating Pressure	Atmospheric
	13	Operating Temperature	50 Deg C
	14	Operating specific gravity	Suitable for water
	15	Operating Viscosity	Suitable for water
	16	Min./ Max Pressure	Atmospheric
	17	Design Pressure	Vendor Standard
	18	Design Temperature	75 Deg C

TRANSMITTER	19	Application	Pure water sump pit level measurement / Filter Beds
	20	Type	Ultrasonic
	21	Principle	time-to-flight / Pulse Time of flight
TRANSMITTER	22	Housing	Aluminium
	23	Paint	Epoxy or polyurethane- coated
	24	Protection	IP 65
	25	Power Supply	24 V DC
	26	Output	Loop powered at 750 Ω 4-20 mA, 2 wire linear with process (HART)
	27	Level Resolution	Better than 1 mm
	28	Transmitter Location	Local/Sensor mounted
	29	Process Flanges and Mounting arrangement	Mtl Wet-side
	30	Material	SS 316 Corrosion resistant PVDF wetted material
	31	Body Material & Bolt & accessories Material	SS 316
	32	Beam Angle	6 Degree
	33	Instrument Span	Vendor to size the transmitter based on process data & submit for Approval
	34	Calibration Range	Vendor to confirm
	35	Alternate Range	NA
	36	Process connection	Manufacturer's standard
	37	Electrical Connection	Manufacturer's standard
	38	Accuracy	$\pm 0.2\%$ of span, 0.2% full scale measuring distance OR 4 mm (+/- 2 mm) which ever is better
	39	Allowable Temp.	Later* DISPLAY
	40	Display	4/5 line LCD Display
	41	Display Scale Required,	External Display ,Menu guided operation Match Calibration
	42	Hydrostatic	Certificate to be provided
	43	Testing Memory	Parameters held in non volatile memory
	44	Mounting Brackets	50 mm Pipe mounting
	45	Lightning Protection	YES Required
COMMUNICATION AND SOFTWARE	46	Communication Type	HART
	47	Communication with:	PLC -SCADA
	48	Configuration from:	Factory
PURCHASE	49	Internal Diagnostics	Required
	50	Approved	As preapproved make

	Manufacturer	
<u>51</u>	<u>Model</u>	<u>Vendor to confirm</u>
52	Purchase Spec	Datasheet is a part of Specification
53	Serial Number	During detail engineering

Item :-Residual Chlorine meter:

Design, Supply, Installation, Testing of Residual chlorine analyser / meter must have automatic sensor cleaning facility at pure water sump and Interfacing with PLC panel. Residual Chlorine meter shall comprises of 3 components i.e. sensors, flow through assembly and transmitter with indicator and gives 2 outputs one to Local display & other to PLC including Mounting arrangement.

Overall Range : 0 -5 mg/l (ppm)

Accuracy : 2% of full scale

Supply Voltage : 230 V ac

Output : 4 20 mA

Membrane free sensor of 2 gold plated electrodes for long term stability and reference electrode (ag/Agcl) must be provided to avoid maintenance. IP 65 Nema 4 housing protection class required.

The residual chlorine meters will monitor residual chlorine exist in pure water of treated water at water treatment plant and at tail end of distribution system. The location of meter at tail end shall be finalized by Engineer in charge. Meter shall be installed in safe and suitable place so as to get protection from sunlight / rain & chlorine vapour.

Residual Chlorine meter shall be waterproof and having on line data transmission arrangement. It shall be connected to departmentally provided central computer with power & data cable of required size and length.

Residual chlorine measuring system shall consist of Chlorine sensor, sensor cable Transmitter/Analyzer, sensor holding arrangement. The sensor shall be rugged in construction and shall be suitable for continuous operation. Residual chlorine shall work on Amperometric Or Chlorometric principle, Bidder has to select best suited for application without compromising specifications listed. The measurement shall have an integral temperature and pH compensator.

The Residual chlorine sensor shall be submerged in the reservoir from the top by making an opening/by providing nozzle in the slab. The Transmitter/Analyzer shall be mounted near the mounting nozzle.

Transmitter/Analyzer shall be suitable for field mounting and shall accept the input from Residual chlorine sensor. The Transmitter/Analyzer shall provide 4-20 mA output proportional to chlorine available in the process. Transmitter output shall be suitable for transmitting over long distance. Transmitter/ Analyzer shall have LCD display to indicate instantaneous residual chlorine in water.

The sensor shall be suitable for the determination of free chlorine in water without the use of sample conditioning reagents without sample pre treatment . The sensor shall be suitable to use in the samples having pH as high as 9.5. The sensor shall be a two-electrode membrane-covered sensor. pH sensor shall be an integral part of the Chlorine sensor which shall be used to compensate the effect of pH on the chlorine measurement. Sensor maintenance shall require no special tools or fixtures. The sensor shall be provided with integral cable.

DATASHEET FOR CHLORINE TRANSMITTERS / ANALYSER

SR.NO.	TECHNICAL SPECIFICATIONS	PARTICULARS
Chlorine sensor		
1	Measuring principle	Amperometric OR Chlorometric

2	Process temperature	0 to 45°C, non-freezing
3	Process pressure	0 to 1 Kg/sq.cm
4	Ingress Protection	IP67
5	Measurement range	0 - 8 (ppm) mg/l of Cl ₂ , (pH between 6 to 9.2)
6	pH range	4 to 9 pH
7	Measured value resolution	approx. 15 µg/l Cl ₂
	Maximum measured error	2 % of measured value
9	Repeatability	± 1%
10	Response time	25 sec to 100% of final reading at Ambient temp.
11	Sensor wetted parts	Silicone, platinum, and polyethersulfone
12	<u>Sensor signal output</u>	Sensor shall have integral cable to be wired to <u>transmitter</u>
13	Sensor memory	Required to store - calibration data, sensor model, serial number etc
<u>Chlorine transmitter</u>		
14	<u>Type</u>	Electronic (microprocessor based) indicating type <u>with adjustable range facility.</u>
15	<u>Material</u>	Die-cast Aluminium /ABS PC Fr /Polycarbonate
16	Electromagnetic compatibility	<u>Interference emission and interference</u> immunity as per EN 61326: 1997 / A1: 1998
17	<u>Display</u>	LC display, two lines, with status indicators user <u>settable measuring menus ; red display for alarms</u>
18	Protection class of field <u>housing</u>	IP 65 Nema 4 housing protection class required.
19	Measuring Range	To suit sensor range
20	Measuring parameter	Standard transmitter which shall be capable to accept multi parameter input (same unit should be capable of accepting input from any of the sensor for pH/Chlorine/Turbidity)
21	Monitor output	4-20mA DC output on HART to PLC
22	Current output resolution	<5uA
23	Power supply	240V AC, +/- 15%, 50/60 Hz
24	Cable entry	1/2" NPT
25	<u>No. of measuring channels</u>	<u>Maximum 2 channel</u>
26	Mounting	Pipe Mounted / Wall mounting/Flush panel mounting
27	<u>Diagnostic feature</u>	<u>Required</u>
28	Accuracy/Repeatability	Better than 2 microgram/litre of full scale
29	Resolution	Manufacturers Standard
30	Sensitivity	0.1 ppm.
31	Response time	6 seconds to reach 100 %
32	Input filter	1 to 999 Seconds
33	Annunciation contacts for monitors:	Number : 2 SPDT 'Hi' and 'Lo' Type: Snap action micro switch Rating: 5 amp., 240V AC, 0.2 Amp. 220V DC
34	Accessories	i) Automatic temperature compensation with fast response integral temperature sensors in the range - 10 to 100 Deg. C ii) Co-axial cables as required

	iii) Electrode holders & supports & mounting arrangement in SS
	<u>iv) Alarm settings and indications on monitor</u>
	v) RFI/EMI shielded, weather and corrosion proof casing
	vi) Other accessories as per site requirement

Item :Power Analyser

On Line Water Quality Monitoring System

Water quality is monitored physically in traditional way. To improve the system and obtaining results at central location, it is proposed to execute the Water quality monitoring system for measuring and monitoring of supplied water parameters like pH, Turbidity and Chlorine. These measured parameters shall be transmitted to a centralized location over GSM network and same shall be viewable over web link to all the authorized personnel of MJP.

The proposed system will have following parameters to be monitored, Data stored and archived on centralized server.

- a. Water Turbidity
- b. Water pH
- c. Water Chlorine content

Accessories-

Turbidity Meter : Sensors shall be installed at Pure water sump and is display unit shall be installed with suitable cable as per directions of Engineer In charge .

pH Meter- Sensors shall be installed in pure water sump and is display unit shall be installed with suitable cable as per directions of Engineer In charge .

Residual Chlorine Meter- Sensors shall be installed in pure water sump and is display unit shall be installed with suitable cable as per directions of Engineer In charge .

All above on line data can be transferred and same shall be acquire on departmentally provided central computer.

Cable – Copper Cables of suitable size ,pair and accessories required for connecting meters / sensors to central computer are included in the item. While installing the system, All mounting materials to be used shall be of SS material.

Web based Software - Commissioning to all above system connecting to central computer with required hardware.

Annual Maintenance Contract- Annual maintenance contract for a period of 4 years. (Includes 1 year warrantee and 3 years comprehensive maintenance)

Item: PLC Panel & web based monitoring system for PW Pumps , WQ Monitoring & other instruments.

For PLC Panel & web based monitoring system refer Specification as per I. No. 5

Providing installing testing and commissioning of Design, Supply, Installing, Testing, PLC based Control Monitoring and Communication Software as per IEC 61131 at Pure Water Sump suitable for monitoring and control of pure water Pumps. Pressure Transmitters, Level Transmitter, PH Transmitter, Turbidity Transmitter, residual chlorine analyser, power analyser for all pumps installed. Necessary web based Software & Hardware system, Web based system Controller, GPRS Modem, Display LCD, RS 485 Convertor, suitable for Flow Meter, Totaliser 8 digit with Analog input, 4-20mA, including Web server software subscription charges and annual sim card subscription charges. And as per detailed specification etc. complete.

Design, manufacture, supply, installation, testing and commissioning of indoor type PLC panel of size approx. 800 mm X 700 mm X 800mm (LBH), fabricated out of min. 2 mm thick CRCA sheet powder coated to Siemens gray color.

The Panel shall be provided with reputed make PLC with following accessories as well as input output configuration. The PLC shall be programmed with IEC 61131 standards for control, web based monitoring and communication of equipments & instruments at RW Pumps

PLC shall have Ethernet port & protocol for Modbus TCP communication with following IO

DI – 16 num

DO – 16 num

AI – 4 num

AO – 2 num.

The panel shall include all the accessories (not limited to following) to achieve purpose of smooth & trouble free operation at Raw Water functionality.

Pump On/Off Indicator-1 No

Digital Flow Indicator-1 num

Digital Pressure Indicator-1 num

Digital Power Indicator – 2 num

Digital pH Indicator – 1 num

Digital Turbidity indicator-2 Nos

Led Level Indicator – 5 levels

MCB 4A DP – 4 num

24 VDC Power Supply 10A – 1 num

Push Buttons – 4 num

Selector Switch - 1 num

Control Relay – 2 num

Electronic Hooter – 1 num

Control Transformer – 1 num

Emergency PB – 1 num

Panel Cooling Fan – 1 num

Panel Light with Door Switch – 1 num Wiring +

TB etc – 1 lot

Hardware – 1 lot

& Necessary web based Software, Web based system Controller, GPRS Modem, including Web server software subscription charges and annual sim card subscription charges.

ITEM:- Annual Maintenance Contract

Maintenance

Annual maintenance of the system broadly can be divided in into following parts-

1. To facilitate remote maintenance of the Automation system components the contractor shall provide a TEAM VIEWER facility for this project. Necessary license software shall be provided and installed.
2. Spares, components for the system
3. Consumables during Maintenance contract of the system
4. Maintenance Services for the System
5. Special purpose tools and calibration equipment's.
6. GPRS and necessary service providers charges for AMC Period.

Maintenance of the system generally involves following activities –

1. Preventive Maintenance:

This includes preventive maintenance of the measurement equipments, calibration of the instruments and replenishing the regents and other consumables, to ensure the smooth working of the system components.

2. Corrective Maintenance:

As and when required it is necessary to carry out the corrective maintenance of the faulty instruments, equipments. This includes the removing the faulty instrument from the system, replace with the spare instrument and repair the same at site or in the manufacturers workshop depending upon the severity of the fault.

3. GPRS and necessary service providers charges for AMC Period.

Contractor has to provide GPRS and required necessary service provider charges during complete AMC Period.

Specifications for Comprehensive maintenance

This section applies to the specifications for maintenance of Instrumentation and controls used in the System. The Contractor shall maintain the complete system including instrumentation & control system for WTP and pure pumping stations with monitoring of all existing for Water Supply Scheme.

Specifications

The specification of materials used for repairs shall be the same as have been used in the original work. Specifications for any materials which were not used during construction shall be approved by engineer prior to commencement of the operation and maintenance period. Without being limited by this clause, during AMC period the Contractor shall use appropriate material for repairs even if material required for such repairs has not been approved earlier, and no delay in making such repairs shall be subjected to such limitation. However, subsequent to use of such material, the Contractor shall submit proposals for the approval of specifications of such material.

Activities during AMC Period

General

Within the framework of the Contractor's responsibilities, the Contractor shall carry out the following activities. However, these shall not limit the requirement for other activities which otherwise are required as per terms and conditions of Contract or to fulfill the Contractor's responsibilities or are essential as per good industrial practices. The Contractor shall be responsible for, but not limited to, the following:

- a) Providing the maintenance services for the system as directed by the engineer in-charge.
- b) Providing all required consumables required for functioning of plant and equipment.
- c) Maintenance of instrumentation (all field instruments) & control system,

software, PCs, control room, radio telemetry system UPS, A.C. etc. and all other works constructed in this Contract.

- e) Entering into AMC (Annual Maintenance Contract) contracts with system/equipment suppliers, as necessary.
- f) Providing necessary GPRS & Service provider subscription charges during AMC Period
- f) Periodic calibration check of all supplied instrumentation and controls during the period of operation and maintenance.
- g) Reporting;
 - Repair history of all mechanical, electrical and instrumentation control equipment in raw water and pure water pumping stations, WTP & water transmission mains;
 - Last periodic maintenance done for all equipment/buildings of the system;
- h) Providing required spares and maintaining adequate inventory of required accessories or equipment itself for repair of system so that all instrumentation and control equipments, software and communication system can work efficiently for the proper functioning of System. Prior approval to the changes required to be carried out during AMC shall be obtained by the contractor from the engineer. The required changes shall be reported well in time. Necessary drawing and literature for any changes shall be submitted to the employers representative. The Contractor shall be solely responsible for the safety and security of the goods in the store and will be responsible for any loss or damages in stores for any reason. He may opt for insurance cover against the value of the goods to be stored without any additional costs on the Department.
- i) Periodic routine maintenance of structures/control room / chambers of each location of WTPs, pumping station, ESRs etc and others built in the Contract. Such maintenance must ensure adequate cleanliness, ventilation, illumination and structural safety. In addition to this, the general hygienic standards must be maintained.

Spare parts & stores

All spare parts used for the equipment in the maintenance of the system must be from the manufacturer of the equipment or, if the equipment itself has been made with parts from other manufacturers, the parts must be of the same make as used in the equipment supplied and installed.

All spare parts shall be packed for long storage under the climatic conditions prevailing at the Site. Each spare part shall be labelled on the outside of its packing with its description, number and purpose and, if more than one spare is packed in a single case, a general description of the case contents shall be shown on the outside and a packing list enclosed. The cost of O & M shall inclusive of spare parts during O & M contract period. The store inventory, the issuing and recording of spare parts will be the responsibility of the Contractor.

The Contractor is also be responsible for providing spare parts and instrumentation required for the Operation and Maintenance during the operation period, and shall bear the cost of the same, including the cost of storing and safeguarding.

The Contractor will make all necessary arrangements to ensure the continuous supply of spare parts and instrumentation for the works, and the rate of supply of these materials shall be in such quantities and amount as would ensure uninterrupted operations.

COMPLETION OF AMC CONTRACT

On the date of Contract Completion or if the Contract is terminated, all the installations, works and equipment's placed under the Contractor's responsibility shall be handed over to the Employer, at no cost, in good working order, barring normal wear and tear. The Employer may perform any inspections, tests from expert appraisals he shall find necessary with a view to checking that this property is in good working order. At the end of AMC period, the Contractor shall be entitled to receive an AMC Completion Certificate within One Month of the Completion of the Contract.

The delivery of such Completion Certificate will relieve the Contractor from his responsibility as

regard to the Operation and Maintenance and confirm that the Contractor has fulfilled all of his obligations under the Contract.

Agency has to provide three years comprehensive maintenance service after the warranty period of 12 months. Payment towards such services will be made as per schedule. However, after installation of meters and on line monitoring system agency has to provide services as under.

Periodic Maintenance Services

Periodic Maintenance Services shall be provided by the bidder on site as preventive care of offered system. The service will be provided on a schedule generally quarterly basis during the contract calendar year period. Field Service Engineer will be sent to site and to conduct periodic Maintenance activities to ensure the system is in accordance to requirement. Following activities shall be carried out during each

Periodic Maintenance Services:

- a. Checking of items installed to ensure satisfactory performance
- b. Checking of software program
- c. Investigations of the problems reported by MJP if any
- d. During AMC visit if any item found defective then it should be replaced by contractor at his own cost.
- e. Service Report on the activities performed and observations.

No of Periodic Maintenance Services visits : 4 Nos. in a year

Emergency Maintenance Services:

Visits shall be provided by bidder as emergency services, as and when required during the contract period in the event of breakdown of the system. Remedial advice shall be provided to MJP over the telephone / fax / e-mail. If still system could not be brought to normalcy, engineer will reach site at the earliest to attend the problems and restore the system back to normalcy.

Emergency situation is defined as: Failure of the system or part of the system resulting in shutdown or tripping.

Minimum Nos. of Emergency Services visits: As required subject to situations defined above but limited to minimum 2 visits in a year.

Item: Laptop or computer station with programming software (web based)

WORKSTATION

- a. A PC based Server cum Operator work station(OWS) cum engineering work Stations (OWS) shall have 32 inch (minimum) flat panel LED displays (dual monitor) with TFT active matrix, a minimum resolution of 1200 by 1600 pixels, minimum 400:1 contrast ratio, minimum dot/pixel pitch of 0.255 mm, and a minimum brightness of 250 cd/m2. Controls shall be provided on the front of each monitor for contrast, brightness, horizontal/vertical position, and horizontal size.
- b. Each work station shall include, at a minimum, CD quality audio capabilities. All work stations shall include the current state-of-the-art hardware platform (CD/DVD rewriteable drives, ports, processor/bus, RAM, etc.) All monitors shall be designed to minimize reflection and glare from external light sources. The key boards shall be provided for control, monitoring and programming function. One number A3 size colour inkjet printer shall be provided along with operator work station at each control station. The work station shall be

server class machine. Contractor shall provide all the necessary certificates/documents issued by server manufacturer.

- c. The work station shall perform the functions of Server, Engineer work stations & operator work station. The term Server/engineer work station refers to the work stations that have typically been called Engineering Work Stations (EWS), but have the dual functionality of an EWS and Server.
- d. The work station shall be able to monitor, view, create, modify, debug, and document any control or information display, program, database, or other function. Server shall be able to store & operate on the required software's for development and modification of control and data acquisition programs.
- e. The work station hardware shall meet system software requirements. Server shall be supplied with minimum RAID 5 configuration (Redundant Array of Independent Disks) and redundant power supply configuration. System hardware and software shall be latest. Server/Engineering station shall be able to call up related data stored in their associated PLC.
- f. The workstation shall be used for historical data storage and retrieval. Each work station shall consist of monitor(s) as specified above, operator keyboard(s), pointing device(s), and supporting electronics (operator interface processors, display generators, data highway communications network equipment, network accessories etc.).
- g. Work station shall have provision for event recording, trending and report generation. The work station shall have option to reuse previous engineering work like options to import tags from PLC and screens with tag from Local HMI stations dedicated for each PLC. Shall have read/write options to PLC as well as to Local HMI workstation. Engineering work station shall include the capability to provide both on-line and off-line development of data acquisition programs and information display.
- h. The workstation shall perform control, monitoring and operation of all instruments/ drives interacting with PLC based control system. The work station shall be possible to use as programming station of the PLC also.

Windows based PC with latest configuration & OS complete with necessary office & antivirus softwares.

PC configuration shall not be less than Intel i5 10th Gen CPU, 16 GB Ram, 128 GB SDD, 500 GB HDD, DVD RW, Rs232 & Rs485 port, 2 RJ45 ports, Keyboard, Optical Mouse, 32 inch color TFT Monitor, Latest Windows Pro OS, Microsoft Office & Antivirus & Internet Security software for 3 years license.

Item:- Cable

- A) Supplying and erecting armoured cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner:-4 x 1.5 sq mm Copper conductor PVC insulated, armoured cable.

- B) Supplying and erecting armoured cable with ISI mark stranded / solid copper conductor 1.1 kV grade complete erected on wall / panel or in provided trench in an approved manner.-4 x 2.5 sq mm Copper conductor PVC insulated, armoured cable.
- C) Supplying, Installing, commissioning & testing with Terminating & Interfacing of 2 Pair x 1 sq.mm as per IS 694 copper Shielded twisted, multistranded armoured cablew on wall in GI tray or on ground.

Maharashtra Jeevan Pradhikran

Up-dated List of Approved Makes (Automation) as on 01/01/2024

13) PVC / XLPE Cables				
A) PVC / XLPE Submersible (Copper Conductor) Cable :-				
1)	Ajanta :- M/s.Ajanta Industries, Metoda, Rajkot-21.	Upto 6 sqmm size	Mr. Ritesh Patel Mobile No. - 9825215350 Mr. Kamlesh Patel Mobile. 9727681901/8866010555 Email : info@ajantaindustries.co.in	31.03.2024
B) 1.1 kV Allum. & Copper Cable :-				
1)	Vishal :- M/s. Vishal Cables Pvt.Ltd. Ambarnath East Dist Thane – 421506.	Multicore Up to 400 sqmm & single core 1000 sqmm	Mr. Hirasing Ailsinghani Mobile No:- 9049777777 / 7841078410 Mr. Dilipsingh Ailsinghani Mobile No:- 9766442288 sales@vishalcables.com	31.03.2024
14) Water Treatment Plant Equipments :-				
A) Air Blowers Twin & Tri Lobo & Turbo & Vaccum pump :-				
1)	Kay International :- M/s. Kay International Pvt. Ltd., Azadpur Commercial Complex, Delhi – 110033.	No Limit	Mr. Anil Suri Contact No:-8572899504 a.suri@kayblowers.com Mr. Saurabh Deshmukh ContactNo :- 9996940489 pune@kayblowers.com	31.03.2024
2)	KPT :- M/s. KPT Industries Ltd., Baner , Pune 411045.	150HP	Mr. sachin mokate Mob. 9225686003, 0231- 2689900 sachinmokate1@gmail.com	30.09.2025
B) Automatic self Cleaning Filtration System				
1)	Microklin :- M/s.Technomax Enterprises (I) pvt. Ltd., Airavali Village, Navi Mumbai.	Upto 20 MLD	Ph. No. 022-27790789, Mob.9867085672 / 9325195539 email- rohan.inamdar@technomax.co.in/ technomax@technomax. co.in	08.03.2024
B) Chlorination System				
1)	Achala :- M/s Achala	Gas Chlorination System, Vacuum Operated (Fully	Mobile No.7498070219 /	

	Engineering and Electronics, Kalva,Thane	Automatic&Manual), Pressure feed Chlorinators & Chlorine Handling equipment	8652270219 achalae@gmail.com, anantpadubidri@gmail.com	31.05.2025
2)	Toshcon :- Toshcon Jasco India Gegal India area, Ajmer-305023.	Gas chlorination System Vacuum operated gas Chlorinators, Residual Chlorine anylesar.	Mr. Ashok Rathore Mob. 9351497757 info@toshcon.com , etering@tushcon.com	30.11.2024
3)	Supreme A 148 :- M/s.Supreme Technology, Khairne,Navi Mumbai- 400710.	Hypochlorite dosing chlorination system & Chlorine leak absorption system.	Phone no- 022-41298851 t0 65 Mob.no - 9327911666 / 9818166449	17.01.2024
4)	"Chlorojeevan " plus :- M/s. Bhavani Enviro Technologies Pvt. Ltd. Dombivli Thane – 421203.	Sodium Dichlorois ocyanurat e Dosing Potable water Chlorination system	Mr. Deepak Deshpande Mob.no - 9167023869 Mr. Dilip Nar Cont. 9324630332 admin@bhavanienviro.com info@bhavanienviro.com	31.01.2024
5)	SM Polymer :- M/s. S.M. Polymers, Vilholi, Nashik – 422010.	Gas Chlorination System, Vacuum Operated (Fully Automatic & Manual) Chlorinato	Mr. Rahul M. Patil Mob :- 9869116003 Mr. Raj Patil Mob :- 9021125576 Mr. Manoj Patil Mob :- 9869010571 smpolymer@gmail. com sales@smpolymers.com	31.03.2024
6)	Toshcon :- Toshcon Jasco India Gegal India area, Ajmer-305023.	Gas Chlorination System, Vacuum Operated (Fully Automatic & Manual) Chlorinators & Chlorine Handling equipment & Residual Chlorine Analyser.	Mr. Ashok Rathore ContactNo:- 09351497757 Mr. Uday Kulkarni Contact No:-9372417787	30.11.2024
C) W.T.P. Equipment.				
1)	Adroit :- M/s.Adroit Associates Pvt. Ltd., Sainath Colony, Indore.	Clarifier / Clariflocculator, Alum & Lime Agitators, Flash Mixers, Mechanical & Manual Screens.	Mr. Jay Purandare Mobile No. 7509178383 Ph. 0731-2593800 Email- adroit@adroitproject.com / jayp@androitindia.co.in	21.04.2026

2)	Indofab :- M/s. Indofab Industries, Thane, Mira Road (East), Dist Thane,-401107.	Clarifiers, Clarifier, Bridge, Clanifloculators, Aeriator, Floculators, Flash Mixer.	Mr. Pratik Shet Mobile No. 9869623866 / 7400092446 Email - sales@indofab.com/ operations@indofab.com hemant@indofab.com	21.04.2026
14) STP Accessories				
1)	Positive :- M/s. Positive Metering pumps (India) Pvt. Ltd. Ambad, Nashik - 422010	Chemical dosing Pumps	Mrs. Chetana Surywanshi MobileNo - 9552590845 chetanak@positivemetering.com Mr. Priyal Sirsath Mobile No. 9922507046 sales@positivemetering.com	29.02.2025
15) SCADA & Automation				
A) SCADA and Automation System				
1)	Axis Solutions :- M/s. Axis Solutions Pvt. Ltd Kathwada, Ahmedabad-382430.	PLC, SCADA	Mr. Purthik Gajjar. Tel. No. 079-22900860/1 Mobile No. 9909906354/ 9925001633 Email. Id: axis@axisindia.in / info@axisindia.in	31.07.2025
2)	Delta :- M/s. Delta Electronics India Pvt. Ltd., Hosur- 635109.	PLC, SCADA, HMI, VED,	Mr. Saurabh Walia Mobile No. 8929191567. Tel. No. 0124-4874900 Email. Id: Saurabh.walia@deltaww.com www.deltaelectronicsindia.com	03.08.2026
B) Transmitters Level, Pressure, Temperature				
1)	Endress +Hauser :- M/s. Endress + Hauser (India) Pvt. Ltd., MIDC, Aurangabad -431136.	All type	Mr. Sunil Bhor Mobile No: 9930306449 sunil.bhor@endress.com Phno. 0240 / 2563695 info@in.endress.com	31.08.2024
2)	Techtrol :- M/S. Pune Techtrol Pvt. Ltd., Bhosari, Pune-411026.	Level Switch, Radar Level Transmitter, Ultrasonic Level Transmitter	Mr. Sudhakar Badiger, Mo. 9922438205, ho@punetechtrol.com Ph. 020/66342900 www.punetechtrol.com	31.07.2025
3)	R.L.T. :- M/s. R.L.T. Instrumentation Pvt. Ltd., Chengalpattu, Chennai-603101.	Level Transmitter, Pressure Transmitter, Liquid Analyzer	Mr. G.P. Tirumurgon Mo. 9566039869	31.05.2025

4)	SBEM SBEM Pvt. Ltd., Pune	Level Transmitter	Mr. Bhushan, Mobile No.: 8929191567 Email: bhushan.g@sbem.co.in	06.12.2024
5	EIP :- M/S. EIP Env. Level Controls Pvt. Ltd., Noida. (U.P.) 201301	Ultrasonic Flowmeter	Ph. No. 0120-424333, 9818953439, 9810181109 emailrgoyal@eipenviroindia.com	30/11/2025
C) Turbidity, pH, Conductivity, DO, ORP, TDS, Cl2, TSS, COD, BOD Analyzers				
1)	Endress +Hauser :- M/s. Endress + Hauser (India) Pvt.Ltd., MIDC, Aurangabad – 431136.	All	Mr. Sunil Bhor Contact No: 9930306449 sunil.bhor@endress.com Ph no.0240 / 2563695 info@in.endress.com	31.08.2024
2)	Toshcon :- Toshcon Jasco India Gegal India area, Ajmer-305023.	All	Mr. Abhishek Toshniwal MobileNo. 9414006717 purchase2@toshcon.com Mr. Uday Kulkarni Mobile No. 372417787 pune@toshcon.com	29.02.2025
3)	R.L.T. :- M/s. R.L.T. Instrumentation Pvt. Ltd., Chengalpattu, Chennai-603101.	All	Mr. G.P.T. Tirumurgon Mo. 9566039869	31.05.2025
D) Web based Pump & Multi Pumps monitoring Solution				
1)	CENSEO meter along with temperature & pressure Probes :- M/s. Secure Meters Ltd., Udaipur-313003.	All types of pumps with No Limit	Mr. Piyush Ghosh Mobile No: 9930360842 email pijoush.ghosh@securemeters.com Mr. Rahul Joshi Mobile No:- 9920132039 rahul.joshi@securemeters.com	31.12.2024
16) Water Meters				
A) ISI Marked Domestic Water Meters as per IS:779:1994 (Mechanical Type)				
1)	Everest :-	Single Jet	Mr. Pawankumar Gupta	
	M/s. Everest Sanitation (india), Delhi- 110052	upto 15 mm dia, Multi Jet upto 50 mm dia	Mobile :- 9810076158 email everestmeter@hotmail.com Mr. Sanjaykumar grawal Mobile: 9422163412 / 8793390473 sanjaykumarmy@gmail.Com	31.12.2024

2)	Ideal :- M/S. Nixis Meter Pvt. Ltd., Ganjimutt, Manglore 574144	Upto 15mm	Ph. No. 0824-2000764, 9822057454 email bbasmareg@gmail.com , marketingdirector2nixis.in	17.01.2026
3)	Rahul :- M/s. Rajastan Industrial &Scientific Corporation, Jhotwara,Jaipur-302012,	Upto 15 mm	Mr. Abhishek Shinde Mo. 7798356666 Email rahulmeters@gmail.com abhishek@ferroton.com www.rahulmeters.com	31.07.2025
4)	Belanto :- M/s. B.M. Watermeters, Jalandhar-144004.	Single Jet upto 15 mm, Multi Jet upto 50 mm dia	M/s. Kushal harma Mo. 876110500/ 9501200231 sales@bmwatermeters.com	31.05.2024
5)	Chambal :- M/s. N.B. Industries (Meters) Pvt.Ltd. Indore 452006.	upto 50 mm	Mo. 9229182344 Gmail - chambalmeters@gmail.com	06.12.2026
B)	Domestic Multi Jet Water Meters OIML / MID certified AMR / AMR Compatible as perISO -4064			
1)	Baylan :- M/s. Aquameas InstrumentsPvt. Ltd. Shivajinagar, Pune 411046	Upto 40mm	Mr. Avinash Jape Mobile No: 9822057521 avinash.jape@aquameas.co msales@aquameas.com	30.09.2024
2)	SBEM SBEM Pvt.Ltd. Pune 412205	upto 40 mm	Mo. 8369170450 Gmail - bhushan.g@sbem.co.in	06.12.2026
3)	TEKSAN :- M/s. Accumeasure Systems Pvt. Ltd. Pune - 411046	Upto 20mm dia	Mr. Abhishek Shinde Mobile No: 7798356666 abhishek.accumeasure@gmail.com	31.01.2024
C)	Bulk Ultrasonic Water Meters OIML / MID certified AMR / AMI Compatible Multi Jet as per ISO - 4064			
1)	Baylan :- M/s. Aquameas Instruments Pvt. Ltd. Shivajinagar, Pune 411023	Upto 200 mm dia	Mr. Avinash Jape Mobile No: 9822057521 avinash.jape@aquameas.com javinash@aquameas.com	06.12.2026
D)	Bulk Woltman Type Water Meters Multi Jet as per ISO - 4064			

1)	Belanto :- M/s. B.M. Watermeters, Jalandhar-144004.	Upto 300 mm dia	M/s. Kushal Sharma Mo. 9876110500/ 9501200231 sales@bmwatermeters.com	31.05.2024
E) Ultrasonic AMR Domestic Water Meters				
1)	Kamstrup :- M/s. Kamstrup MeteringSolution Pvt.Ltd., Ghodbunder Road, Thane-400610.	Upto 40 mm dia	Mr. Subodh Vaidya Mobile No. 9822496763 subv@kamstrup.com Mr. Upendra Borate Sales Mobile No. 9702015903 upb@kamstrup.com	31.12.2024
2)	Baylan :- M/s. Aquameas Instruments Pvt. Ltd. Pune 411023	Upto 40mm dia	Mr. Avinash Jape Mobile No: 9822057521 javinash@aquameas.com	06.12.2026
F) Electromagnetic Domestic AMR / AMI Water meter.				
G) Ultrasonic AMR Bulk Water Meters				
H) Ultrasonic Flow Meters (Insertion, Portable & Clamp on Fixed Type)				
1)	ADDMAS :- M/s. Instronix Process Controls, Sanand, Ahmedabad- 382481	No Limit	Mr. Divyang Patel Mob.9879007526 / 7486892642 / admin@addmas.i sales@addmas.in, divyangkp@hotmail.com	28.02.2024
2)	EIP :- M/S. EIP Env. Level Controls Pvt. Ltd., Noida. (U.P.)201301	Ultrasonic Flowmeter	Ph. No. 0120-424333, 9818953439, 9810181109 email- rgoyal@eipenviroindia.com	30/11/2025
3)	SBEM SBEM Pvt.Ltd. Pune 412205	No Limit	Mo. 8369170450 Gmail - bhushan.g@sbem.co.in	06.12.2026
I) Full Bore Electromagnetic Flowmeter AC & Battery Operated				
1)	Eureka :- M/s. Eureka Industrial Equipments Pvt. Ltd. Paud Road, Pune- 411038.	Upto 1500 mm dia	Mr. Ashish Shaha, Mo. 9370469464 sales@eurekaflow.com www.eurekaflow.com	31.05.2025
2)	SBEM SBEM Pvt.Ltd. Pune 412205	upto 1500 mm	Mo. 8369170450 Gmail - bhushan.g@sbem.co.in	06.12.2026
3)	R.L.T. :- M/s. R.L.T. Instrumentation Pvt. Ltd., Chengalpattu, Chennai-603101.	Upto1200 mm	Mr. G.P.T. Tirumurgon Mob. 9566039869	31.05.2025

4)	Endress +Hauser :- M/s. Endress + Hauser (India) Pvt. Ltd., MIDC, Aurangabad -431136.	Upto 1200 mm	Mr. Sunil Bhor Mob. 9930306449 Ph.No. 0240/2563695 sunil.bhor@endress.com info@in.endress.com	31.08.2024
5)	ADDMAS :- M/s. Instronix Process Controls, Sanand, Ahmedabad- 382481	Upto 1000 mm	Mr. Divyang Patel Mob. :9879007526 / 7486892642 / 8733807526 admin@addmas.in, sales@addmas.in, divyangkp@hotmail.com	28.02.2024
6)	Electronet(Pune :- M/s. Electronet Equipments Pvt. Ltd Kondwa (Bk.), Pune – 48	Upto 1000 mm dia	Mr. Rajendra Nagavkar, Managing Director Mob. 822015256 rmn@eeplindia.com Mr. Tushar Patil Contact No: 8275518875	31.05.2024
7)	AAROHI :- M/s. Aarohi Embedded systems Pvt. Ltd., Metoda,Rajkot- 360021.	Upto 900 mm dia	Mr. Ravi Bhardava, Mob- 9512999942. info@aarohies.com	31.05.2025
8)	Manas :- M/s. Manas Microsystem Pvt. Ltd., Bhosari, Pune -411026.	Upto 800 mm dia	Mr.Shrikant Sahasrabuddhe Contact No: 9860792277 md@manasmicro.com Mr. Pavan Patil Mobile No. 8530006258	31.12.2024
9)	ATLANTECH :- M/S. shree Siyaram switchgears Pvt. Ltd., station Road, Jaipur -302001	Upto 400mm dia	Ph. No. 01414022627, 9602142150 email: shyamr1964@gmail.com,info@atl antech.in	17.01.2026
10)	Nivo :- M/s. NIVO Controls Pvt.Ltd. 104- Indore – 452010.	Up to 350 mm dia	Mrs. Suwarna Karwade Mobile No:- 9584132258 sales @nivocontrols.com	30.06.2024

Note : If any make of the product is not mentioned in the above approved list then the same shall be got approved from Superintending Engineer (M),M.J.P., Thane/Nagpur.