

PRESS TENDER NOTICE

Contractor

No. of correction

Chief Officer

Contractor

No. of correction

Chief Officer

Contractor

No. of correction

Chief Officer

DETAILED TENDER NOTICE

Contractor

No. of correction

Chief Officer

SHEGAON MUNICIPAL COUNCIL
Taluka: Shegaon Distt: Buldhana
DETAILED TENDER NOTICE NO. ----- OF 2025-26

Online percentage rate basis Tender in B-1 Form in two envelopes system are invited for the following works from the contractors registered with MJP in class Unlimited or registered in CIDCO/MIDC OR ANY GOVERNMENT DEPARTMENT IN INDIA in equivalent class of MJP, by the Executive Engineer, MJP/Engineer-in charge/Commissioner Shegaon Municipal Council , (on behalf of The Chief Engineer/ Commissioner , Shegaon Municipal Council) , -----, ----- 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

- a) **NAME OF WORK** : SHEGAON SEWERAGE SCHEME FOR PHASE-III (PUMPING MACHINERY), TAL. SHEGAON, DIST. BULDHANA
- b) **ESTIMATED TENDER COST** : **Rs. 25575126.00 /-**
- c) **EARNEST MONEY DEPOSIT**: **Rs. 127880.00 /-** (0.50% of the cost put to tender)
- d) **DOWNLOADING COST OF TENDER DOCUMENTS**:- Rs 5900/-(18% Including GST) (Non-refundable).
- e) **CLASS OF CONTRACTOR** :- Class-Unlimited (Elect./Mech.) & above Registered with MJP or PWD Electrical in equivalent class or equivalent registration with MIDC/CIDCO or any Govt. Department in India 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.

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/Chief Officer /Commissioner 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 Corporation. The mandate for EMD refunds / forfeit / adjustment against security deposit shall trigger from e- tender application of NIC portal.”

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 Chief Officer , Shegaon Municipal Council, Shegaon for initial minimum period of **36 months** (time limit) and shall be extended suitably if the work is not completed within the time limit.

- **Deductions through R.A. Bills.**

Balance 2% 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.

- **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 **“Chief Officer, Shegaon Municipal Council, Shegaon”**
- The tenderer shall submit the Bank Guarantee of Additional Security Deposit (ASD) within 8 days from opening of Financial Bid to the office of **“Chief Officer, SHEGAON MUNICIPAL COUNCIL, SHEGAON.”**
- 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 1 %	1) NIL
Lower than below 1% to 10%	2) 1 % of estimated cost put to tender
Lower than below 10% to 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/-
Lower than 15 % below	4) % as per Sr. No. 3 + (% rate quoted -15%) x 2 For example : If 19% below is quoted the amount of performance security (Additional Security Deposit) shall be 6+(19-15)x2 = 6%+8% = 14% Performance Security of estimated cost put to tender. If the amount is less than Rs. 1000/-, then minimum to be Rs. 1000/-.

- The bank Guarantee shall be valid upto defect liability period of the tender. It should bear MICR and IFC 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.

The initial Security Deposit and additional security deposit may be in the form of Fixed deposit receipt OR Bank Guarantee by a Nationalized/Scheduled Bank in the name of **“The Chief Officer, Shegaon Municipal Council, Shegaon** and shall be for a minimum period of **12 months (time limit)** and shall be extended suitably if the work is not completed within the time limit. The tenderer shall have to furnish this security deposit with initial security deposit.

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 (1985) (latest revision) provision applicable during contract period.

4. TIME OF COMPLETION

12 (Twelve) calendar months, including Monsoon. This will be counted from the date of issue of the work order.

5. DETAILED TENDER SCHEDULE

Sr. No.	Activities	Date & Time
1	Tender publishing date	28/04/2026 10.00 Hrs
2	Documents download start date	28/04/2026 10.00 Hrs
3	Documents download end date	08/05/2026 upto 05.00 Hrs.
4	Pre-bid meeting date	04/05/2026 upto 00.00 Hrs.
5	Bid submission start date	28/04/2025 from 10.00 Hrs.
6	Bid submission closing date	08/05/2026 upto 50.00 Hrs.
7	Bid opening date (Technical Bid)	11/05/2026 at 10.00 Hrs.
8	Bid opening date (Commercial Bid)	Will be intimated after opening of Technical Bid.

6. PRE QUALIFICATION CRITERIA

- The firm / contractor should registered with MJP in class Unlimited /MIDC/CIDCO OR ANY GOVERNMENT DEPARTMENT IN INDIA in class 1'& above (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.

Special Pre Qualification conditions as per C.V.C. Guidelines.

Particular Construction Experience and Key Production Rates

- A) Average annual financial turnover during the last 3 years, ending 31st march of the previous financial year should be atleast 30 % of the estimated cost.
- B) The applicant should have experience:
- successfully completed similar works during last five years ending last day of month previous to the one in which applications are invited shouldbe either of the following:
 -
 - 1.1 Three similar completed works costing not less than the amount equalto 40 (forty) percent of the estimated cost.

or

1.2 Two similar completed works costing not less than the amount equal to 50 (fifty) percent of the estimated cost.

or

1.3 One similar completed work costing not less than the amount equal to 80 (eighty) percent of the estimated cost.

2. “similar work” should be as mentioned in following point no 3. (as per scope of work for tender called i.e Water supply scheme)

3. The similarity of work shall be pre-defined based on the physical size, complexity, methods/ technology and/ or other characteristics described, and scope of works. Substantial completion shall be based on 80 % (eighty percent) (value wise) or more works completed under the contract (Note: Substantial completion should not be defined in terms of percentage completion, rather it should be based on functional consideration. For contracts under which the applicant participated as a joint venture member or sub-contractor, only the applicant’s share, by value, shall be considered to meet this requirement. For arriving at cost of similar work, the value of work executed shall be brought to current costing level by enhancing the actual value of work at simple rate of seven percent per annum, calculated from the date of completion to the date of Bid opening.

Certificate for ‘successful completion’ of project/work/asset should contain two parts. Part-I shall contain ‘financial value of work done’ and part-II shall contain ‘certificate of functional completion of project/work/asset’.

- The agency shall have experience successful completion and commissioning of the works listed below with any Govt/Semi Govt./ corporation or equivalent organization. The experience of each work should be under single agreement.

•

Sr.No	Components in project	Experience required for
1.	1) Pumping station of Wetwell-1 Details of Non Clog Submersibles Pumpset 06 Nos a) Discharge 60000 LPH each Head 18 m 2) Pumping station of Wetwell-2 Details of Non Clog Submersibles Pumpset 07 Nos b) Discharge 135000 LPH each Head 17.5 m 3) Pumping station of Wetwell-3 Details of Non Clog Submersibles Pumpset	Minimum Experience for prequalification Contractor should have experience of similar work, Satisfactory completion of Providing erecting, Testing, Commissioning and giving test & Trial of Non Clog Submersibles Pumpset as under in Single Tender 1) Individual Capacity of 25 HP . 2) Total capacity of 150 HP.

Sr.No	Components in project	Experience required for
	c) Discharge 46666.67 LPH each Head 13 m 4) Replacement of Pumping Machinery at Existing 7MLD Plant Details of Non Clog Submersibles Pumpset a) Discharge 24000 LPH each Head 22 m x 2 Nos b) Discharge 48000 LPH each Head 22 m x 2 Nos c) Discharge 120000 LPH each Head 22 m x 1 Nos	
2	SCADA & AUTOMATION	Minimum Experience for prequalification Experience of similar work, Satisfactory completion of Providing erecting, Commissioning and giving test & Trial of PLC & SCADA Automation.

- C) 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 and counter signed by the City/Hydraulic/Superintending Engineer or equivalent officer or head of Govt/Semi Govt./, Corporation or councils. Except Automation work, the certificate issued by Private Individuals/ Private Organization will not be considered.
- D) In case LT installation The certificate of experience shall have to be issued by the officer not below the rank of Executive Engineer or equivalent officer or Head of Govt/Semi Govt./, Corporation or councils.
- E) For the work of Automation experience certificate issued by private organization can be considered if supported by company registration certificate, TAN, VAT, PAN and contact details.
- F) The firm shall have valid VAT registration No or TIN No.
- G) The firm shall have valid PAN No.
- H) The bidder should visit the site i.e. Shegaon, Wetwells and STPs sites location mentioned in the tender document before submitting the tender and get the site visit certificate duly signed by **the Municipal Council Engineer**. It is essential for bidder to submit the geotagged photo of site visit and Self attested Signed copy of site visit certificate in **Annexure- XVIII** (attached separately). The same should be uploaded in envelope no.1 if any agency/ Contractor refuse to visit the Site and submit the Geotagged site certificate then Chief Officer Municipal Council have rights to qualify or disqualify the bidder/agency/contractor for the bid.

All the documents pertaining to pre-qualification criteria shall be submitted separately online in Envelop No.1 (Technical Bid)

The bidder shall have a bid capacity more than the value of this bid. Bidding capacity of contractor for completion of work will be decided by following formula.

Available bid capacity = $(1.5 \times N \times A) - B$, where

A = Maximum value of engineering (Civil/ Electrical/ Mechanical as relevant to work being procured) works executed in any one year during the last five years (updated at the current price level), taking into account the completed as well as works in progress.

M = Multiplier Factor i.e 1.50

N = Number of years prescribed for completion of the work in question.

B = Value (updated at the current price level) of the existing commitments and ongoing works to be completed in the next 'N' years

ठेकेदाराने Self Declaration सादर करणे आवश्यक राहिल. (Annexure XV)

Bid capacity calculation ठेकेदाराने सादर करताना

1. प्रगतीपथावरील तसेच ठेकेदाराने न्यूनतम देकार भरलेल्या निविदा व निविदा स्वीकृत झालेल्या तथापि कार्यादेश देणे बाकी निविदा इ. कामांची माहिती दर्शविणारा Annexure -A मधील सर्व विवरण पत्रांमध्ये किमान कार्यकारी अभियंता पेक्षा कमी नसलेल्या पदावरील अधिकाऱ्यांची स्वाक्षरी असणे आवश्यक आहे किंवा सनदी लेखापालामार्फत प्रमाणित करणे आवश्यक आहे. या सर्व विवरणपत्रांमध्ये ठेकेदारांची स्वाक्षरी अनिवार्य राहिल तसेच नगरपालिका / महानगरपालिका इ. स्थानिक स्वराज्य संस्थांच्या कामाच्या बाबतीत संस्थेतील प्रशासकीय प्रमुखंची स्वाक्षरी असणे आवश्यक आहे किंवा सनदी लेखापाला मार्फत प्रमाणित करणे आवश्यक आहे. या सर्व विवरण पत्रांमध्ये ठेकेदारांची स्वाक्षरी अनिवार्य राहिल.
2. वर्ष निहाय Turnover त्याच प्रमाणे Bid Capacity Calculations चार्टर्ड अकॉउंटंटचे कडून तपासून घेऊन CA आणि ठेकेदारांच्या स्वाक्षरीसह ठेकेदारांच्या लेटर हेडवर असणे आवश्यक आहे.
3. Bid Capacity Calculations सोबत ठेकेदाराने द्यावयाच्या प्रगतीपथावरील कामे व त्याचप्रमाणे न्यूनतम देकार भरण्यात येऊन Letter of Indent प्राप्त झालेल्या कामांच्या बाबतीतील विवरण पत्राचा नमुना Annexure-XIV नुसार संलग्न केला आहे.
4. ठेकेदाराने त्यांच्याकडील प्रगतीपथावरील कामे व त्याच प्रमाणे न्यूनतम देकार भरण्यात आलेल्या निविदांच्या बाबतीत Letter of Indent मिळालेल्या कामाचा समावेश करावा मात्र, निविदा प्रक्रियेत भाग घेऊन, केवळ न्यूनतम देकार भाविलेल्या कामांचा समावेश करण्यात येऊ नये.
5. Contractor should submit Bid Capacity calculations with works in hand also lowest Bid and letter of indent in Annexure-XIV
6. Contractor should submit Statement of work in hand or incomplete work duly signed by not less than Executive Engineer, in case of municipal council or municipal corporation

statement should be signed by Chief Officer, Hydraulic Engineer respectively.

7. Contractor should submit year wise turnover and Bid capacity calculation on his/her letterhead duly signed by Chartered accountant.
8. With Bid capacity calculation contractor should submit a affidavit as per(Annexure-XIV).
9. Contractor should submit list of works in hand and list of tenders with lowest also letter of for which he is L1 (lowest 1) and also submit list of tenders for which letter of Indent or letter of acceptance issue to him.
10. **Networth = PRE-QUALIFICATIONS CRITERIA (FINANTIAL)**
 1. The networth is applicable to tenders costing more than 25 crores.
 2. The networth calculatios should be certified by charteredaccountants.
 3. The Bidder should have networth 8% of tender cost of continues 3years from the finantial year. In which he desires to take work.

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 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.500/- stamp paper as per prescribed form (**Annexure B**) 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 mechanical/ electrical/ automation/ particular civil work then he is allowed to have joint venture with another agency having the experience of mechanical/electrical/automation/ particular civil work.

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

For pre-qualification, the JV should fulfil the criteria specified in the pre-qualification document. The attributes to be evaluated will be the same as for individual contractors; however, certain parameters up to the specified limits have to be essentially met by them collectively, some by the lead partner, and some by the other partner, as briefly described below:

1. Qualifying factors to be met collectively: (i) annual turnover from construction; (ii) particular construction experience and key production rates; (iii) construction cash flow for the subject contract; (iv) personnel capabilities; and (v) equipment capabilities;
2. Qualifying factors for lead partner: (i) Annual Turnover from Construction; (ii) particular construction experience; (iii) financial capability to meet cash flow requirement of subject contract – not less than of 50 % (fifty per cent) of the respective limits prescribed in case of individual contractors may be accepted; (iv) adequate sources to meet financial commitments on other contracts; (v) financial soundness;
3. Qualifying factors for other partner: Same as for lead partner except that for the factors specified in (2) (iii) above, a lower limit of 25 % (twenty-five per cent) may be accepted instead of 50% (fifty per cent.)

(g) Disqualification

Even if an applicant meets the eligibility criteria (Please refer Para 4.5 below) and PQC, he shall be subject to disqualification if he or any of the constituent partners is found to have:

1. made misleading or false representations in the forms, statements, affidavits and attachments submitted in proof of the qualification requirements; and/ or;
 2. Records of poor performance during the last five years, as on the date of application, such as abandoning the work, rescission of the contract for reasons which are attributable to non-performance of the contractor, inordinate delays in completion, consistent history of litigation resulting in awards against the contractor or any of the constituents, or financial failure due to bankruptcy, and so on. The rescission of a contract of venture JV on account of reasons other than non-performance, such as the most experienced partner (major partner) of JV pulling out;
 3. On account of currency of debarment by any Government agency.
- In case of work of erection of High Tension Installations, main contractor shall have joint venture with the registered Mechanical/Pumping Machinery contractor. Manufacturer

representative shall be present during the erection.

8. COST OF BLANK TENDER FORM

- Rs...../- 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 .../.../2025 at 11:00 AM hours in the office of **the Chief Officer, Shegaon Municipal Council, Shegaon**, 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 tenderers. 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

.../.../2025 at 4:00 PM.

13. DATE & TIME OF ONLINE OPENING OF TENDER

.../.../2025 at 11:00 AM in the office of the Chief Officer, Shegaon Municipal Council, Shegaon.

14. SUBMISSION OF TENDER

Bids must be accompanied with:

- a) Copy of online payment receipt of Tender documents .
- b) Copy of online payment receipt of EMD
- 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-A)**
- e) Scanned copy of minutes of Pre-bid meeting duly signed by Contractor.
- f) Scanned copy of Joint Venture/Collaboration in prescribed format.
- g) EPFO/ESIC Registration Certificate as per related Act.
- h) The bidder should visit the site i.e.all Wetwell and STPs site locations. mentioned in the tender document before submitting the tender and get the site visit certificate duly signed by the Municipal Council Engineer. It is essential for bidder to submit the geotagged photo of site visit and Self attested Signed copy of site visit certificate in Annexure- XVIII (attached separately). The same should be uploaded in envelope no.1 If any agency/ Contractor refuse to visit the Site and submit the Geotagged site certificate then Chief Officer Municipal Council have rights to qualify or disqualify the bidder/agency/contractor for the bid.

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 "<http://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.

- a) Copy of online payment receipt of Tender documents .
- b) Copy of online payment receipt of EMD
- 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-A)**

- e) Scanned copy of minutes of Pre-bid meeting duly signed by Contractor.
- f) Scanned copy of Joint Venture/Collaboration in prescribed format.
- g) EPFO/ESIC Registration Certificate as per related Act.
- h) Scanned Copy of Site visit certificate and Geo Tagging Photographs

If the various documents contained in this Envelope do not meet the requirements as stated above, a note will be recorded accordingly by the tender opening authority and the envelope No. II of such tenderers will not be considered for further action and the same will be rejected. Also tender will be liable for rejection if bidder mentions his commercial offer anywhere in envelope No.1

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 Corporation. The tendered rate shall then be read out by the tender opening authority.

16. 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.

Sd/-

**Chief Officer
Shegaon Municipal Council,
Shegaon**

GENERAL CONDITIONS OF CONTRACT

SHEGAON MUNICIPAL COUNCIL
TALUKA : SHEGAON DISTRICT: BULDHANA

Name of work : LAHAN LAKE REJUVENATION SCHEME UNDER AMRUT
2.0,
TAL. SHEGAON, DIST. BULDHANA

GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS

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

- a) "UDD" means Urban development department
- b) "SBA" means Swacha Bharat Abhiyan
- 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 Chief Officer, Shegaon Municipal Council, Shegaon 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, whose tender has been accepted and who has been authorized to proceed with the work.
- i) "The Pradhikaran" shall mean the , a Pradhikaran constituted under the Pradhikaran Ordinance issued on 10.03.1997.
- j) "S.M.C" means Shegaon Municipal Council
- k) "M. J. P." means, Maharashtra Jeevan Pradhikaran.
- l) "The Chief Engineer M.J.P. " shall mean Chief Engineer M.J.P., 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, Akola" 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 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 Municipal Corporation.

s) PMC means Project Management consultant appointed by the Municipal Corporation/Municipal Council.

2. The contractor shall erect temporary sheds for storage for material supplied by Corporation and brought by him on site. Also, at each construction site contractor shall have separate storage space for cement and other material.

3. All the water retaining structures shall be designed in M25 and constructed in M30.

4. Contractor shall take trial pits and trial bores at site at his own cost to ascertain the bearing capacity of the strata and accordingly submit the designs.

5. Contractor shall submit designs and drawings for all structures such as Trunk Main for installation of Flowmeter at Wet well, Wet well, Pump House, STP.(Hydraulic and structural, and Electrification wiring Diagram), Thrust blocks/anchor blocks, Pumping machinery and its layout, all allied electrical and mechanical equipment's as directed by Engineer in charge/Commissioner/ Chief Officer .This designs and drawings shall be got checked from Government Engineering College or IIT at contractors own cost.

6. The contractor shall maintain the record of these materials in the prescribed proforma and registers as directed by the Engineer in charge/Commissioner / Chief Officer. 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.

7. Contractor shall take photographs and videos of all sub-works during construction and

submit two copies in hard and soft along with final bill.

8. Contractor shall prepare record drawings of all sub-works as per execution in details by using Auto Cad programme; as directed by Engineer in charge/Commissioner/ Chief Officer. 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.
9. Contractor shall maintain register for dewatering having details such as BHP of pumps, start and stop of dewatering pumps, Fuel consumed etc.
10. The material i.e. cement, steel, sand, metal, bricks, alum pipes valves etc. brought on the work site shall be accompanied with the necessary company/manufacturing firm's test certificate. In addition, these materials shall be tested as per frequency prescribed by the department and the cost of such testing shall be borne by the contractor. If the test results are satisfactory, then and then only the material shall be allowed to be used on the work. If the test results are not as per standards, these materials shall be immediately removed from the work site at contractor's cost. In case of cement, if so, requested by the contractor in writing, material will be allowed to be used before receipt of test results but this will be entirely at the risk and cost of the contractor.
11. All the formwork used for construction shall be of steel or with lining of steel. Wooden shutters may be allowed at the discretion of the Engineer in charge/Commissioner/ Chief Officer for minor works.
12. Contractor shall have Cube Testing machine on site. Test cubes shall be tested in front of Engineer in charge/Commissioner / Chief Officer or his representative and a register for it shall also be maintained.
13. RCC designer appointed by the Contractor shall visit and inspect the work at various stages of construction and comply with the query of the department without any extra cost.
14. **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 Commissioner/ Chief Officer... The term contract and firms means the agency entering into contract with the Commissioner/ Chief Officer.

The SMC, an urban local body of Government of Maharashtra, has proposed to execute the following work under sanctioned scheme SHEGAON SEWERAGE SCHEME FOR PHASE 3 (PUMPING MACHINERY) (PUMPING MACHINERY) UNDER MAHARASHTRA SUVARNA JAYANTI NAGAROTTHAN MAHAABHIYAN YOJANA, TAL. SHEGAON, DIST. BULDHANA

This tender includes-

Sr. No.	PARTICULAR
9 (a)	SUB WORK NO 9 (a) -: WETWELL NO 1 TO STP 1, 2.5 MLD SEWERAGE PUMPING MACHINERY
9 (b)	SUB WORK NO 9 (b)-: WETWELL NO 2 TO STP 2, 8.5 MLD SEWERAGE PUMPING MACHINERY
9 (c)	SUB WORK NO 9 (c)-: WETWELL NO 3 TO EXISTING 7 MLD STP SEWERAGE PUMPING MACHINERY
11	SUB WORK No 11 -: REPLACEMENT OF SEWAGE PUMPING MACHINERY AT EXISTING 7.00 MLD @ UNAD NALA WITH MECHANICAL & MANUAL SCREEN
13	SUB WORK NO 13 -: SCADA & AUTOMATION

15. 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.

16. 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 Commissioner/ Chief Officer, 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.

17. 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.

18. 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 SMC for stacking his materials, stores, erection of temporary structures, sheds etc with prior written permission of The Chief Officer, SMC. The location of the temporary structures to be erected shall be got approved from the Chief Officer and all the products obtained after cutting the same shall be stacked at suitable place as directed by Engineer in charge. All land occupied by the contractor for temporary use shall be handed over back in good conditions to the entire satisfactions of the SMC. 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.

19. 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.

20. WORK THROUGH OTHER AGENCY IN THE SAME AREA :

The Chief Officer, SMC, 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.

21. 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 Chief Officer, SMC 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 in charge/COMMISSIONER/ Chief Officer shall be final in case of interpretation of specifications.

22. 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 Shegaon Municipal Council 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 Corporation, 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 Corporation 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. MC does not take guarantee for continuous power supply at site.

23. LINE OUT

The contractor shall himself carry out the line out of works in the presence of the representative of the Corporation 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.

24. 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 Corporation.

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 endeavour 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.

25. CHECKING QUALITY OF THE WORK :

The Engineer in charge 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 Engineer in charge may direct. The contractor shall make good the same at his cost and to the satisfaction of the Engineer in charge without extra cost.

26. CHANGES :

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

27. 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 Rs.- will be withheld from the R. A. bills of 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 Chief Officer therein.

28. 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 Chief Officer, Shegaon Municipal Council, Shegaon** shall be final and remain binding on both parties.

29. 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.

30. LANDS, CONDITION AND LAYOUT

Line out of the Work

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 levelling, 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.m area 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.

31. 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 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.

32. 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 Engineer in charge 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 Engineer in charge 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

33. 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.

34. OVERLOADING

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.

35. 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.

36. 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 shall 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.

37. 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, guard rails, 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 Contractors 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.

38. 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, 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.

39. 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.

40. 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

41. 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 approval is given after receipt of tenders.

42. LAWS AND REGULATIONS

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.

43. Resolving the disputes:

In case of disputes, between a Contractor and Shegaon Municipal Council, the decision of the Chief officer shall be final and binding. In case of any further dispute, the decision of Secretary UDD-2 / Member Secretary MJP or any other person appointed by the Secretary UDD-2 will be final.

44. 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.

45. 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 Commissioner in regard to the quantum of compensation, the difference in the amount will be adjusted. 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.

46. 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.

47. 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.

48. 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 lag or lead in the progress than the programme.

49. 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. 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/Corporation/Commissioner/ Chief Officer** 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.

50. 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.

51. 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.

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

53. 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 contractor's bills and will be remitted to the concerned Departments. Certificate for such deductions will be issued by the Commissioner / Chief Officer.

54. 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 / Chief Officer 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. 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 Municipal Corporation and shall not be used for campaigning, advertising without permission of the Corporation.

55. 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.

56. 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.

57. 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.

58. 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.

59. 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.

60. 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.

61. STATUTORY INCREASE IN DUTIES, TAXES ETC.

All the taxes including GST 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.

62. 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/Corporation.

63. 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.

64. WORK ORDER BOOK

A well bound work order book shall be maintained on site and it shall be the property of Corporation and the Contractor/ his agent shall promptly sign orders given therein by the Engineer in charge of /Commissioner/ Chief Officer. 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 Corporation 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.

65. 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.

66. PRICE VARIATION - AUTHORITY

Price variation is (As per Clause 59) applicable to this tender.

67. NO INTEREST ON DUES

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

- 68.** Any recovery advised by the **MC, Shegaon** 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.

69. Mobilization Advance will not be granted.

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 Commissioner 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.

- 70. Information boards:** The contractor shall provide information boards at lake site considering all features & cost etc.
- 71.** Agency has to provide two AC SUV (Innova/Creta), (Diesel) in white colour shall be supplied to department and to PMC while starting the work. No extra payment shall be made on this account.
- 72.** For facilitation or MB work, Site office shall be equipped with laptops 3 Nos & advance Notepad 2 nos along with internet connection & printers & necessary furnitures & Air Conditioned Office and Water Purifier and pantry set up etc. no extra payment shall be made on this account.

SPECIAL CONDITIONS

SHEGAON MUNICIPAL COUNCIL
TALUKA: SHEGAON DISTRICT: BULDHANA

Name of work : SHEGAON SEWERAGE SCHEME FOR PHASE 3 (PUMPING MACHINERY) (PUMPING MACHINERY) UNDER MAHARASHTRA SUVARNA JAYANTI NAGAROTTHAN MAHAABHIYAN YOJANA, TAL. SHEGAON, DIST. BULDHANA

SPECIAL CONDITIONS

1) Payment against Excess quantities of various items.

Before making payment of excess quantities as per rules, the concerned Engineer in charge/ CHIEF OFFICER of council /Corporation 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 SHEGAON MUNICIPAL COUNCIL 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 Engineer in charge/ Commissioner, Chief Officer of /Municipal council / corporation, **Shegaon** in writing.

While asking the contractor to execute such excess quantity, the concerned Engineer in charge/ Chief officer of Shegaon Municipal Council 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 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. Engineer in charge of Corporation 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 Engineer in charge/ Chief Officer of Corporation/ Council 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 Engineer in charge/ Chief Officer of Council/ Corporation , whose elucidation and elaboration shall be considered final.

7) Supply of material by the contractor.

- 7.1 The contractor should supply all the material mentioned in Schedule "B". This shall be conforming to relevant IS & approved 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 **SMC**. (List of third party inspection agencies appointed is periodically circulated by the MJP central office or from the approved list of TPI agencies appointed by Govt. of Maharashtra). The charges for the same shall be borne by the contractor.

7.2 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.

7.3 1) For supply of pipes, valves, specials etc. -80% payment shall be released after supply, 10% after lowering, laying & jointing, and 10 % after satisfactory hydraulic testing.

2) 10% cost total subwork of pipeline work shall be retained till hydraulic testing is given as per IS code of as per tender condition.

7.4 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.

7.5 The Engineer in charge of Corporation 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 in charge of Corporation , in this behalf.

7.6 The contractor shall further at all times satisfy the Engineer in charge of Corporation 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 in charge of Corporation

8 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 Engineer in charge during the course of contract regarding work, there shall be no provision for the appointment of an Arbitrator. The decision of the Chief Officer, SMC, Shegaon /secretary UDD2/Any other person appointed by secretary UDD2 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 CORPORATION's 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.

Rates for all type of materials are inclusive of GST and all taxes levied by Central Government, State Government or local bodies.

Rates for supply of specials and valves are inclusive of excise duty (Central), GST, Third party inspection charges, storage charges, overhead charges and transportation of materials up to site and stacking. Rates mentioned in the tender are inclusive of all Central Govt, State Govt. and Local taxes, duties and cess etc.

- 15.** Though the contractor is required to do refilling before hydraulic testing to avoid traffic hurdle, no payment for refilling of the trenches of pipe line shall be payable till satisfactory hydraulic testing is given. Re-excavation required if any during testing shall be done by contractor at his own cost.

16. The works of cross connections to existing lines are to be arranged in such a way as no major shutdowns are required to be taken and work should be completed within minimum period of time, without interrupting the major water supply in the area.
17. Activity in Bar chart and network diagram (CPM / PERT) shall be modified regularly in case any activity could not be done in time due to some extra ordinary reason. The same modified Bar Chart/Network diagram should be submitted for approval of Engineer-in-Charge or competent authority of Municipal Council, who will give approval after consultation with PMC.
18. Work shall be executed in stages as mentioned Government Resolution issued by the Urban Development department on dated.....

19. INCENTIVE BONUS

As an encouragement to the early completion of the project an incentive bonus will be payable to the contractor.

Incentives/ Bonus (e.g. one percent of the contract value per month subject to a maximum of five percent of contract value) for early completion and penalties for delay should, therefore, be built into the contract very judiciously. To avail of the incentive clause, it shall be mandatory on the part of the contractor to report the actual date of completion to the concerned Engineer (Engineer herein refers to PWO/ PSU/ Organisation to which work has been entrusted under Rule 133 of GFR 2017). The Engineer shall report the actual date of completion of the works as soon as possible through fax or email so that the report is received within seven days of such completion by the concerned CA.

20. All the bills in R A bill format shall be submitted to the **Shegaon MC** by the contractor. The bills will be checked and scrutinized by **Shegaon MC** and will be submitted to the ULB for Recording, Passing and Payment by the ULB.
21. The bills vetted and submitted by the **PMC** will be normally cleared and payment will be released within a period of 15 days from the receipt of such vetted bills by the ULB or executing agency as the case may be. Such payment will be subject to availability of funds with the ULB or executing agency.
22. Extension of time limit will be granted by Commissioner/ Chief officer after obtaining approval/consent of competent authority of Municipal Corporation/ Council.
23. Bidder should be authorised manufacturer / Dealer or bidder should have certificate of Technical Assistance from authorised manufacturer or Dealer of said technology of S.T.P to execute the work.
24. 5% of STP amount is withheld for maintenance in DLP period.

- 25.** 5% amount will be release after successful completion of DLP.
- 26.** The Contractor shall mandatory provide The annual Maintenance Charges services to user department for a minimum period of three year on payment basis. Necessary MOU will be sign between supplier of STP and user department.
- 27.** It is mandatory to supplier or contractor of STP to take handing taking over of STP with detailed demonstration to user department.

INSTRUCTIONS TO TENDERER

SHEGAON MUNICIPAL COUNCIL

Name of work : SHEGAON SEWERAGE SCHEME FOR PHASE 3 (PUMPING MACHINERY) UNDER MAHARASHTRA SUVARNA JAYANTI NAGAROTTHAN MAHAABHIYAN YOJANA, TAL. SHEGAON, DIST. BULDHANA

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

- 2.1 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.
- 2.2 No corrections, additions or alterations in the tender document shall be made. No special stipulations in the tender document shall be permitted.
- 2.3 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.
- 2.4 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.
- 2.5 Rules and conditions of the contract are subject to amendment till the time of acceptance of tender.

2.6 The notes and conditions stipulated in this notice will form a part of the agreement.

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 LABOUR EMPLOYED IN THE CONSTRUCTION BY THE CONTRACTOR

- a) The contractor shall provide an adequate supply of pure and wholesome water for the use of labourers on works and in camps.
- b) The contractor shall construct trenches, semi-permanent latrines for the use of labourers, 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 labourers 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 over crowding, 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 antimalarial 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.

7.0 MISCELLANEOUS

- 7.1 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.
- 7.2 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.
- 7.3 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.

- 7.4 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 the standard specification given without reproducing the details in contract. Decision of Engineer in charge shall be final in case of interpretation of specification.
- 7.5 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.
- 7.6 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 Maharashtra Jeena Pradhikaran/Municipal Council/Corporation 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 Engineer in charge or Commissioner / Chief Officer or his authorized agent will be always in writing, copies of which will go to the signed by authorized representative of /Municipal Council/Corporation and the contractor. It is however understood that before taking over of such work /Municipal Council/Corporation 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.

**ACQUAINTANCE WITH SITE
CONDITIONS AND WORK
CONDITIONS**

SHEGAON MUNICIPAL COUNCIL

**NAME OF WORK : SHEGAON SEWERAGE SCHEME FOR PHASE 3
(PUMPING MACHINERY) UNDER MAHARASHTRA SUVARNA
JAYANTI NAGAROTTHAN MAHAABHIYAN YOJANA,**

TAL. SHEGAON, DIST. BULDHANA

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 Engineer in charge/Commissioner/Chief officer, 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 Corporation'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 Corporation 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.

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 Corporation 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 Pradhikaran/Council/Corporation'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 at least 15 days and concrete work shall be kept wet for at least 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 by the Corporation 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 numberof 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.

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

In case of the EIRL the Contractor shall supply Rate Analysis based on labourand 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 Corporation from his bills. In case Corporation 's water supply is available, a connection at asuitable place may be sanctioned but all further arrangements of pumping ifrequired, 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 Engineer in charge /Commissioner/Commissioner, 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 Pradhikaran/Council/Corporation ,

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

FORM B.1

PERCENTAGE RATE TENDER AND CONTRACT FOR WORKS DEPARTMENT SHEGAON MUNICIPAL COUNCIL, SHEGAON

NAME OF WORK : SHEGAON SEWERAGE SCHEME FOR PHASE 3 (PUMPING MACHINERY) UNDER MAHARASHTRA SUVARNA JAYANTI NAGAROTTHAN MAHAABHIYAN YOJANA, TAL. SHEGAON, DIST. BULDHANA 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 Engineer in charge/Commissioner/ CHIEF OFFICER and signed by the Engineer in charge/Commissioner/CHIEF OFFICER.
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 Engineer in charge/Commissioner/ CHIEF OFFICER for the purpose of identification shall also be open for inspection by contractors at the office of the Engineer in charge/Commissioner/ CHIEF OFFICER 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 /Corporation/ COUNCIL , 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 (Rs.127880.00) (Rs. One Lakh Twenty Seven Thousand Eight Hundred Eighty Rupees only)** 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(iii), 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 to furnish the balance security deposit without prejudice to any other right and powers of the Pradhikaran/ Corporation / Municipal Council hereunder, or in law, Pradhikaran/ Corporation / Municipal Council 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.

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 Engineer in charge /Chief officer /Commissioner 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.

Competent authority is the final authority to reject all or any of the tenders.

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 Council/Corporation unless it is signed by the Engineer in Charge.

The memorandum of the work to be tendered for and the schedule of materials to be supplied by the Corporation / Municipal Council (herein before and after called as **SMC**) and their rates shall be filled in and completed by the office of the Engineer in charge/Commissioner/Chief officer 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.

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.

Under no circumstances shall any; contractor be entitled to claim enhanced rates for items in this contract.

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.

Corrections and additions should be initiated.

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.

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.

In view of the difficult position regarding the availability of foreign exchange no foreign exchange would be released by the Corporation for the purchase of plant and machinery or any other purpose for the execution of the work contracted for.

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.

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.

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 also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the Act.

In this tender 26 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.

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, Municipal Corporation will grant the extension considering the progress of work and in the light of clause 2.

As per Government Resolution Price Variation Clause is not applicable to tender.

21. The tender Rates are inclusive of all taxes such as VAT, Service Tax, Cess, and General Tax etc. 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
22. 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 duly 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 **Shegaon Municipal Council** (here in before and here in after referred to as **SMC**) for the work specified in the underwritten memorandum within the time specified in such memorandum at **(Rs.2,89,58,341. 00 (Two Crore Eighty Nine Lakh Fifty Eight Thousand Three Hundred and Fourty One Rupees Only)** in figures as well as in words percent below/above 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/Corporation such materials are at the rates to be paid for them shall be as provided in schedule “A” here to.

Memorandum

a) General description : **NAME OF WORK :**
SHEGAON SEWERAGE SCHEME FOR PHASE 3
(PUMPING MACHINERY) UNDER
MAHARASHTRA SUVARNA JAYANTI
NAGAROTTHAN MAHAABHIYAN YOJANA,

TAL. SHEGAON, DIST. BULDHANA

Pumping Stations with Wetwells (3 Nos.), Sewage Treatment Plants (3 Nos.) & Replacement Of Sewage Pumping Machinery At Existing 7.00 MLD With Mechanical & Manual Screen, SCADA & AUTOMATION, Water Flow Meter

b) Estimated Cost. **Rs. 26946051. 00 /-**

a) if several sub works are included they should be detailed in a separate list

c) Earnest Money. **Rs. 127880.00/-**

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.

If the tender is proposed to be accepted at the rates quoted less than estimated cost put to tender security deposit over and above 4% in (d) at the below rate shall have to be paid by Tenderer as under, till the complete 4% security deposit is recovered.

i) For offer upto 10% below 2% Intial + 2% through R.A.Bill.

ii) For 10% to 15% below 4% Intial + 2% through R.A.Bill.

iii) For offer more than 6%Intial + 2% through
R.A.Bill.15% below

Additional security is to be paid by the successful bidder initially only in addition to 2% original Security Deposit.

(Security Deposit shall be based on estimated cost put to tenderor tendered cost whichever is higher)

g) Time allowed for the work from date of written order tocommence.

(12) 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 inwriting 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 **Rs. 127880.00 (in wards One Lakh Twenty Seven Thousand Eight Hundred Eighty Rupees only)** is herewith forwrdd. The amount of earnest money shall not bear interest and shall be liable to be forfeited tothe Pradhikaran/ Shegaon Municipal Council /Corporation 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 ofearnest money may be adjusted towards the security deposit or refunded to me/us in writing unless the same or any part thereofhas been forfeited as aforesaid.

/We have secured exemption from payment of earnest money after executing the necessary bond in favour of the Pradhikaran/Municipal Council/Corporation 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 / Municipal Council /Corporation under any other contract or transaction of any nature whatsoever or otherwise.

Should this tender be accepted I/We hereby agree to abide by

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

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/Municipal

Council/Corporation the sum of money mentioned in the said

conditions. Term Deposit Receipt No. Dated from The Bank..... at in respect of sum of Rs.

..... Is herewith forwarded representing the earnest money (a) the full value which is to be absolutely forfeited to the Pradhikaran/ Municipal Council/ Corporation 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.

Contractor

Signature of the
contractor before
submission of tender.

Address

date of 2025

Witness

Signature of witness to

contractor's signature.

The above tender is hereby accepted by me for and one
behalf of the Shegaon Municipal Council

Dated

Chief officer , Shegaon Municipal Council

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 Chief Engineer/Commissioner/Commissioner concerned upto 15 days if the Commissioner/Commissioner 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 Pradhikaran/Corporation 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 deduction to be held by Corporation 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 Pradhikaran/Corporation 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 Pradhikaran/Corporation 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 Pradhikaran/Corporation 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. The amount of security deposit lodged by Contractor shall be refunded along with the payment of the final bill, if the date upto, which the Contractor has agreed to maintain the work in good order, is over. If such date is not over only 90% amount of the security deposit shall be refunded along with the payment of the final bill. The amount of security deposit retained by Pradhikaran/Corporation shall be released after expiry of period upto, which the Contractor has agreed to maintain the work in good order, is over. 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 Pradhikaran/Corporation shall be adjusted towards the excess cost incurred by the Pradhikaran/Corporation 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 Chief Engineer/Commissioner /Commissioner(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

***Compensati
on Delay***

exceeds one month to complete, for complete minimum quantum of work as compared to accepted tender cost as stated below.

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 (12) Twelve 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 case of delay in completion of the contract, liquidated damages (for repair works costing up to Rs. Ten lakh - one percent of the contract value per week and for all other works half percent of the contract value per week of delay subject to a maximum of ten percent of contract value) should be levied. The penalties proposed for identified lapses of omission or commission must be disclosed in the tender documents in clear monetary terms.

Chief Engineer/Commissioner/Chief Officer should be the final authority in this respect, irrespective of the fact that tender is accepted by State level technical Committee. However Commissioner /Chief officer 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 Pradhikaran/Corporation shall have power to adopt any of the following courses, as he may deem best suited to the interest of the Corporation

Action when whole of deposit is forfeited.

- a) 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 Pradhikaran/Corporation
- b) 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.
- c) 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/Commissioner/Commissioner 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 Pradhikaran/Council/Corporation 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 Corporation 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 MJP/ Corporation, 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 Corporation 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 Corporation 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 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

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

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 Corporation 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 contract rates not being applicable at current market rates to be certified by the Corporation whose certificate thereof shall be final. In the alternative the Corporation 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 Corporation 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 Corporation 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 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 Corporation before the expiration of the period stipulated in the tender on before the expiration of 30 days from the date on which he was hindered as aforesaid or on which the cause for asking extension occurred, whichever is earlier and the Corporation or in the opinion of Commissioner, 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 Corporation in this matter shall be final. ***Extension of time***

Clause 7 : On the completion of the work the contractor shall be furnished with a certificate by the Corporation (hereinafter and hereinbefore called the Engineer-in-charge) of such completion but neither such certificate shall be given nor ***Final Certificate.***

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 he 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 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.

Payment on intermediate certificate to be regarded as advance.

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 vary 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.

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

a

s

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 in all respects

Bills to be

submitted monthly

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 Corporation 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

*Stores supplied by
Council*

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 Corporation 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 Corporation, 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“

Clause 12 (A) : All stores of materials such as cement, steel etc. supplied to the contractor by Corporation 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 Corporation or his agent at all the times.

*Storage of controlled
material*

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

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

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.

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 Corporation 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 Corporation 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,

*Alteration in
specifications designs
not invalidate & to*

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 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 Chief 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 part of the contractor for which the Corporation 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 here in after.	<i>No claim to any payment Or compensation for Alteration in or restriction of Work except specified in this clause.</i>
--	---

- 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 30 days 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 items 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 Corporation 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 Corporation 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 Municipal Council for the loss suffered by him on account of delay by Corporation in the supply of materials entered in Schedule „A“ where such delay is caused by.

- 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 Corporation.

No. claim to compensation

on account of loss due to delay in supply of material by MJP.

In the case of such delay in the supply of materials, MJP/ Corporation shall grant such extension of time for the completion of the works as shall appear to the Corporation to be reasonable in accordance with the circumstances of the case. The decision of the Corporation 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 Corporation 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 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.

Action and compensation payable in case of bad work.

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

Work to be open to inspection.

Contractor or responsible agent to be present

duly authorized agent shall be considered to have the same force and effect as if they had been given to the Contractor himself.

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 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 Corporation, 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 Corporation. 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 Corporation 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 Corporation the amount of such costs, charges and expenses sustained or incurred by the Corporation of which the certification of the Corporation 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 Corporation, the same may be recovered from the Contractor as arrears of land revenue.

*Contractor liable
for
damage done
and for
imperfections*

The Corporation, shall also be entitled to deduct the same from any amount which may then be payable or which may thereafter become payable by the Corporation 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 Corporation. 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
------------------------------------	------------

2. Wet Well/STP /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 |

3. Pipe Lines.

- | | |
|---|------------|
| i) Pumping Mains, Gravity Mains, Leading Mains including all the fixtures | Five Years |
| iv) Repairs to pipe lines under the works at (a) and (b) above. | Five Years |
| v) All the works in this tender under Shedule B | Five Years |

The instructions contained in the Government of Maharashtra (Public Works 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 Corporation 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 working places.

*Liability of
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.

*Employment of
female labor
work on
Sunday*

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 Corporation.

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 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 Corporation. 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.	<i>Measures prevention of fire. for</i>

Clause 23 : Compensation for all damages done intentionally or unintentionally by Contractor's labour whether in or beyond the limits of the Corporation 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 Chief Engineer/Commissioner 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 Corporation to Contractor under this contract or otherwise. 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.	<i>Liability of Contractor for any damage done in or outside work area.</i>
--	--

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 Corporation 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 contract, the Engineer-in-charge may thereupon by notice in writing rescind the contract, and the security deposit of the Contractor shall thereupon stand forfeited and be absolutely at the disposal of Corporation and the same consequences shall ensue as if the contract had been rescinded under Clause 3 hereof and in addition the Contractor shall not be entitled to recover or be paid for any work thereof actually performed under the contract.

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 insolvent.

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 Corporation 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 Commissioner/Commissioner, 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.

Clause 30.1 : Except where otherwise specified in the contract and subject to the powers delegated to him by MJP Corporation under the code, rules then in force, the decision of the Commissioner/Chief officer 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 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 Commissioner/Commissioner as aforesaid appeal against it to the Chief Officer, SMC, Shegaon 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 30: If the contractor is not satisfied with the order passed by the Commissioner/Commissioner as aforesaid, the contractor may, within thirty days of receipt by him of any such order, appeal

against it to the Member Secretary, MJP who if convinced that prima facie, the contractors, claim rejected by Chief Engineer/Commissioner/Commissioner 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 MS MJP shall be final and binding on the contractor and the Engineer-in-charge

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.	<i>Lump sums in estimates</i>
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.	<i>Action where specifications no</i>
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.	<i>Definition of work</i>
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.	<i>Contractor's percentage whether applied to net or gross amount of bill.</i>
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 Corporation. (Please see special clause for royalty).	<i>Quarry fees and royalties</i>

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 Corporation as principal under sub-section (1) of Section 12 of the said Act on behalf of the Contractor, it shall be recoverable by the Corporation 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 Corporation, the same shall be recoverable from the Contractor forthwith and be deducted without prejudice to any other remedy of the Corporation 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 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. ----- Only)

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 Engineer in charge, Chief Officer of Municipal council/corporation shall see that claim towards excess quantity under this clause 38 is submitted to higher authority immediately on its cropping up. The Engineer in charge Commissioner of Municipal council/corporation 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
forexcess
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. % of average rate for lift 0.00 to 1.50 meter and_% for lift_.
- 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.__% of average rate for lift meter and %___for lift ____.
- 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.__% of average rate for lift and ____% for lift_____.
- 4) Excavation in hard rock and concrete road by chiseling wedging line drilling 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_% of average rate for lift 0.00 to 1.590 m_% and 1.50 to 3.00 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.

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 Corporation 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 Chief Officer, SMC, Shegaon 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 Corporation 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 take place on account of labour using loose garments while working near machinery.

Clause 44: Payment to Contractors shall be made by cheque drawn on Commissioner/Commissioner/Engineer in charge'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, Commissioner of Municipal council/corporation, or by any person to Engineer in charge Commissioner of Municipal council/corporation 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 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.

Price not to exceed controlled price fixed by Govt.

Clause 47 A :

Rate inclusive of all taxes

- 1) The rates to be quoted by the contractor must be inclusive of all other relevant taxes except GST. No. extra payment will be made to the **contractor**
 - a) Bidder shall quote his rate excluding GST.
 - b) GST shall be paid on the amount of bill of the work done as per prevailing guide lines rate of GST during the period of work done as applicable.
 - c) The rates quoted by the contractor shall be deemed to be 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.
- 2) a) Bidder shall quote his rate considering the provisions counted under GST Act 2017.
b) Amount of GST 2% I.E. CGST and SGST each 1% will be deducted at source (T.D.S.) from 01.10.2018.

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

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

Clause 52 : All amounts whatsoever which the Contractor is liable to pay to the Corporation 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 Corporation to the Contractor,

ii) hire charges in respect of heavy plant, machinery and equipment given on hire by the Corporation to the Contractor for execution by him of the work and/ or for which advances have been given by the Corporation to the Contractor shall be deemed to be arrears of the land revenue and Corporation without prejudice to any other rights and remedies of the Corporation 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 Corporation 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 Corporation to such workers shall be deemed to be debt payable by the Contractor and the Corporation shall be entitled to recover the same as such from the contractor or deduct same from the amount payable by the Corporation to the contractor hereunder or from any other amounts payable to him by the Corporation.

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 Corporation on a stamp of required amount as per rules in force. The stamp charges shall be borne by the contractor

Clause 59 : PRICE VARIATION CLAUSE:

If during the operative period of the contract as defined in condition (1) below, there shall be any variation in the Consumer Price Index (New Series) for Industrial workers for.....Centre as per the Labour Gazette published by the Commissioner of Labour, Govt. of Maharashtra &/or in the Wholesale Price Index for all commodities prepared by the Office of Economic Adviser, Ministry of Industry, Govt. of India or in the price of petrol/oil & lubricants & major construction materials like bitumen, cement, steel, various types of metals pipes etc. then subject to the other conditions mentioned below, price adjustment on account of

- i. Labour component
- ii. Material component
- iii. Petrol, oil & lubricant components
- iv. Cement components
- v. HYSD & mild steel components
- vi. Cement component

- vii. CI & DI pipes component
 Calculated as per the formula hereinafter appearing, shall be made. Apart from these, no other adjustment shall be made to the contract price for any reason whatsoever. Component percentage as given bellow is as of the total cost of work put to tender. Total of labour, material & POL components shall be 100 & other components shall be as per actuals.
- i. Labour component (K1)%
 - ii. Material component (K2)%
 - iii. Petrol, oil & lubricant components (K3)%
 - iv. Cement components
 - v. HYSD & mild steel components
 - vi. Cement component
 - vii. CI & DI pipes component

Note- if Cement, steel, bitumen, CI & DI pipes are supplied on Schedule-A,

than respective component shall not be considered. Also, if particular

component is not relevant same shall be deleted.

- 1) Formula for Labour components: $V1 = 0.85P \times K1 \times \frac{L1 - L0}{100 L0}$

Where

V1= Amount of price variation in Rupees to be allowed for Labour components

P= Cost of work done during the Quarter under consideration minus the cost of cement, HYSD and mild steel, Bitumen, CI & DI pipes calculated as the basic star rates as applicable for the tender, consumed during the quarter under consideration.

K1= Percentage of LABOUR component as indicated above L0= Basic Consumer Price Index for ----- center shall be average consumer price index for the preceding months in which the last date prescribed for receipt of tender falls. L1= Average consumer price index for ----- center for the quarter for the consideration.

- 2) Formula for Material components: $V2 = 0.85P \times K2 \times \frac{M1 - M0}{100 M0}$

Where

V2= Amount of price variation in Rupees to be allowed for Material components

P= Same as work out for labour component

K2= Percentage of Material component as indicated above M0= Basic Wholesale Price Index shall be average Wholesale price index for the preceding months in which the last date prescribed for receipt of tender falls.

M1= Average wholesale price index for the quarter under consideration

- 3) Formula for petrol, oil & lubricant components $V3 = 0.85P \times K3 \times \frac{P1 - P0}{100 P0}$

P0
100 P0

Where

V3= Amount of price variation in Rupees to be allowed for POL components

P= Same as work out for labour component

K3= Percentage of petrol, oil & lubricant components component as indicated above

P0= Average price of HSD at -----, during the preceding months in which the last date prescribed for receipt of tender falls.

P1= Average price of HSD at -----during the quarter under consideration

- 4) Formula for Bitumen components $V4 = QB(B1 - B0)$

Where

V4= Amount of price variation in Rupees to be allowed for Bitumen components

QB= Quantity of bitumen (Grade) in metric tonne used in the permanent works & approved enabling works during the quarter under consideration

B1= Current, average ex-refinery price per metric tonne of bitumen (Grade) under consideration excluding Goods and service tax during the quarter under consideration.

B0= Basic rate of bitumen in Rupees per metric tonne as considered for working out value of P or average ex-refinery price in Rupees per metric tonne excluding good and service tax of bitumen for the grade of bitumen under consideration during prevailing preceding the month in which the last date prescribed for receipt of tender fall whichever is higher.

- 5) Formula for HYSD & mild steel components $V5 = S0 \times \frac{(SI1 - SI0)}{SI0} \times T$

Where

V5= Amount of price variation in Rupees to be allowed for HYSD / mild steel components

S0 = Basic rate of HYSD / mild steel in rupees per metric tonne excluding GST as considered from working out value of T.

SI1= Average steel index as per RBI bulletin during the quarter under consideration

SI0= Average of steel index as per RBI bulletin for the preceding month in which the last date prescribed for receipt tender falls.

T= Tonnage of steel used in the permanent works for the quarter under consideration

- 6) Formula for cement components

$V6 = \{C0 \frac{(C1 - C2)}{C1}\} T$

CIO

Where

V6=Amount of price escalation in Rupees to be allowed for cement components

C0= Basic rate of cement in Rupees per metric tonne excluding GST as considered for working out value of P.

CI1= Average cement index published in the RBI bulletin for the quarter under consideration

CIO=Average of Cement Index published in the RBI Bulletin for the preceding the month in which the last date prescribed for receipt of tender falls.

T=Tonnage of cement use in the permanent works for the quarter under consideration.

7) Formula for CI/DI pipe Component:

$$V7=Qd \times (D1-D0)$$

Where

V7=Amount of price escalation in Rupees to be allowed for CI/DI pipe component.

D0=Pig iron basic price in Rupees per tonne excluding GST considered for working out value of P.

D1=Average pig iron price in Rupees per tonne during the quarter under consideration (Published by the Institute of Indian foundrymen)

Qd =Tonnage of CI/DI pipes used the works during the quarter under consideration.

The following conditions shall prevail:

The operative period of the contract shall mean the period commencing from the date of the work order issued to the contractor & ending on the date on which the time allowed for the completion of work specified in the contract for work expires, taking in to considering the extension of time, if any, for completion of the work granted by Engineer under the relevant clauses of the Conditions of Contract in cases other than those where such extension is necessitated on account of default of the contractor. The decision of Engineer as regards the Operative period of the contract shall be final & binding on the contractor. Where any

compensation for liquidated damages is levied on the contractor on account of delay in completion or inadequate progress under the relevant contract provisions, the price adjustment amount for the balance of work from the date of levy of such compensation shall be worked out by pegging the indices L_1 , M_2 , P_1 , B_1 , SI_4 , CI_1 , D_1 to levels corresponding to the date from which such compensation is levied.

ii) This price variation clause shall be applicable to all contracts in B1, B2 and SBD forms but shall not apply to piece works. The price variation shall be determined during each quarter as per formula given above in this clause.

iii) Price variation under this clause shall not be payable for the extra items required to be executed during the completion of the work & also on the excess quantities of items payable under the provision of Clause 41/37/38 of the contract form B1/B2/SBD respectively. Since the rates payable for the extra items or the extra quantities under Clause 41/37/38 are to be fixed as per the current DSR or as mutually agreed to yearly revision till completion of such work. In other words, when the completion/execution of extra items as well as extra quantities under Clause 41/37/38 of the Contract Form B1/B2/SBD extends beyond the operative date of the DSR, then rates payable for the same beyond that date shall be revised with reference to the current DSR prevalent at that time on year to year basis or revised in accordance with mutual agreement thereon, as provided for in the contract, whichever is less

iv) This clause is operative both ways i.e. if the price variation as calculated above is on the plus side, payment on account of the price variation shall be allowed to the contractor & if it is on the negative side, implementing agency shall be entitled to recover the same from the contractor & the amount shall be deductible from any amounts due & payable under the contract.

v) To the extent that full compensation for any rise or fall in costs to the contractor is not entirely covered by the provisions of this or other clauses in the contract, the unit rate & price included in the contract shall be deemed to include amount to cover the contingency of such other actual rise or fall in costs.

vi) Calculation for working out escalation payment on account of material, labour & POL will be restricted to 2 digits only.

Clause 60 : The contractor shall provide and maintain barricades, guards, guard rails, temporary bridges and

Insurance

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 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 Corporation staff or to any other person not connected with Corporation /Contractor

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 topayment of the premiums shall be of debt due.
4. Alternations to the terms of an insurance shall not be madewithout 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 shall pay additional premium necessary so as to keep the insurance police valid always till thedefect 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 officeregarding royalty charges is not submitted by the contractor, final bill and security deposit for such work will not be payable to the contractor.

Chief Officer
Shegaon Municipal Council, Shegaon

GENERAL SCOPE OF WORK

SHEGAON MUNICIPAL COUNCIL

**NAME OF WORK : SHEGAON SEWERAGE
SCHEME FOR PHASE 3 (PUMPING MACHINERY),
UNDER MAHARASHTRA SUVARNA JAYANTI
NAGAROTTHAN MAHAABHIYAN YOJANA,
TAL. SHEGAON, DIST. BULDHANA**

GENERAL SCOPE OF WORK

The S.M.C. / Urban Local Body of Government of Maharashtra, has proposed to execute the following work under sanctioned scheme

This tender includes

SUB WORK NO 9(A) -: ESTIMATE FOR WETWELL NO 1 TO STP 1, 2.5 MLD SEWERAGE PUMPING MACHINERY

SUB WORK NO 9(B) -: ESTIMATE FOR WETWELL NO 2 TO STP 2, 8.5 MLD SEWERAGE PUMPING MACHINERY

SUB WORK NO 9(C) -: ESTIMATE FOR WETWELL NO 2 TO EXISTING 7 MLD STP, SEWERAGE PUMPING MACHINERY

SUB WORK No 11 - REPLACEMENT OF SEVAGE PUMPING MACHIANRY AT EXISTING 7.00 MLD @ UNAD NALA WITH MECHANICAL & MANUAL SCREEN

SUB WORK NO 13 -: SCADA & AUTOMATION.

- Centralized PLC and SCADA Automation at Wetwell 2
- PLC Automation at Wetwell 1 with Sensors.
- PLC Automation at Wetwell 2 with Sensors.
- PLC Automation at Wetwell 3 with Sensors.

SCHEDULE-A

SHEGAON MUNICIPAL COUNCIL

**NAME OF WORK : SHEGAON SEWERAGE SCHEME
FOR PHASE 3 (PUMPING MACHINERY), UNDER
MAHARASHTRA SUVARNA JAYANTI
NAGAROTTHAN MAHAABHIYAN YOJANA,
TAL. SHEGAON, DIST. BULDHANA**

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	-	-	-

SCHEDULE-B

SHEGAON MUNICIPAL COUNCIL

**NAME OF WORK : SHEGAON SEWERAGE SCHEME
FOR PHASE 3 (PUMPING MACHINERY) (PUMPING
MACHINERY), UNDER MAHARASHTRA SUVARNA
*JAYANTI NAGAROTTHAN MAHAABHIYAN
YOJANA,**

TAL. SHEGAON, DIST. BULDHANA

SCHEDULE "B" - ABSTRACT

SCHEDULE - B		
9 (a)	SUB WORK NO 9 -: WETWELL NO 1 TO STP 1 (2.5 MLD) SEWERAGE PUMPING MACHINERY	35,72,962.00
9 (b)	SUB WORK NO 9 -: WETWELL NO 2 TO STP 2, 8.5 MLD SEWERAGE PUMPING MACHINERY	62,59,167.00
9 ©	SUB WORK NO 9 -: WETWELL NO 3 TO STP 2, 7 MLD SEWERAGE PUMPING MACHINERY	30,65,089.00
11	SUB WORK No 11 - REPLACEMENT OF SEVAGE PUMPING MACHIANRY AT EXISTING 7.00 MLD @ UNAD NALA WITH MECHANICAL & MANUAL SCREEN	88,89,074.00
13	SUB WORK NO 13 -: SCADA & AUTOMATION	37,88,834.00
TOTAL		2,55,75,126.00

ANNEXURE-1
INFORMATION ABOUT WORK IN HAND

(To be supported with certificate signed by concerned Superintending Engineer/City Engineer) in case Col. 8 shows the cost of completed work as more than 80%)

Sr. N o .	Name of Works	Name of Division /MC	Accept ed Tender Cost.	Cost of supply of pipes	Balan ce cost (4-5)	Cost of work completed as on (Excluding supply of pipe)	Proportio nof Col.7 toCol.6 %	Reason for delay (if any) for completion of balance work.
1	2	3	4	5	6	7	8	9

ANNEXURE-2

DETAILS OF MACHINERY AVAILABLE WITH THE TENDERER FOR THE USE ON THIS WORK

Sr.No	Name of Equipment	No. of unit	Name of Make	Capacity	Age and Condition	Remark

ANNEXURE-3

FORM OF BANK GUARANTEE BANK GUARANTEE

(Security for Performance)

In consideration of the Commissioner (hereinafter called "**SMC**/Shegaon Municipal Council" (**SMC**) having agreed to exempt hereafter called "The said contractor") from the demand, under the terms and conditions of an Agreement dated (hereafter called "the said Agreement") made between the Commissioner **SMC** and the said contractor for the Security Deposit for the due fulfillment by the said contractor of the terms and conditions contained in the said Agreement, on production of the Bank Guarantee for Rs

_____ (In words Rs _____) we, (here in after referred to as "the Bank" at the request of the said contractor do hereby undertake to pay to the **SMC** an amount not exceeding the above said amount of Guarantee against any loss or damage caused to or would be caused to or suffered by the **SMC** by reason of any breach by the said contractor or any of the terms or conditions.

2. We, _____ do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, in hereby on a demand from the **SMC** stating that the amount claimed is due by way of loss or damage caused to or would be to or suffered by the **SMC** by reason of breach of the said contractor of any of the terms or condition contained in the said agreement or any reason of the contractor's failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding the above said amount Guarantee.

3. WE undertake to pay to the **SMC** any money so demanded notwithstanding any dispute or disputes raised by the Contractor in any suit or proceeding pending before any court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor shall have no claim against us for making such payment

4. We _____ further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continued to be enforceable till all the dues of the **SMC** under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged till **SMC** certified that the terms and conditions of the said Agreement have been duly and properly carried out by the said contractor and accordingly discharges this guarantee unless a demand or claim under this guarantee is made on us in writing on or before we shall be discharged from all liability under this guarantee thereafter.

5. We

_____ further agree with the **SMC** that the **SMC** shall have the fullest liberty without our consent and without affecting in any manner our obligations here under to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the **SMC** against the said contractor and to forbear or enforce any of the terms and conditions relating to the said Agreement, and we shall not be relieved from any liability by reason of any such variation, or extension being granted to the said contractor, or for any forbearance act or omission on the part of the **SMC** any indulgence by the **SMC** to the said contractor or by any such matter or thing whatsoever which under the law to sureties would, but for this provisions, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or of the Contractor.

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

Dated the

day of

2025-2026

For

(Indicate the name of the Bank)

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

ANNEXURE-4

UNDERTAKING 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

ANNEXURE-5

DECLARATION BY CONTRACTOR

ANNEXURE-6

COLLABORATION AGREEMENT

Annexure-B

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) Shegaon Municipal Council has floated a tender for the work **NAME OF WORK : SHEGAON SEWERAGE SCHEME FOR PHASE 3 (PUMPING MACHINERY) UNDER RASHTRYA SWARN JAYANTI NAGORATHAN, TAL. SHEGAON, DIST.BULDHANA** (Principal contractor)registered with / MCGM/ MIDC/ CIDCO ANY GOVT ORGANIZATION in Class is a well established contractor engaged in the activities of execution of water supply projects.

1. (Collaborator) -----Registered with Maharashtra Jeevan Pradhikran / MIDC/ MCGM/ CIDCO/ ANY GOVT in Civil/Mechanical Class..... is well established contractor having the experience of work mentioned inpara 4.

1. 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).

1. 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 its perfect execution utilizing the technical experience. The principal contractor involved in this collaboration, directly or indirectly will hold fully responsible towards Shegaon Municipal Council 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 HERETO 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 **Shegaon Municipal Council** then carry on the business as a collaboration in respect of development and execution of the said work in accordance with the terms and conditions that may be imposed or agreed by and between the **Shegaon Municipal Council** 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 **Shegaon Municipal Council** 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 **Shegaon Municipal Council**, the same shall be referred to Member Secretary, 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 their respective hands and seals the day, month and year first above written.

SIGNED, SEALED AND DELIVERED BY THE WITH NAME

(Name of First Party)

(Name of Second Party)

WITNESS :-

1.

2.

JOINT VENTURE AGREEMENT

ANNEXURE –C

JOINT VENTURE AGREEMENT

JOINT VENTURE AGREEMENT

This agreement of joint venture made and entered into at on

thi

s

_____ 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 setout 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 COMMISSIONER/CHIEF OFFICER, SMC, SHEGAON

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 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 or undertake any contract other than the subject work.

WITNESS

Whereas the _____ COMMISSIONER /CHIEF OFFICER, SMC, SHEGAON, hereinafter referred as the COMMISSIONER/CHIEF OFFICER, SMC, SHEGAON, 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. "

me

Na
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 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 bonds, 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 sh all 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 thereof.

- 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 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.

(Address)

SIGNED, SEALED AND DELIVERED BY THE WITH NAME

(Name of First Party)

(Name of Second Party)

WITNESS :-

1.

2.

Annexure-VII

Details of audited turnover executed by the contractor in last five years and existing commitment of ongoing work.

Sr. No	Name of Works	Name of Division /MC	Accepted Tender Cost.	Amount of work completed					Amount of balance work	Remark
				2019-20	2020-21	2021-22	2022-23	2023-24		

(in Rs. Cr.)

Abstract for BID Capacity Calculation

Details of audited turnover executed by the contractor in last five years and existing commitment of ongoing work.

Year	Max. value of engineering works executed in the year	Maximum value of engineering works executed by the contractor in any one year, during the last five years		Remarks
		Value	Year	
1	2	3	4	5
2018-19		Write the max value here	Write concerned year here	
2019-20				
2020-21				
2021-22				
2022-23				

(Rs. In Crore)

<u>Year</u>	Value of existing commitment of ongoing work to be completed during next N years	Total value of existing commitment of ongoing work to be completed during next N years. (B)
1	2	3
2023-24		
2024-25		
2025-26		

Maximum value of engineering (Civil/ Electrical/ Mechanical as relevant to work being procured) works executed in any one year during the last five years (updated at the current price level), taking into account the completed as well as works in progress. (A) = ...

No. of year prescribed for completion of work for which present tender are invited (N) =

Total value of existing commitment of ongoing work to be completed during next **N** years (B) =

Note :-

- Since all the data is pertaining to the contractors own performance, the contractors are requested to provide its bidding capacity for this work by furnishing the calculations and supporting documents duly certified by chartered accountant to prove its contentions
- Ongoing works and works where contractor is lowest and for which letter intent has been issued to the contractor shall be considered in the calculation of value of existing commitment and ongoing works. (B)
- The statement showing the value of existing commitments of ongoing works during next N years for each of works in the list should be counter signed by Engineer-in-charge not below the rank of Executive Engineer or equivalent officer or head of any other Govt./semi Govt. organization.
- Submission of false information results in blacklisting of the contracting agency.
- Bidder shall submit the affidavit as per the format provided in the Annexure 14.
- Bidder shall submit the self declaration as per the format provided in Annexure 15.
- Annual turnovers and Bid capacity calculations shall be submitted in contractor's letter head with signature of contractor. Same shall be submitted due verified certification of the Chartered Accountant.
- If support documents are not found uploaded, bid capacity will not be taken into account which will result in disqualification for this tender.

BAR CHART

Sr. No.	Name Of Sub work	Month																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

(12 Months)

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

Name of work :-

Date :-

Draft Affidavit Regarding**The work in hand & work where bids have been submitted**

I / We hereby declare that, I / We have bidden for the work of ___ and at the date of bid in the below given Table – I (A). The following works amounting to Rs. ____ Crores are the balance works. Which are yet to be executed by my / our firm.

Table I (A) During the next _____ Years

Sr. No.	Description of works	Place & State	Contract No. & Date of W.O.	Name & Address of Department	Accepted Tender Cost Rs. (In Lakhs)	Sanction date of Completion
1	2	3	4	5	6	7
Ongoing works						

Details of ongoing works			Value of works remaining to be completed (Rs. In Lakhs)	Reasons for delay
Expenditure	Expected progress in % & Amount	Actual progress % & Amount		
8	9	10	11	12
To be certified by CA.				

Similarly in the works mentioned in the table 1 (b), my / our firm is lowest and the tender is approved and work order is yet to be issued. The cost of such work is Rs. ____ cr.

Table 1 (B)

Sr. No.	Description of works	Place & State	Contract No. & Date of W.O.	Name & Address of Department	Accepted Tender Cost Rs. (In Lakhs)	Sanction date of Completion
1	2	3	4	5	6	7
Tender where bidder is lowest and tender is approved, work order to be issued.						

Details of ongoing works			Value of works remaining to be completed (Rs. In Lakhs)	Reasons for delay
Expenditure	Expected progress in % & Amount	Actual progress % & Amount		
8	9	10	11	12
To be certified by CA.				

I / We here by declare that, the above given information is true as on ____the day of month year_. No any information is false and misleading, I have not abandoned any work or action under clause 3 (c) is not executed against me / our firm. I am not black listed for any of the work.

If information is above table is found to be false or incomplete or the department finds that any information is hidden by me / our firm, the department will have all the liability to debar my firm from this binding or any further binding and department can black list my / our firm for the period as it may find suitable for such action.

Date : -	Signature
Place :-	Name of the firm

Annexure - XV

Self Declaration

- All the information provide in the forms, statements and attachments submitted in proof of the qualification requirements are correct. No any misleading or false information provided.
- I have not abandoned the works and I have properly completed all the contractor in time.
- I have / have not participated in the previous biddings for the same work and had/ hadnot quoted unreasonably high bid prices and could not furnish rational justification
- The details of litigation history is as below.

Name of Other party(s)	Cause of dispute	Litigation where (Court/arbitration)	Amount involved
------------------------	------------------	--------------------------------------	-----------------

- I am not financially failure.

Annexure XVI

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 of 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 (finalisation of final bill).

(Signature of contractor)

(Seal of company)

Annexure XVII

स्वयंघोषणापत्र

(On Rs.500/- Stamp Paper)

मी/ आम्ही याव्दारे असे नमूद करतो, की, महाराष्ट्र महानगरपालिका अधिनियम 1949 चे कलम 10 (फ) च्या तरतुदीच्या ज्या खाली उद्धृत केलेल्या आहेत माहित आहे. गंभीरपणे नमूद करतो कि, महानगरपालिकेशी कि या महानगरपालिकेच्या अधिन किंवा महानगरपालिकेने किंवा महानगरपालिकेच्या वतीने करण्यात येणाऱ्या संविदेमध्ये महापालिकेच्या कोणत्याही नगरसेवकाचा कोणताही हिस्सा किंवा हितसंबंध किंवा आमच्याशी भागीदारी नाही.

निविदा धारकाचे नाव :-----

पत्ता :-----

दिनांक:----/----/----

निविदा धारकाची सही

साक्षीदाराचे नाव :-----

पत्ता :-----

दिनांक:----/----/----

साक्षीदाराची सही

Annexure - XVIII
SITE VISIT CERTIFICATE

Name of Work :-

Name of Contractor / Agency: -

Name of Authorized Representative Visited Site: -

Dear Sir/Madam,

My authorized representative as named above have personally inspected the work site on the date Time PM/AM and have made our self-acquainted & satisfied with the site condition. This will be uploaded in envelope no. 1 of the tender.

Date:

Place:

Time:

Signature with
Stamp of the
Contractor / Agency

GENERAL SPECIFICATION

GS-1

- 1) All the materials used in the work shall be of best quality and the material rejected shall be removed from the site by the contractor within 36 hours in the presence of the Engineer in charge at his own cost.
- 2) All other rules regarding workmen compensations etc will be binding on the contractor.
Unwanted persons shall be dispensed with if called upon by the Engineer in charge.
- 3) Other unforeseen items to be executed in course of work will have to be done by the contractor as per specifications, in P.W.D. Hand book volume I and II (Latest Edition) I.S. code of practice and as per standard specifications book of latest edition.
- 4) The contractor shall be responsible and liable to pay for the damages caused by him to public property etc.
- 5) All T and P machinery shall be provided by the contractor. Non availability of the same shall not be an excuse for application for extension of time limit.
- 6) Water of good quality for labour, construction, washing and such other purposes shall be provided by the contractor without any claim for extra cost.
- 7) Materials belonging to contractor if not removed from site of works after completion of the work within a period of 15 days shall be taken over by department at contractor's risk and cost and then shall be auctioned at the contractor's risk and cost. The amount so recovered shall be credited to contractor's account after recovery of any dues or over payments etc.
- 8) The final bill and deposits will not be paid unless the site is cleared off all rubbish materials and contractor's stores etc from the site of the work.
- 9) The contractor will have to pay the royalties and municipal taxes, if charged by the . The same will not be refunded.
- 10) Specifications given for relevant nature and type of work, for any particular item of the tender shall also be applicable to the other item of work when similar work is repeated or carried out in part or full although the item numbers may not have been mentioned especially against the particular specifications.

- 11) The contractor shall be responsible for obtaining permission from Government local bodies, private party for storing, stacking of materials required for execution of work.
- 12) Necessary sign board, danger flags, red lamps shall be provided by the contractor to avoid accidents. Necessary guarding will also have to be provided.
- 13) Before entering any land, the contractor shall make independent enquiry regarding ownership of land. Any action regarding trespassing will be at the risk of contractor.
- 14) Materials remaining unsold or unserviceable as per discretion of the Engineer-in-Charge shall be confiscated destroyed or disposed off without any compensation to the contractor, who will be responsible for all legal disputes at his own cost and consequences without reference to the department.
- 15) In case of legal disputes for materials brought and stores at site without permission of the Engineer-in-Charge, the contractor will be responsible for all legal disputes at his own cost and consequences without reference to the department.

GS 2: SPECIFICATION OF WORK :

The work shall be carried out as per practices and procedures laid down in P.W.D. Hand book Volume - I & II Latest Edition and Public Works Department's standard specifications (Latest Publication of Government of Maharashtra) with amendments from time to time and as per I. S. applicable for respective items of works, as directed by the Engineer in charge.

GS 3: MOTIVE POWER :

No electric power supply shall be entered by the during construction and testing of various structures under different sub-works. The contractor shall have to make his own arrangement for the same at his cost. During trial period of the plant, power supply shall be made available by the department. The firm should inform within one month from the date of receipt of work order, the total electrical load required for successful operation of the treatment plant. This electrical load shall also include lighting load for inside and outside light points etc. attached to the buildings in proper as well as premises of the plant.

GS 6: SATISFACTORY COMPLETION OF VARIOUS ITEMS :

The sub works included in the schedule of works for BPT MBR WTP & ESR on Lump sum basis.

The various items of the sub work are to fit in perfectly in the whole system physically, hydraulically, architecturally and mechanically.

GS 7: DISPOSAL OF EXCAVATED STUFF :

All materials obtained from any excavation carried out under this contract will be the property of and the contractor shall not have any claim on it. It will not be used by the contractor for any other purpose than the legitimate use on the work itself. Stuff still remaining surplus shall be spreaded over the different site of work or disposed off as directed by the Engineer in charge without extra cost.

GS 8: SUBMISSION OF DETAILED DESIGNS AND DRAWINGS AFTER ACCEPTANCE OF TENDER :

For Lump sum job works the contractor shall submit complete detailed designs and drawings within one month from the date of issue of work order for approval to the department. Piecemeal submission of designs and drawings shall not be permitted to commence the actual work at site unless detailed structural designs and working drawing are approved by the department. If called upon, the contractor shall also submit within reasonable time relevant books and other literature which have been referred to by him in working out the design for civil, mechanical or electrical works involved in the construction. Such books and literature will be returned to him. Reason of secrecy in regard to details of designs, materials, equipments etc shall not be placed by the contractor in the name of „TRADE SECRET“ for not furnishing the requisite details called for. The design gets approved from Govt. Engineering College structural consultants approved in listed in MJP shall be subjected to modifications if found necessary and such modification shall not violate the contract. The contractor shall be responsible for the correctness and soundness of the designs submitted by him. The structures shall be as per recognized engineering practices and if any provisions, are found inadequate or faulty, necessary modifications will have to be carried out by him at any stage up to the expiry of guarantee period and no extra payment will be made on the account.

Six copies of all the approved designs and drawings should be furnished by the contractor to the department free of cost.

GS-9: REQUIREMENT OF STRENGTH OF CONCRETE

The contractor shall make field arrangements for testing of all materials for cement concrete i.e. slumps test, compression test etc. The concrete cube moulds 3 Nos. of 15 x 15 x 15 cm size shall be kept during concreting operation. Three cubes shall be prepared from at site during concreting to be used in work for compression test, for each concreting to be used in work for compression test, for each concreting of the

structures. One cube shall be tested for test at 7 days age and two at 28 days in Regional Testing Laboratory at Govt. Polytechnic/Engineering college / Vishveshvarayya National Institute of Technology, Nagpur or at any approved laboratory, by Engineer –In-Charge. ALL THE TESTING CHARGES SHALL BE PAID BY CONTRACTOR. The entire responsibility of the testing of materials will be borne by the contractor. Mixing of concrete shall be done with Concrete Mixers.

- a) The contractor will make his own arrangement for receiving all materials, tools, etc. required for the work.
- b) No extra charges for the carriages of water will be allowed.
- c) The rates for all items are inclusive of all charges such as carting, lifting etc. No extra payment for any lead and lifts will be paid for any item.
- d) The contractor should not be subletted without written permission of the Engineer-In-Charge.
- e) The conditions in the tender notice will be binding on the contractor and the Tender Notice will form a part of agreement.
- f) The material required for carrying out the work for which the tender is offered shall be brought by the tenderer.

GS-10 ORDINARY CONCRETE

Full payment shall be made when 75% of the result are equal and above the specified strength and the remaining 25% of the result are above 75% of specified strength.

Cases failing outside the above limit shall be examined by the Engineer-In- Charge on merits in each case.

- 1) The charges for preliminary design of concrete mix shall be entirely borne by the contractor .
- 2) For grades of concrete M-20 and above where cement is to be used by weighment, the cost of extra cement required to make up under weight bags shall be borne by the contractor.
- 3) For the item of concrete and other items in the agreement where cement is not to be used by weighment the cement bags are received from the manufacturer shall be assumed to contain cement of 50 kg. net weight. The work shall be carried out as per this method of reckoning.

Item wise Detailed Specification List

TECHNICAL SPECIFICATIONS

DETAILED SPECIFICATIONS

All material such as sand, metal, rubble, steel, bricks, cement etc. shall be get checked from laboratory of Government Polytechnique or Engineering College. Then it should be allowed to use. Charges for this shall have to be borne by the contractor.

ITEM NO. 1 :- SUBMERSIBLE NON CLOG SEWAGE PUMP SET

GENERAL

The submersible sewage pump shall be vertical type with non-clog design. It shall be suitable for pumping raw unscreened sewage, containing sludge, storm water, long fibers, plastic pieces, cigarette butts etc. The pump shall be able to pass through soft solids of minimum 100 mm dia. And capable of desilting with the sewage / sludge with specific gravity of 1.05. Pumps shall be of 1450 rpm.

Impeller shall be of single / double vane, semi open, non-clog design additionally, a special contra block cutting and tearing system should also be incorporated on the suction side of the pump for disposing of soft fibrous material which would otherwise clog the pump.

Maintenance free anti friction permanently grease filled ball bearings shall be provided and this shall take care of the entire axial and radial forces at any point of operation. The weight of the revolving parts of the pumps including the unbalanced hydraulic thrusts of the impeller shall be carried by thrust bearings provided in each pump assembly.

The pump installation design shall be such as to facilitate automatic installation and removal of the pump without having to enter into the sewage pit. Profile gasket shall be provided in automatic coupling system so as to avoid metal to metal contact between the pump and delivery bend to ensure leak proof joint.

The reverse rotation prevention system shall be incorporated in the pump design to ensure that pump does not start rotating in the reverse direction due to wrong electrical connection

PUMP CONSTRUCTION

Pump Casing

The pump casings shall be of CI as per IS 210 Gr. FG. 260. The internal surfaces shall be free of rough spots.

Impeller

Impeller shall be of Stainless Steel (CF-8M) material and shall be of single double vane, semi open, non-clog design. Additionally, a special contra block cutting and tearing system should also be incorporated on the suction sides of the pump for disposing off soft and fibrous material which would otherwise clog the pump.

Pump Shaft

The pump shaft shall be of SS 316. The shaft shall be of one-piece construction.

i. Pump Bearing

Pump bearing shall be of anti-friction type. The bearings shall be able to take normal trust load due to unbalanced hydraulic load on the impellers plus the weight of all rotating parts of the pumps. Pump bearings shall be designed with a minimum life of 40,000 Hours, the bearings shall be grease lubricated for life and shall be maintenance free.

Guide Rail Assembly

The assembly shall have CT pedestal, bracket, delivery bend, S.S. Guide Rail pipe of suitable Diameter for the Pumping Machinery as per Schedule-B & above size, suitable for the same above.

Pump set NB of class C, Upper guide rail, holder etc. The pedestal and bracket shall provide CI automatic coupling between pump delivery flange and discharge bend.

Mechanical Seal

Double mechanical seal shall be provided to prevent pumped liquid entering into the motor winding. The seal shall be situated in oil chamber to ensure proper lubrication.

The face combination of lower mechanical seal shall be Silicon Carbide V/S Silicon Carbide and upper mechanical seal shall be Carbon Vs chrome Steel.

Moisture Sensor

Moisture sensor (seal monitor) shall be provided in the oil chamber to detect the failure of the mechanical seal. The sensor will trip the pump motored into event of ingress of moisture into the oil chamber.

Lifting Chain

Each pump shall be provided with lifting chain fabricated from stainless steel material of adequate strength. The chain shall have rings of same size as chain, fixed at on both ends.

Fasteners

All pump fasteners shall be in SS-304 only

Foundation Nut and Bolts

S.S. Foundation nuts and bolts shall be provided for fixing auto coupling.

Protective Coating

The pumps and motor shall be anti corrosive epoxy painted.

Pump Balancing

All rotating parts shall be statically and dynamically balanced as per relevant standards.

Agency should Supply & erect properly the Non-clog Submersible pumpset with Suitable size of Auto coupling in Wet well.

SUBMERSIBLE MOTOR

The submersible motor shall be dry, squirrel cage type, suitable for three phase supply, continuous duty with class “F” insulation. Winding of themotor shall be impregnated by resin. Motor shall have integral cable entry port and cable entry shall be properly sealed.

The pump motor may often require starting after intermitted clogging. The motor should therefore be in complete aluminum dia cast rotors only to ensure better starting torque characteristics.

The enclosure of motor shall be IP 68. “Each phase of the motor shall be provided with thermionic switches or bimetallic Electro mechanical temperature detectors. The motor shall operate satisfactory at all operating level in wet well. Motor shall be sealed against entry of liquid being pumped by using two mechanical seals.

The motor shall have reserve margin of 30% on duty point and shall not be overloaded over the entire working range of the pump.

Submersible Motor Cable

Each pump shall be provided with 20 meters (10 Meter x 2 run) long submersible cable of Copper Conductor with required rating both for power and control cables, which shall be terminated in the pump started panel, as per recommendations of manufacturer and as approved by Engineer-in-charge.

PUMP COMPONENTS

Pump Set Includes

Pump motor with (10 x 2) 20 meters long submersible cable with copper conductor without any joint.

Guide rail assembly consisting of cast iron pedestal, bracket delivery bend / duck foot bend and upper guide rail holder.

Guide pipe of appropriate length as per drawing & of Stainless-Steel Material.

S.S. lift chain with shackles of required length as per drawing.

For Wet well No. 1 to STP-1 Pumping Station.

Sr.No	Description	0.5 DWF	1 DWF	2. 5 DWF
1.	Type of Pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump
2.	No. of Pumps	6 Nos. (1W+5S)	6 Nos. (2W+4S)	6 Nos. (4W+2S)
3.	Duty head required	16 Mtr.	16 Mtr.	16 Mtr.
4.	Duty discharge required	60000 LPH	120000 LPH	300000 LPH
5.	Full load speed nominal	1450 r.p.m.	1450 r.p.m.	1450 r.p.m.

6.	Pump operating head range	14.4Mtr To 20Mtr	14.4Mtr To 20Mtr	14.4Mtr To 20Mtr
7.	Shut off head expected	18Mtr.	18Mtr.	18Mtr.

For Wet well No. 2 to STP-2 Pumping Station.

Sr.No	Description	0.5 DWF	1 DWF	2.25 DWF
1.	Type of Pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump
2.	No. of Pumps	7 Nos. (1W+6S)	7 Nos. (2W+5S)	7 Nos. (5W+2S)
3.	Duty head required	14 Mtr.	14 Mtr.	14 Mtr.
4.	Duty discharge required	135000 LPH	270000 LPH	675000 LPH
5.	Full load speed nominal	1450 r.p.m.	1450 r.p.m.	1450 r.p.m.
6.	Pump operating head range	12.6Mtr To 15.4Mtr	12.6Mtr To 15.4Mtr	12.6Mtr To 15.4Mtr
7.	Shut off head expected	17.5 Mtr.	17.5 Mtr.	17.5 Mtr.

For Wet well No. 3 to EXISTING 7MLD STP Pumping Station.

Sr.No	Description	0.5 DWF	1 DWF	2.25 DWF
1.	Type of Pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump
2.	No. of Pumps	6 Nos. (1W+5S)	6 Nos. (2W+4S)	4 Nos. (4W+2S)
3.	Duty head required	11Mtr.	11 Mtr.	11 Mtr.
4.	Duty discharge required	46666.67 LPH	93333.33 LPH	234333 LPH
5.	Full load speed nominal	1450 r.p.m.	1450 r.p.m.	1450 r.p.m.
6.	Pump operating head range	10Mtr. To 13.75Mtr.	10Mtr. To 13.75Mtr.	10Mtr. To 13.75Mtr.
7.	Shut off head expected	13Mtr.	13Mtr	13Mtr

For Old Wet well No. 1 to Existing STP Cap.7MLD Pumping Station.

Sr.No	Description	0.5 DWF	1 DWF	2.25 DWF
1.	Type of Pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump	Non clog Sub. sewage pump
2.	No. of Pumps	2 Nos. (1W+1S)	2 Nos. (1W+1S)	1 Nos. (1W)
3.	Duty head required	22 Mtr.	22 Mtr.	22 Mtr.
4.	Duty discharge required	24000 LPH	48000 LPH	120000 LPH
6.	Full load speed nominal	1450 r.p.m.	1450 r.p.m.	1450 r.p.m.
7.	Pump operating head range	20Mtr. To 27.5Mtr.	20Mtr. To 27.5Mtr	20Mtr. To 27.5Mtr
8.	Shut off head expected	25.3 Mtr.	25.3 Mtr.	25.3 Mtr.

All the pump shall be suitable for solo or parallel operation without change in performance.

Pump delivery and length of CI piping, layout and G.A. drawing shall be got approved by department before procurement.

TESTING

All the tests shall be conducted in accordance with the relevant I.S. / manufacturers testing standards.

Each pump shall be tested at manufacturer works in the presence of Third Party inspection agency approved by MJP and Engineer-in-charge or his representative for performance tests for six reading including duty point and shut off.

In addition to the above tests, manufacturers will also conduct the following tests.

Hydraulic test on casing

Routine test of motor including H.V. test and Meager test

Review of material for major components certifying the grades of the material used and quality control procedure.

Performance Test

Strip inspection for one random pump after performance test.

Dynamic balancing of impeller and shaft.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's or from the approved list of TPI agencies appointed by Govt. of Maharashtra valid prevailing approved agency(for 20HP and above capacity Pump sets). 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 2 & 3 :- CIDF SLUICE VALVE GLANDLESS AND ELECTRIC VALVE ACTUATOR

Providing, erecting, testing & commissioning CIDF sluice valve suitable for working pressure of 10 Kg / cm² with standard non rising spindle, hand wheel, cap etc. manufactured as per IS 2906 / 14846 and as per detailed specification and including Electric Valve Actuators totally enclosed, weather-proof and dust proof construction with IP-67, protection class suitable for installation in any position without lubrication, leakages or other operational difficulty with special grease filled gear box and hand wheel for emergency manual operation which will automatically disengage on restoration of power to motor and with 10 watt single phase space heater and continuous local mechanical position indicator & individually replaceable counter gear assembly and with two torque and four limit switches with S.S. flap and operated with gear driven cams and of rating 250 Volt, 5 Amp. AC / DC, torque switch dial and with TEFC squirrel cage induction motor working on 440 Volts +/- 10%, 3 phase, 50 Hz AC of intermittent duty rating S-2, insulation class "F" and temp rise restricted to class "B" with IP – 67 protection class suitable for DOL starting and with three thermostat and 30% over load margin. The torque rating of reduction gear box shall be at least 1.5 times max. torque required for opening & closing of valve. Electric Valve Actuator for non rising spindle type sluice valve, PN-1 rating for valve of suitable size

Sr. no	Sub work No./ Item No.	Size of CIDF Sluice Valve with Valve Actuator	Qty
1	SW No.9A/ Item No.2 & 3	150 mm Dia	6
2	SW No.9B/ Item No. 2 & 3	200 mm Dia	7
3	SW No.9C/ Item No. 2 & 3	150 mm Dia	6
4	SW No.11/ Item No. 2 & 3	100 mm Dia	4
		150 mm Dia	1

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 4 :-REFLUX VALVE

Providing & supplying ISI mark CI D/F reflux valves (non-return valves) of following dia. Including all taxes (Central & Local), railway freight, insurance, unloading from railway freight, inspection charges unloading from railway wagon, loading into truck, transportation up to departmental stores / site, unloading, stacking etc. complete. Reflux valves as per IS 5312 part I (1984) Size of Reflux Valve of following table. Of approved make of the MJP

Sr.no	Sub work No./ Item No.	Size of CIDF Sluice Valve with Valve Actuator	Qty
1	SW No.9A/ Item No.4	150 mm Dia	6
2	SW No.9B/ Item No.4	200 mm Dia	7
3	SW No.9C/ Item No.4	150 mm Dia	6
4	SW No.11/ Item No.4	100 mm Dia	4
		150 mm Dia	1

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 5 :-KINETIC AIR VALVE (Double Ball)

Providing & erecting Kinetic Double Orifice type Air Valves as per standard specification having small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on molded seat ring, with built-in Kinetic features, isolating sluice valve mounted in horizontal position and operated by wheel gearing, inlet face and drilled, including all taxes (Central & local), insurance, third party inspection charges, loading, unloading transportation up to departmental site complete

Suitable for size Diameter as per below table.

Sr.no	Sub work No./ Item No.	Size of Kinetic Air Valve (Double Ball)	Qty
1	SW No.9A/ Item No.4	80 mm Dia	1
2	SW No.9B/ Item No.4	100 mm Dia	1
3	SW No.9C/ Item No.4	80 mm Dia	1
4	SW No.11/ Item No.4	80 mm Dia	1

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 6 :-PRESSURE GAUGE ARRANGEMENT

Glycerin feed type pressure gauge of 150 mm dia. 0 to 3 kg / cm² range with G.I. pipe connection and isolating chrome plated cock on delivery of each pump set. The dial shall be installed on upper-floor level to see the reading on operating platform. The pressure gauge shall be suitable to measure the pressure of sewage.

Sr.no	Sub work No./ Item No.	Size of Glycerin feed type pressure gauge.	Qty
1	SW No.9A/ Item No.3	150 mm Dia	6
2	SW No.9B/ Item No.3	150 mm Dia	7
3	SW No.9C/ Item No.3	150 mm Dia	6
4	SW No.11/ Item No.3	100 mm Dia	4
		150 mm Dia	1

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 7 :-CIDF PIPE & SPECIALS

Providing, erecting in position & jointing with flanged joints with necessary jointing material i.e. rubber packing, nut bolts, washer etc. with labour & hydraulic testing for 100mm dia., 150mm dia. And 200mm dia. CI pipe for non-clog submersible pump set to be erected at wetwell Pumping Station with ISI standard CI double flanged pipes including all taxes (Central & local), railway freight, insurance, unloading from railway wagon, loading into truck transport to stores / site, unloading etc. complete as directed by Engineer-in-charge.

Fabricating, providing and erecting MS common delivery manifold having 100mm dia., 150mm dia. And 200mm dia. With 8 mm and above thickness plate and flanged branch outlet of 100mm dia., 150mm dia. And 200mm dia. pump delivery 5,6&7 Nos. with dish end & fabricating transportation,

installation & with two coats of red oxide & rubber paint of Shalimar or equivalent with hydraulic testing etc.

Sr.no	Sub work No./ Item No.	Size of CIDF PIPE & SPECIALS..	Qty in KG
1	SW No.9A/ Item No.3	150 mm Dia	1500
2	SW No.9B/ Item No.3	200 mm Dia	1800
3	SW No.9C/ Item No.3	150 mm Dia	1200
4	SW No.11/ Item No.3	100 mm Dia	1200
		150 mm Dia	

MODE OF PAYMENT: The payment of shall be made to the contractor as per actual executed quantity and the measurement of work shall be taken in KG up two places of decimals.

ITEM NO. 8 :-MS PIPE & SPECIALS

Providing, erecting in position & jointing with flanged joints with necessary jointing material i.e. rubber packing, nut bolts, washer etc. with labour& hydraulic testing for 100mmd dia., 150mm dia. And 200mm dia. MS pipe for Various non-clog submersible pump set to be erected at Various Pumping Station with ISI standard CI double flanged pipes including all taxes (Central & local), railway freight, insurance, unloading from railway wagon, loading into truck transport to stores / site, unloading etc. complete as directed by Engineer-in-charge Municipal Council or his representative.

Fabricating, providing and erecting MS common delivery manifold having 300mm, 250mm dia. With 8 mm thickness plate and flanged branch outlet of Required dia pump delivery 5,6&7 Nos. with dish end & fabricating transportation, installation & with two coats of red oxide & rubber paint of Shalimar or equivalent with hydraulic testing etc.

Sr.no	Sub work No./ Item No.	Size of MS PIPE & SPECIALS	Qty in KG
1	SW No.9A/ Item No.8	150 mm Dia	900
2	SW No.9B/ Item No.8	200 mm Dia	1000
3	SW No.9C/ Item No.8	150 mm Dia	1200
4	SW No.11/ Item No.8	100 mm Dia	1600
		150 mm Dia	

MODE OF PAYMENT: The payment of shall be made to the contractor as per actual executed quantity and the measurement of work shall be taken in KG up two place of decimals.

ITEM NO. 9 :-IRON WORK

Providing structural steel work in single stanchions composed of RSJ, channel etc. with caps, bases, mild steel plates, angles, brackets, cleats, gusset plates, anchor bolts etc. as per detailed design & drawing or as directed by Engineer- in-charge, Municipal Council or his representative including cutting, fabrication, hoisting, erecting, fixing in position, making riveted / bolted / welded connections and one coats of anticorrosive paint and over it two coats of oil painting etc. complete for pump foundation & chequered plates in Pump House.

Sr.no	Sub work No./ Item No.	Iron Work Qty in Kg
1	SW No.9A/ Item No.9	800
2	SW No.9B/ Item No.9	1000
3	SW No.9C/ Item No.9	900
4	SW No.11/ Item No.9	900

MODE OF PAYMENT: The payment of shall be made to the contractor as per actual executed quantity and the measurement of work shall be taken in KG up two place of decimals.

ITEM NO. 9 :- Main Control LT Cubical Panel.

Designing, Providing, Erecting, Testing& Commissioning Main L. T. Control Panel Board comprises of ACB/ MCCB for Incoming & outgoing, meters, and other electrical component.

415 VOLT L.T. PANEL

The section specifies 415 V, LT Panel, 3 phase, 50 Hz switch board panel related equipment, control, metering, protection and indication. The general requirements of the system are described in the following clauses.

One 415 V switch gear would receive power from the transformer in Raw Water pump house and would serve power to another switch gear to starter and driving motors

A dimensional drawing of the panel; showing position of switch gears, Ammeter, Voltmeter etc. shall be submitted before manufacturing, for approval.

CONSTRUCTION

The control panel shall comprise of fully compartmentalized modular type cubicles suitable for floor mounting. The panel board shall be divided into distinct vertical sections each comprising of:

A completely metal enclosed bus bar compartment running horizontally.

Individual feeder modules arranged in multi-tier formation.

Enclosed vertical bus bars serving all motors in the vertical sections.

The panel shall be fabricated out of 50 x 50 mm angles and 16 SWG M.S. sheets at the bottom and rear and 14 SWG M.S. sheets in the front and top. The front and the rear sides shall be provided with hinged doors. Mechanical interlock shall be provided so that the front doors cannot be opened on 'ON' positions. Cable entry and exit to and from the panels board shall be from the bottom. The fabricated cubical shall form a totally enclosed, metal clad, dust and vermin proof enclosure. The indicating and operating switches shall not be mounted above 1.6 m from floor level.

The panel in cubical in shape 4 Nos. and of multiple sizes of (height x width x length)

INTERNAL CABLING

The switch board shall be completely factory wired, ready for connecting to the equipment.

Power cabling shall be of suitable size not less than 2.5 mm, 2 PVC insulated, multistoried copper conductors of 1100 V grade. All cable connections shall be made using proper crimping sockets. Suitable size flanged type glands shall be provided for outgoing cables.

Control cabling shall be done with PVC insulated multistrand copper conductors of size not less than 1.5 Sqmm of 600 V grade. The control wiring shall be concealed by taking through neatly arranged PVC cable trays and all cables shall be terminated in suitable compression type terminal blacks. The

cable terminations shall be made in accordance with wiring diagrams, using identifying codes as approved by the Engineer.

All cable shall be arranged and marked in general compliance with IS:375.

EARTHING

A 50 x 10 mm G.I. earthing flat, running the length of control panels shall be provided. Metal frame of control switch board shall have two separate and distinct earth connections of adequate size.

PAINTING

The panel shall undergo chemical de-rusting and shall be effectively phosphates as per IS:6005 and primed. The panels shall be thoroughly rinsed with clean water after phosphatising, followed by final rinsing with dilute bicarbonate solutions and oven drying. The phosphate coating shall be sealed by the application of two coats of ready mixes, stoving type zinc chromate primer.

Two coats of finishing synthetic enamel paint shall be applied, each coat followed by storing. The final finished thickness of paint film on steels shall not be less than 100 microns and shall not be more than 150 microns. The color for the finishing paints shall be approved by the Engineer. The finished painted appearance of panels shall present an aesthetically pleasing appearance free dust and un-even surface.

MISCELLANEOUS

Engraved PVC labels shall be provided on all incoming and out going compartments. The exact legend to be provided shall be as approved by the Engineer.

COMPONENT

The power receiving panel comprises of following equipments for receiving the power from transformers.

Sub Work No.9A – Item No. 9 - L.T. Cubical Panel Board For PS-1 Pumping Station

Sr. No.	Particulars of Item	Qty	Unit
1	2	3	4
1	Cubical Box Type Panel Fabrication in CRCA sheet size:2.5m x 2m x 0.5m	100	Kg
2	Iron work sheet metal work consisting of CRCA sheets various section of iron, plate, angle, bar, ms pipe etc for panel boardAngle base frame & internal support 50 x50 x6 mm	150	Kg
3	Supplying and erecting of any size electrolyte aluminium patti or bar in bus bar chamber	30	Kg
4	Providing & erecting 4 Pole MCCB 415V, 200 A, rated short-circuit breaking capacity 36 kA.as per specification no. SW-SWR/MCCB (1 Transformer + 1 D.G Set)	2	No
5	Providing & erecting 3 Pole MCCB, 415 V, 63A, rated short-circuit breaking capacity 25 kA for (7.5 HP Pumps % other loads)	7	Nos
6	Supplying, erecting & marking TPMCB 6A to 32A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for Valve Acuator & Spare	6	Nos
7	Supplying, erecting & marking TPMCB 40A to 63A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for lighting + spare	5	Nos
8	Digital type Voltmeter Flush type 0 / 500 Volt	1	No.
9	Digital type Ammeter of suitable scale Flush Mounting	6	No.
10	Selector Switch for VM & AM	7	No.
11	CT of required ratio for VM & AM	18	No.
12	Indicating Lamp with LED	3	Nos.
13	Caution Board 250 x 200 mm in 16 gauge GI sheet	2	Nos
14	Earthing Terminals	2	Nos
15	Insulation matting with Class B Insulation suitable for 11 kv	3	Sqm
16	Self-locking arrangement with keys in duplicate	2	Nos

Sr. No.	Particulars of Item	Qty	Unit
1	2	3	4
17	Capacitor of 5KVA 5 x 3 = 15KVA + 1 spare connect only when any capacitor gets faulty	4	Nos
18	Assembled Fully Automatic Star Delta starter, in a provided cubical panel to operate squirrel cage induction motor working on 380- 440 Volt, 3 phase, 50 Hz with no volt coil, over load relay and ON-OFF push buttons, with necessary material and connected to supply, etc complete.		
	10 HP	6	Nos
19	Labor charges for Internal Panel Wiring of Panels including all materials for connected load more than 60 HP Add per HP	60	HP

Sub Work No.9B – Item No. 9 - L.T. Cubical Panel Board WW-2 Pumping Station

Sr. No.	Particulars of Item	Qty	Unit
1	2	3	4
1	Cubical Box Type Panel Fabrication in CRCA sheet size:3.0m x 2.5m x 0.5 m	150	Kg
2	Iron work sheet metal work consisting of CRCA sheets various section of iron, plate, angle, bar, ms pipe etc for panel board Angle base frame & internal support 50 x50 x6 mm	150	Kg
3	Supplying and erecting of any size electrolyte aluminium patti or bar in bus bar chamber	30	Kg
4	Providing & erecting 4 Pole MCCB 415V, 400 A, rated short-circuit breaking capacity 36 kA.as per specification no. SW-SWR/MCCB (1 Transformer + 1 D.G set)	2	No
5	Providing & erecting 3 Pole MCCB 415V, 200A, rated short-circuit breaking capacity 36 kA. for APFC + other load	2	Nos
6	Providing & erecting 3 Pole MCCB, 415 V, 100A, rated short-circuit breaking capacity 25 kA for 20 HP Pump + 1 Spare	8	Nos
8	Supplying, erecting & marking TPMCB 6A to 32A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for Valve Acuator & Spare	7	Nos
9	Supplying, erecting & marking TPMCB 40A to 63A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for lighting + spare	3	Nos
10	Digital type Voltmeter Flush type 0 / 500 Volt	1	No.

Sr. No.	Particulars of Item	Qty	Unit
11	Digital type Ammeter of suitable scale Flush Mounting	7	No.
12	Selector Switch for VM & AM	11	No.
13	CT of required ratio for VM & AM	21	No.
14	Indicating Lamp with LED	3	Nos.
15	Caution Board 250 x 200 mm in 16 gauge GI sheet	2	Nos
16	Earthing Terminals	4	Nos
17	Insulation matting with Class B Insulation suitable for 11 kv	3	Sqm
18	Self-locking arrangement with keys in duplicate	2	Nos
19	Supplying and erecting, assembled Fully Automatic Star Delta starter, in a provided cubical panel to operate squirrel cage induction motor working on 380- 440 Volt, 3 phase, 50 Hz with no volt coil, over load relay and ON-OFF push buttons, with necessary material and connected to supply, etc complete. 20 HP	7	Nos

Sub Work No.9C – Item No. 9 - L.T. Cubical Panel Board WW-3 Pumping Station

Sr. No.	Particulars of Item	Qty	Unit
1	2	3	4
1	Cubical Box Type Panel Fabrication in CRCA sheet size:3m x 2m x 0.5m	150	Kg
2	Iron work sheet metal work consisting of CRCA sheets various section of iron, plate, angle, bar, ms pipe etc for panel board Angle base frame & internal support 50 x50 x6 mm	120	Kg
3	Supplying and erecting of any size electrolyte aluminium patti or bar in bus bar chamber	30	Kg
4	Providing & erecting 4 Pole MCCB 415V, 200 A, rated short-circuit breaking capacity 36 kA.as per specification no. SW-SWR/MCCB (1 Transformer + 1 DG Set)	2	No
5	Providing & erecting 3 Pole MCCB, 415 V, 63A, rated short-circuit breaking capacity 25 kA for 7.5 HP Pump & 1 spare+	7	Nos
6	Supplying, erecting & marking TPMCB 6A to 32A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for Valve Acuator & Spare	6	Nos
7	Supplying, erecting & marking TPMCB 40A to 63A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for lighting + spare	6	Nos

8	Digital type Voltmeter Flush type 0 / 500 Volt	1	No.
9	Digital type Ammeter of suitable scale Flush Mounting	6	No.
10	Selector Switch for VM & AM	6	No.
11	CT of required ratio for VM & AM	18	No.
12	Indicating Lamp with LED	3	Nos.
13	Caution Board 250 x 200 mm in 16 gauge GI sheet	2	Nos
14	Earthing Terminals	2	Nos
15	Insulation matting with Class B Insulation suitable for 11 kv	3	Sqm
16	Self-locking arrangement with keys in duplicate	2	Nos
17	Capacitor of 5KVA 5 x 4 = 20KVA	4	Nos
18	Assembled Fully Automatic Star Delta starter, in a provided cubical panel to operate squirrel cage induction motor working on 380- 440 Volt, 3 phase, 50 Hz with no volt coil, over load relay and ON-OFF push buttons, with necessary material and connected to supply, etc complete.		
	5 HP	6	Nos
19	Labor charges for Internal Panel Wiring of Panels including all materials for connected load more than 60 HP Add per HP	60	HP

Sub Work No.11 – Item No. 9 - L.T. Cubical Panel Board For Existing STP

Sr. No.	Particulars of Item	Qty	Unit
1	2	3	4
1	Cubical Box Type Panel Fabrication in CRCA sheet size:3m x 2m x 0.5m	150	Kg
2	Iron work sheet metal work consisting of CRCA sheets various section of iron, plate, angle, bar, ms pipe etc for panel board Angle base frame & internal support 50 x50 x6 mm	120	Kg
3	Supplying and erecting of any size electrolyte aluminium patti or bar in bus bar chamber	30	Kg
4	Providing & erecting 4 Pole MCCB 415V, 200 A, rated short-circuit breaking capacity 36 kA.as per specification no. SW-SWR/MCCB .	1	No
5	Providing & erecting 3 Pole MCCB, 415 V, 63A, rated short-circuit breaking capacity 25 kA for 5 HP & 10HP Pumps	4	Nos
6	Providing & erecting 3 Pole MCCB, 415 V, 100A, rated short-circuit breaking capacity 25 kA for 25 HP Pump + 1 Spare	2	Nos

7	Supplying, erecting & marking TPMCB 6A to 32A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for Valve Acuator & Spare	5	Nos
8	Supplying, erecting & marking TPMCB 40A to 63A, with rated short - circuit breaking capacity (Icn) 10kA in provided distribution board as per specification for lighting + spare	5	Nos
9	Digital type Voltmeter Flush type 0 / 500 Volt	1	No.
10	Digital type Ammeter of suitable scale Flush Mounting	5	No.
11	Selector Switch for VM & AM	5	No.
12	CT of required ratio for VM & AM	15	No.
13	Indicating Lamp with LED	3	Nos.
14	Caution Board 250 x 200 mm in 16 gauge GI sheet	2	Nos
15	Earthing Terminals	2	Nos
16	Insulation matting with Class B Insulation suitable for 11 kv	3	Sqm
17	Self-locking arrangement with keys in duplicate	2	Nos
18	Capacitor of 5KVA	4	Nos
19	Assembled Fully Automatic Star Delta starter, in a provided cubical panel to operate squirrel cage induction motor working on 380- 440 Volt, 3 phase, 50 Hz with no volt coil, over load relay and ON-OFF push buttons, with necessary material and connected to supply, etc complete.		
	Upto 10 HP	4	Nos
	25 HP	1	Nos
20	Labor charges for Internal Panel Wiring of Panels including all materials for connected load more then 60 HP Add per HP	70	HP

MOULDED CASE CIRCUIT BREAKER

The 440 volt Moulded case circuit breaker shall have the following features. All MCCB shall be provided for distribution of power supply.

The continuous rating of MCCB shall be as shown in above table. The final steady state operation temperature of the contacts when carrying rated current under continuous operation shall not excess the limit specified in relevant IS. The contacts shall be of silver alloy of high arc resistance and long electrical life quality. The operating mechanism shall be quick make quick break and trip free. The housing shall be made of heat resistant insulating material. Mechanical ON-OFF indication shall be provided. The MCCB shall be mounted in panel board.

The MCCB shall incorporate shunt release device. The overload protection shall have the setting range to meet the load requirement. All release should operate on common trip bar. The auxiliary contact block should be provided to facilitate visual ON-OFF indication. The MCCB shall be supplied with all standard accessories for functional requirement as per duty conditions, as per relevant standard.

BUS BAR

Bus bar shall be of electrolytic Aluminum to suitable Amp current rating and of withstanding the electro mechanical force due to short circuit. The neutral bus bars shall not be smaller than half cross section of main bus bars. The bus bars shall be housed in separate bus bar chamber and supported on unbreakable, non-hygroscopic supports, rigidly held to the framework. The bus bar shall have separate special screwed cover with ventilating louvers. The continuous rating of the bus bars shall not be less than 300 Amp. The temperature rise of the bus bars shall not exceed 55°C over an ambient temperature of 40°C. The bus bars shall be PVC insulated with colour code for phase identifications. The bus bars shall be easily accessible for inspection. The power distribution bus bars or cables shall be bolted clamp type. The parallel bus bar shall not be used for main bus bars or distribution.

The current density for auxiliary bus to connect out going switches or other switches shall be minimum 1 Amp per square mm or nearest commercial size whichever is on higher side for Aluminum bus and 2 Amp/Sq.mm for copper bus.

10 MCB

The Miniature Circuit Breakers shall be provided for isolation purpose and have the rating to suit the load continuous on it. The ON-OFF position shall be clearly marked on the panel. The mechanical interlocking shall be provided so that the door opens only on off position of switch

H.R.C. FUSES

H.R.C. cartridge fuses shall be of link type for power and control, non- deteriorating has adequate fault capacity, indication to show health and tripped conditions. Fuses shall conform to IS:2208.

INDICATING LAMPS

The indicating lamps of 22 mm dia shall be of filament bulbs type of 230 volts rating with series resistance for different voltages. The oil and dust proof, un-breakable suitably colored polycarbonate lenses shall be used to improve appearance and illumination.

SELECTOR SWITCH

The selector switch shall be with three positions, unit designed for heavy duty application and handle of robust design. The required position shall be engraved on the front plate.

AMMETER, VOLTMETER

The meters shall meet following general requirements.

i)	Accuracy	?	Class 1 as per IS;1248
ii)	Case	?	Steel
iii)	Cover	?	Metal
iv)	Window	?	Plastic
v)	Scale	?	Flat

RUBBER MATTING

PVC Synthetic elastomer electrically insulating mat with B class insulation 2.5 mm thick up to 22 kV of approved make shall be provided for panel boards and starters.

FACTORY TESTING

The Panel shall be tested at Manufacturer's workshop in presence of third party inspection agency approved by MJP & superintending Engineer (Mech.) or his representative. The scope of inspection is as under and as mentioned in QAP for the LT Panel .

Review of raw material test certificate and quality control procedure.

HV test

IR test

Routine test

Checking phase and earth clearance of bus bars.

Checking wiring diagram and contact circuit and operation of panels.

Fault simulation for testing protection relays except short circuit and earth fault.

Note :- The complete circuit diagram of all power circuits, control circuits with necessary protection relays, CTs, PTs, auxiliary contacts etc. shall be prepared and drawn on A - 1 size engineering sheets duly laminated and fixed on teak wood board and shall be fixed in the pump house.

In addition to above five laminated copies of above sized circuit diagram shall be submitted to the office for Record and O & M purpose.

MODE OF PAYMENT: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 10 :-APFC Panel

Supplying and erecting of following mentioned capacity KVAR APFC, 440 V Three phase, 50 cycles, THYRISTER SWITCHED MICRO APFC PASSIVE FILTER PANEL,

consisting of suitable steps of APP type capacitor units confirming to IS- 13585 (Part – I) 1994 with harmonic filter reactors, as per specification no ESD-APFC with TPI & MJP inspection.

The contractor shall design, supply, erect, commission & give satisfactory test & trial of Automatic power factor correction panel. The panel shall be designed in such a way that the system P.F. shall be improved to 0.99 or above .But in any case the system P.F. should not be on leading side. The tentative technical details of the equipment is given below. But it is the responsibility of the contractor to provide necessary accessories for proper functioning of the equipment. The P.F. shall be improved by min.4 step CONTACTOR SWITCHED APFC PANEL. The capacitor bank shall be Mix dielectric type. Each bank shall be of Suitable KVAR .Two banks of Suitable KVAR shall be kept spare.

The APFC panel board shall be completely factory wired ready for connecting the equipment. All internal wiring of the panel is to be carried out by PVC insulated PVC sheathed copper cable of adequate capacity. Incoming and outgoing cable entries shall be enclosed in metal clad dust and vermin proof enclosure and suitable size cable glands shall be provided for cable entries from bottom.. The drawing of the panel shall be got approved before actual manufacturing and the panel board shall be tested at manufacturers work in presence of departments representatives

For PS-2 Pumping Station – 40 KVAR

FACTORY INSPECTION AND TEST.

The APFC Panel shall be inspected and tested by third party agency approved by M.J.P. or from the approved list of TPI agencies appointed by Govt. of Maharashtra in presence of Engineer-in-Charge or his representative. The scope of inspection is as under and as mentioned in QAP for the LT Panel .

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO 11 :-CABLE

14.1 1.1 kV POWER CABLE

Power cable used in 415 V system shall be of MJP approved make and shall be 1.1 kV grade 3.5 core single core or 3 core as applicable aluminum/copper conductor PVC insulated PVC sheathed galvanized flat steel armoured type conforming to IS: 1554. As given in cable schedule.

14.1 CABLE SCHEDULE

The cable lengths stated in the schedule are estimated quantity and shall form the base for comparison of the tender others. However for contract work quantity of the cables as actually required shall be supplied at the tendered rates.

The sizes of the cables stated in the schedule are the minimum acceptable size and shall form the base for comparison of tender offers. The tenderer may offer alternative sizes and quote for such size separately the prices for which shall however not be considered for comparison and evaluation of tender offer. The Engineer-in-Charge reserves the right to accept or reject such alternative size / sizes.

(A)Cable Schedule.

Sub Work No. 9 A/ Item No.11

Sr.No	Cable Description & Size	Qty	Unit
a)	3.5 Core 70 Sq. MM Aluminium Armoured Cable Double Run from MSEDCL T/F to Main Panel.	120.00	Mtr
	Supplying and erecting, Flat flexible Sub Cable 3 Core x 4 Sq mm For 10 HP Pumps	240.00	Mtr
b)	4 core 2.5 sqmm copper conductor control cable for actuator power supply	120.00	Mtr
c)	9 core 2.5 sqmm copper conductor control cable for actuator power supply	120.00	Mtr
d)	Supply, erection & termination, commissioning & testing of armoured cable 3.5 core 25 sq mm. for DG Set	50.00	Mtr

Sub Work No. 9 B/ Item No.12

Sr.No	Cable Description & Size	Qty	Unit
a)	3.5 Core 150 Sq. MM Aluminium Armoured Cable Double Run from MSEDCL T/F to Main Pane	100.00	Mtr
b)	Supplying and erecting, Flat flexible Submersible Cable Copper Conductor (Std.) for 20 HP Pump 3 Core 10 sq mm	300.00	Mtr
c)	3.5 core 2.5 sqmm copper conductor for actuator power supply	100.00	Mtr
d)	9 core 2.5 sqmm copper conductor control cable for actuator power supply	100.00	Mtr
e)	Supply, erection & termination, commissioning & testing of armoured cable 4 core 70 sq mm. for DG Set	50.00	Mtr

Sub Work No. 9 C/ Item No.10

Sr.No	Cable Description & Size	Qty	Unit
a)	3.5 Core 70 Sq. MM Aluminium Armoured Cable Double Run from MSEDCL T/F to Main Pane	80.00	Mtr

Sr.No	Cable Description & Size	Qty	Unit
b)	Supplying and erecting, Flat flexible Sub Cable 3 Core x 4 Sq mm For pump	200.00	Mtr
c)	4 core 2.5 sqmm copper conductor control cable for actuator power supply	120.00	Mtr
d)	9 core 2.5 sqmm copper conductor control cable for actuator power supply	120.00	Mtr
e)	Supply, erection & termination, commissioning & testing of armoured cable 3.5 core 25 sq mm. for DG set	50.00	Mtr

Sub Work No. 11/ Item No.10

Sr.No	Cable Description & Size	Qty	Unit
a)	3.5 Core 95 Sq. MM Aluminium Armoured Cable Double Run from MSEDCL T/F to Main Panel	100.00	Mtr
b)	Supplying and erecting, Flat flexible Sub Cable 3 Core x 2.5 Sq mm For 25 pump	100.00	Mtr
c)	Supplying and erecting, Flat flexible Sub Cable 3 Core x 10 Sq mm (double run) For 25 pump	40.00	Mtr
d)	4 core 2.5 sqmm Aluminium conductor control cable for actuator power supply (double run)	100.00	Mtr
e)	9 core 2.5 sqmm copper conductor control cable for actuator power supply	120.00	Mtr

CABLING METHODS

Cables shall be laid in ducts above ground and while passing through wall on trays in and out the pump house. Every cable shall be neatly run vertically, horizontally or parallel to adjacent walls, beams or Columns. At both ends for termination, the cable shall approach from a common direction and are individually terminated in an orderly and symmetrical fashion.

The cables shall be terminated in mechanical ground which shall be suitable to provide adequate support by locking on the anchor for additional earth continuity. Suitable compression type copper cable lugs shall be used for cable terminations.

The point of entry, exit of the cables from the building shall be sealed from outside with an approved asbestos compound followed by, about 40 mm thick bituminous compound or a weak mortar, care shall be taken not to damage sheathing of cable due to hot bituminous compound while sealing.

Cable route markers of approved design shall be installed at the following position.

Entry and exit points of underground duct / trench.

Exits from the building.

At every 5 m distance of straight run.

Any other position necessary to trace route.

A metallic plastic tag bearing cable reference number indicated in cable schedule at every 4 m run or part thereof and at both ends shall be provided. For case of identification and route tracing. The schedule shall be prepared by the contractor and submitted for approval.

The cable routing and laying shall be such that sharp bends and links are avoided. The radius at bends for PVC insulated cables shall not be less than 15 D where D is overall diameter of the cable.

Laying and termination of 11kV and 1.1 kV grade cable shall be as per manufacturers instructions.

Such instructions shall be furnished to the Engineer-in-Charge.

Loops/extra length shall be provided in each cable run located suitably. The loop/extra length shall be adequate for two straight through joints as and when such needs arises.

Trench - Making the trench in soft soil of suitable width and depth as per IS for laying provided L.T cable of 25 sq mm & above and covered with Half round Hume pipe complete. As per specification no. CW-EXN-CTR

MODE OF PAYMENT: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO 12:- EARTHING

GENERAL

1 The earthing arrangement for sub-station switch yard and indoor equipment shall be designed in conformity with the I.E. rules 1956 and IS: 3043 and Rules/ Regulation/ Instructions of statutory authorities, as applicable for the class of work under the contract. The arrangement specifications and quantity/size stipulated hereunder are minimum requirements. It shall however, be the responsibility of the contractor to design and provide the earthing arrangement as stated above without any extra cost. Required excavation for above system by Mechanical Means should be done by concern contractor without any extra cost.

2. EARTH ELECTRODE AND EARTH PITS

All earth electrodes shall be of pipe type earthing with 40mm. dia. G.I. pipe or 20 mm dia. G.I. Rod complete with all materials testing and recording the results as per specification no. EA-EP. The electrodes shall not be situated at a distance less than 1.5 m from building fencing structure and equipment foundations. The earth pits shall conform to the provisions in IS and shall be constructed in M- 150 concrete. Required quantity of salt and charcoal shall be provided. Each earth pit shall have funnel arrangement for watering, minimum requirements of each pits/ electrodes are as under.

1. Earthing for 0.4 KV system

Each earth electrode shall have disconnecting link to disconnect and measure resistance of earth electrode. RCC chamber shall be provided with C.I. cover to each earth pit. RCC chamber's top shall be flushing to meTal spreading level in switch yard.

A ring bus shall be formed in a pole yard and transformer yard to which individual earth electrode shall be connected. Earth leads from equipment, structure etc. shall be connected separately to the ring bus. Both ring buses shall be interconnected with two parallel earth leads at two opposite points on each ring bus.

3 EXTENT OF EARTH CONNECTIONS

Earth connections shall be given to meTal frame work of A. B. switches, operating handles, lightening handles, lightening arrestors, insulators, transformer neutral and body cable box and glands, VCB body and frame work, pole structure and fencing. Each unit shall have two separate and distinct earth connections of adequate size.

Sr.no	Sub work No.	Quantity
1	SW No.9A / Item No.12	8 Nos
2	SW No.9B / Item No.13	9 Nos
3	SW No.9C / Item No.11	8 Nos
4	SW No.11 / Item No.12	7 Nos

MODE OF PAYMENT: The payment of shall be made to the contractor as per actual executed quantity as per Schedule-B.

ITEM NO 13:- ALUMINUM STRIPS FOR EARTHING

Supplying and erecting GI strip of high purity required size used for earthing on wall and/or any other purpose with necessary GI clamps fixed on wall painted with bituminous paint with joints required. As per specification no EA-EP.

Sr.no	Sub work No.	Quantity
1	SW No.9A / Item No.13	120 Kg
2	SW No.9B / Item No.14	150 Kg
3	SW No.9C / Item No.12	170 Kg
4	SW No.11 / Item No.14	170 Kg

MODE OF PAYMENT: The payment of shall be made to the contractor as per actual executed quantity and the measurement of work shall be taken in KG up two place of decimals.

ITEM NO 14 & 15 :-Chain Pulley Block and Travelling Trolley - 3MT- 6 MTR. SPAN For 4 number Pumping Stations.

GENERAL

Particular For STP water pump house

Qty 03 No. CP Block With 03 Nos Travelling Trolley.

Capacity 1 Tonnes x 03 Nos

3 Tonnes x 01 Nos

Lift 6m

The contractor should design & provide the Chain Pulley Block With Travelling Trolley of 1 tone safe working capacity tested to 50 % overload times working capacity, overhead travelling crane with all equipments & accessories shall be provided.

To lift complete weight of the pump or motor from any point, in the pump house.

Gantry Girder : Providing & erecting travel/ gantry girder i.e. ISMB of minimum size 225x110mm on provided RCC corbel beam in pump house by providing & fixing foundation plates with proper grouting etc complete. The crane shall generally conform to respective IS.

MODE OF PAYMENT: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO 16:-Tools, Furniture & Fire Fighting Equipments.(For All 4 Pumping Stations)

The contractor has to supply following meters/instruments/Tools./safety equipment/Spares/Water Cooler and Furniture of standard specification and approved make as directed by the Engineer-in-charge

TOOLS : OF MAKE GEDORE/JHALANI/TAPARIA/EVERST ONLY

Sub Work No. 9A

Sr. No.	Description of items	Qty	Unit
1	D.E. Fix spanner set 12 piece 6-32mm	1	set
2	Ring spanner set 12 piece 6-32mm	1	set
3	Ball pen Hammer 800 gm	1	set
4	200mm cutting plier	1	no
5	Adjustable wrench 250-30 mm	1	no

6	Pipe wrench 450-60 mm	1	no
7	Screw driver 6x300 mm	1	no
8	Screw driver 8 x 200 mm	1	no
9	Insulation Tester(Megger)	1	no
10	Earth - Tester	1	no
11	Tong Tester (Clip on meter) of range 0-10-30-100-1000 Amps and 0-300-600 Volts	1	no
12	Screw driver with tester 3.6 x 60 mm	1	no
13	Supplying shock proof type hand lamp with lamp holder, guarded glass and 10 mtrs of 3 core PVC flexible cord with hand shield type 3 pin 6 Amp plug top. (164 x 1.05 = 172)	1	no
14	M.S. Tool box	1	no
15	Tublar box spanner set 8 pieces	1	no
16	Long nose cutting plier 200 mm	1	no
17	Steel Almirah 150 x 90 x 45 cm	1	no
18	Steel Table wooden top 120 x 75 cm	1	no
19	PVC Fibre Chairs	2	no
20	GI Buckets	2	nos
21	Stand	1	no
22	First Aid Box	1	no
23	Hand Gloves	2	no
24	Instruction Chart	2	no
25	Fire Extinguisher CO2 type 4.5 Kg capacity	2	no

Sub Work No. 9B

Sr. No.	Description of items	Qty	
1	D.E. Fix spanner set 12 piece 6-32mm	1	set
2	Ring spanner set 12 piece 6-32mm	1	set
3	Ball pen Hammer 800 gm	1	no
4	200mm cutting plier	1	no
5	Adjustable wrench 250-30 mm	1	no
6	Pipe wrench 450-60 mm	1	no
7	Screw driver 6x300 mm	1	no
8	Screw driver 8 x 200 mm	1	no
9	Insulation Tester(Megger)	1	no
10	Earth - Tester	1	no
11	Tong Tester (Clip on meter) of range 0-10-30-100-1000 Amps and 0-300-600 Volts	1	no
12	Screw driver with tester 3.6 x 60 mm	1	no

Sr. No.	Description of items	Qty	
13	Supplying shock proof type hand lamp with lamp holder, guarded glass and 10 mtrs of 3 core PVC flexible cord with hand shield type 3 pin 6 Amp plug top.	1	no
14	M.S. Tool box	1	no
15	Tublar box spanner set 8 pieces	1	no
16	Long nose cutting plier 200 mm	1	no
17	Steel Almirah 150 x 90 x 45 cm	1	no
18	Steel Table wooden top 120 x 75 cm	1	no
19	PVC Fibre Chairs	2	nos
20	GI Buckets.	2	no
21	Stand.	1	no
22	First Aid Box.	1	no
23	Hand Gloves.	1	no
24	Instruction Chart.	1	no
25	Fire Extinguisher CO2 type 4.5 Kg capacity.	1	no

Sub Work No. 9C & 11

Sr. No.	Description of items	Qty	
1	D.E. Fix spanner set 12 piece 6-32mm	1	set
2	Ring spanner set 12 piece 6-32mm	1	set
3	Ball pen Hammer 800 gm	1	no
4	200mm cutting plier	2	no
5	Adjustable wrench 250-30 mm	2	no
6	Pipe wrench 450-60 mm	1	no
7	Screw driver 6x300 mm	1	no
8	Screw driver 8 x 200 mm	1	no
9	Insulation Tester(Megger)	1	no
10	Earth - Tester	1	no
11	Tong Tester (Clip on meter) of range 0-10-30-100-1000 Amps and 0-300-600 Volts	1	no
12	Screw driver with tester 3.6 x 60 mm	2	no
13	Supplying shock proof type hand lamp with lamp holder, guarded glass and 10 mtrs of 3 core PVC flexible cord with hand shield type 3 pin 6 Amp plug top.	1	no
14	M.S. Tool box	2	no
15	Tublar box spanner set 8 pieces	2	no
16	Long nose cutting plier 200 mm	2	no
17	Steel Almirah 150 x 90 x 45 cm	1	no
18	Steel Table wooden top 120 x 75 cm	1	no
19	PVC Fibre Chairs	4	nos

Sr. No.	Description of items	Qty	
20	GI Buckets.	4	no
21	Stand.	1	no
22	First Aid Box.	1	no
23	Hand Gloves.	1	no
24	Instruction Chart.,	2	no
25	Fire Extinguisher CO2 type 4.5 Kg capacity.	2	no

**ITEM NO.17:- Indoor & Outdoor Electrification
(Sub Work No. 9A)**

Sr. No.	Particulars of Item	Qty	Unit
1	Item No. 1		
	Point wiring for light/fan/bell in 20 mm rigid PVC conduit with 1.5 sq.mm FRLS grade Copper wire with flush type switch and required accessories as per specification No: WG-PW/SW	10.00	Point
2	Item No. 2		
	Point wiring for independent plug in 20 mm rigid PVC conduit with 1.5 sq.mm FRLS grade Copper wire with flush type switch and required accessories as per specification No: WG-PW/SW	5.00	Point
3	Item No. 3		
	Supplying and erecting LED street light fitting 40 to 50 W, with PF > 0.95 class IP 65 and above housing of pressure die cast aluminium alloy and heat sink extruded aluminium complete	5.00	Nos
4	Item No. 4		
	Supplying & erecting street light bracket made from 25 mm dia GI pipe B class , 0.6 m in length along with pole cap of 300 mm length and 80 mm dia duly welded with provided leads as per specification No. FG-BKT/BPC	5.00	Nos
5	Item No. 5		
	Supplying & erecting water tight terminal box of 1.6 mm(16 SWG) CRCA sheet of size 200 x 150 x 150 mm complete on pole as per specification No. CB-SB	5.00	nos
6	Item No. 6		
	Supplying and erecting Exhaust fan heavy duty 230 V A.C. 50 cycles 450 mm. 1400 RPM complete erected in position as per specification no. FG-FN/EXF	2.00	Nos
7	Item No.7		
	Supplying and erecting integrated LED flood light fitting Max. 70-75W IP65 & IK07 class having pressure die-cast aluminium housing, having system lumens output of Min. 3000 Lumens, min. efficacy of 100 lumen/W, CRI>70, CCT upto 6500K, THD<10%, p.f. >0.90, operating range of 140-270V, inbuilt surge protection of 4 kV, Life class of 50,000 Hrs. at L70B50, including driver with U shaped bracket with 3 Years warranty as per specification No FG-ODF/FLS2.	2.00	Nos

Sr. No.	Particulars of Item	Qty	Unit
8	Item No. 8		
	Supplying & erecting XLPE/PVC insulated, armoured cable 1100 V grade with ISI mark Twin core 4 sq.mm. strandad/solid aluminium conductor with 6 mm thick 25 mm width M.S. Spacer with GI earth wire 6 Sq.mm, complete erected on wall/on pole with 25/3 mm M.S. clamps or in provided trench in an approved manner.	150.00	m
9	Item No. 9		
	Making cable trench in soft soil of suitable width and depth as per IS for laying provided LT cable up to 16 sq.mm complete as per specification No. CW-EXN-CTR.	50.00	m
10	Item No. 10		
	Providing pipe type earthing with 40 mm dia G.I. pipe or 20 mm dia. G.I. Rod complete with all materials as per specification No. EA-EP	5.00	Nos
11	Item No. : 11 - Steel poles		
	Supplying and erecting G.I. pipe pole 'B' class 80 mm dia 6 m long with pole cap, base plate in provided foundation as per specification no. OH-PL/GIP	5.00	Nos
11	Item No. 11		
	Supplying & erecting mains with 2x2.5 sq.mm FRLS d copper PVC insulated wire laid in provided conduit/ trunking/inside pole/ Busbars or any other places as per specification No. WG-MA-/BW	100.00	mtrs

Sub Work No. 9 B

Sr. No.	Particulars of Item	Qty	Unit
1	Item No. 1		
	Point wiring for light/fan/bell in 20 mm rigid PVC conduit with 1.5 sq.mm FRLS grade Copper wire with flush type switch and required accessories as per specification No: WG-PW/SW	10.00	Point
2	Item No. 2		
	Point wiring for independent plug in 20 mm rigid PVC conduit with 1.5 sq.mm FRLS grade Copper wire with flush type switch and required accessories as per specification No: WG-PW/SW	5.00	Point
3	Item No. 3		
	Supplying and erecting integrated LED flood light fitting Max. 70-75W IP65 & IK07 class having pressure die-cast aluminium housing, having system lumens output of Min. 3000 Lumens, min. efficacy of 100 lumen/W, CRI>70, CCT upto 6500K, THD<10%, p.f. >0.90, operating range of 140-270V, inbuilt surge protection of 4 kV, Life class of 50,000 Hrs. at L70B50, including driver with U shaped bracket with 3 Years warranty as per specification No FG-ODF/FLS2.	4.00	Nos
4	Item No. 4		

Sr. No.	Particulars of Item	Qty	Unit
	Supplying & erecting street light bracket made from 25 mm dia GI pipe B class , 0.6 m in length alongwith pole cap of 300 mm length and 80 mm dia duly welded with provided leads as per specification No. FG-BKT/BPC	4.00	nos
5	Item No. 5		
	Supplying & erecting water tight terminal box of 1.6 mm(16 SWG) CRCA sheet of size 200 x 150 x 150 mm complete on pole as per specification No. CB-SB	4.00	Nos
6	Item No. 6		
	Supplying and erecting Exhaust fan heavy duty 230 V A.C. 50 cycles 450 mm. 1400 RPM complete erected in position as per specification no. FG-FN/EXF	2.00	Nos
7	Item No.7		
	Supplying and erecting LED street light fitting suitable for above 40W to 48 W lamp, including lamp, with PF > 0.95, class IP 65 and above. Housing of pressure die cast aluminium alloy and heat sink extruded aluminium as per specification no. FG-ODF/FLS2	4.00	Nos
8	Item No. 8		
	Supplying & erecting XLPE/PVC insulated, armoured cable 1100 V grade with ISI mark Twin core 4 sq.mm. strandad/ solid aluminium conductor with 6 mm thick 25 mm width M.S. Spacer with GI earth wire 6 Sq.mm, complete erected on wall/on pole with 25/3 mm M.S. clamps or in provided trench in an approved manner.	100.00	M
9	Item No. 9		
	Making cable trench in soft soil of suitable width and depth as per IS for laying provided LT cable up to 16 sq.mm complete as per specification No. CW-EXN-CTR.	50.00	M
10	Item No. 10		
	Providing pipe type earthing with 40 mm dia G.I. pipe or 20 mm dia. G.I. Rod complete with all materials as per specification No. EA-EP	4.00	Nos
11	Item No. 11		
	Supplying and erecting G.I. pipe pole 'B' class 80 mm dia 6 m long with pole cap, base plate in provided foundation as per specification no. OH-PL/GIP	4.00	Nos
12	Item No. 12		
	Supplying & erecting mains with 2x2.5 sq.mm FRLS d copper PVC insulated wire laid in provided conduit/ trunking/inside pole/ Busbars or any other places as per specification No. WG-MA-/BW	50.00	Mtrs

Sub Work No. 9C & 11

Sr. No.	Particulars of Item	Qty	Unit
1	Item No. 1		
	Point wiring for light/fan/bell in 20 mm rigid PVC conduit with 1.5 sq.mm FRLS grade Copper wire with flush type switch and required accessories as per specification No: WG-PW/SW	10.00	Point

Sr. No.	Particulars of Item	Qty	Unit
2	Item No. 2		
	Point wiring for independent plug in 20 mm rigid PVC conduit with 1.5 sq.mm FRLS grade Copper wire with flush type switch and required accessories as per specification No: WG-PW/SW	2.00	Point
3	Item No. 3		
	Supplying and erecting integrated LED flood light fitting Max. 30W IP65 & IK07 class having pressure die-cast aluminium housing, having system lumens output of Min. 3000 Lumens, min. efficacy of 100 lumen/W, CRI>70, CCT upto 6500K, THD<10%, p.f. >0.90, operating range of 140-270V, inbuilt surge protection of 4 kV, Life class of 50,000 Hrs. at L70B50, including driver with U shaped bracket with 3 Years warranty as per specification No FG-DF/FLS2.	3.00	Nos
4	Item No. 4		
	Supplying & erecting street light bracket made from 25 mm dia GI pipe B class , 0.6 m in length alongwith pole cap of 300 mm length and 80 mm dia duly welded with provided leads as per specification No. FG-BKT/BPC	5.00	nos
6	Item No. 6		
	Supplying and erecting Exhaust fan heavy duty 230 V A.C. 50 cycles 450 mm. 1400 RPM complete erected in position as per specification no. FG-FN/EXF	1.00	Nos
7	Item No.7		
	Supplying and erecting LED street light fitting suitable for above 40W to 48 W lamp, including lamp, with PF > 0.95, class IP 65 and above. Housing of pressure die cast aluminium alloy and heat sink extruded aluminium as per specification no. FG-ODF/FLS2	8.00	Nos
8	Item No. 8		
	Supplying & erecting XLPE/PVC insulated, armoured cable 1100 V grade with ISI mark Twin core 4 sq.mm. strandad/ solid aluminium conductor with 6 mm thick 25 mm width M.S. Spacer with GI earth wire 6 Sq.mm, complete erected on wall/on pole with 25/3 mm M.S. clamps or in provided trench in an approved manner.	100.00	M
9	Item No. 9		
	Making cable trench in soft soil of suitable width and depth as per IS for laying provided LT cable up to 16 sq.mm complete as per specification No. CW-EXN-CTR.	40.00	M
10	Item No. 10		
	Providing pipe type earthing with 40 mm dia G.I. pipe or 20 mm dia. G.I. Rod complete with all materials as per specification No. EA-EP	2.00	Nos
11	Item No. 11		
	Supplying and erecting G.I. pipe pole 'B' class 80 mm dia 6 m long with pole cap, base plate in provided foundation as per specification no. OH-PL/GIP	4.00	Nos
12	Item No. 12		

Sr. No.	Particulars of Item	Qty	Unit
	Supplying & erecting mains with 2x2.5 sq.mm FRLS d copper PVC insulated wire laid in provided conduit/ trunking/inside pole/ Busbars or any other places as per specification No. WG-MA-/BW	50.00	mtrs

MODE OF PAYMENT: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO 18 :-Mechanical COARSE Screen DESIGN CONSIDERATION (01 nos for 01 pumping stations)
Sub-work No. 11

Screen channels should be designed for approach velocities between 2fps (0.6m/s) and

fps (1m/s). If velocities drop below 2fps, grit and screenings might accumulated upstream of the screen. Accumulated debris might lead to functional problems once a peak flow flushes that debris to the screens within a short time period. If velocities are higher than 3.3 fps (depending on the screen type) debris might bypass the screenings media and end up downstream of the screen. The velocity in the channel can be controlled by utilizing a partial flume downstream of the screen, or by controlling the wet well water levels. In addition to that, baffle plates can be used to increase the approach velocities to the screen. Sometimes aeration equipment is installed prior to the screen to keep grit suspended to avoid significant sedimentation prior to the screen at low flow scenarios. If large amounts of rocks and gravel are present, a rock trap also can be installed upstream of the screens. This rock trap could be emptied either manually or automatically with the means of a screw auger.

Before selecting and sizing a screenings system the following points should be considered:

Current plant flows

future plant flows

Required screenings capture rate or required bar spacing (does the plant process require a certain capture rate, E.g. MBR plants)

Head loss across the screen

Screenings handling, processing and disposal

Existing or new construction –available space

Relationship between daily average flow and peak flow

Wastewater characteristics (grit, gravel, branches, leaves, FOG content, tools and sheets -> prisons)

Construction, capital cost vs. Life-cycle cost

Outdoor or indoor installation

Control Typically, at least two mechanical screens should be installed so that one unit can be taken out for service or maintenance. If only one unit is to be installed a manual bar rake must be installed

to provide an emergency bypass. One slide gate shall be installed prior and one after the screen. Please take care to allow enough space for the pivoting, if the screen system comes with such a feature. Head loss of fine screens: An important figure in the design of a screenings system and the design of a WWTP is the head loss associated with a screen. Most screen manufacturers use one or another form of the Kirschmer formula for calculating the head loss of a fine screen.

Mechanical treatment is indispensable as the first process step of preliminary treatment of wastewater, both for STP inlets and other fields of application, such as process water treatment.

Disturbing coarse material has to be removed in order to protect the subsequent steps against damage/pollution or to relieve them. It is the goal to completely separate floating, settling and suspended material, depending on the bar spacing, and remove the material prior to discharging it into a container.

The hygienic conditions, operation safety and the fact that there are nearly any maintenance works are factors becoming more and more important.

For municipal STPs an additional screenings washing is recommendable as regards the denitrification, in order to lead the soluble organics again to biological treatment.

A1. SPECIFICATION:

The offered Multi raking bar screens are made generally as per MahrMaschinenbau, Austria technical design and specifications for its "MM2MM" range bar screens which are suitable for minimum bar spacing starting from 2 mm up to any higher spacing. The design incorporates design requirements of Austrian standards for multi raking screens.

A2. APPLICATION:

The offered Jash-Mahr "MM2MM" Multi-Rake screens are mechanically operated front raking screens with multiple rakes capable to screen out most of the Fine, medium and large floating wastes (depending upon the spacing provided between bars) such as plastic bags, floating debris, weeds, grass, paper wastes, cloths, rags, etc coming with the water or sewage which generally clog the pumps installed downstream of the screen.

These screens have multiple rakes which clear the screening trapped on the screen fields more frequently and transfer the screening to the discharge point. The rakes spaced one after the other at a determined distance are directly mounted on the two endless revolving chains driven through upper sprocket and the lower sprockets. Sealing provided at the sides of the bars prevents bypassing of the waste water.

A3. SALIENT FEATURES:

The salient constructional features of the offered Jash-Mahr "MM2MM" Multi raking screens are as under:

The screen is provided with specially extruded tapered bar profile which is wider at the point of entry and narrower at the point of exit. This means that if a hard material passes through the entrance then

it would flow through the bars without getting logged and disturbing the straightness of the bars as well as spacing between the bars.

The screen can be offered with bar spacing from as low as 2 mm to any higher spacing. This means that the same screen design can work as a fine screen as well as a coarse screen.

Each individual bar in the screen is replaceable in situ condition. This means that if the screen is purchased today with a higher spacing then at a later date the same screen can be modified at site and provided with lower spacing as required based on the need of the future treatment process.

The rake can engage the bars within 20 seconds or even at a lower duration as required. As a result of the head loss is very low even in those screens where the spacing between bars is very low.

The operating motor is provided with variable speed drive. This means that when flooding take place or when load on screen increases, the level controller will sense the increased head loss and automatically increase the speed of operation so that rakes engage faster with bars thereby cleaning the bar field faster. At faster speed the rake can engage with the bars even within 5 seconds.

The screen is provided with an anti-jamming system incorporating predetermined forward - reverse cycles to remove the jam. This means that when jamming takes place the rake will undertake reverse motion to remove the jam. This will be done 5 times and if the jam is not removed thereafter then an alarm signal will be given.

The entire screen structure is made in stainless steel and is designed to withstand 3 times the hydraulic load coming on the screen. As a result, the structure is so rigid that it does not need any anchorage to the civil works. This eliminates installation problems and at the same time allow removal of screen outside the channel for maintenance / up gradation in future.

The chains are made in stainless steel and designed to withstand pull force of up-to 112 kN and the geared motors are designed to withstand 1.5 times the design load of the screen ($3 \times 1.5 = 4.5$ times the hydraulic load). This strong chain with powerful geared motor facilitates in removal of heaviest of the loads and in overcoming the forces encountered in jam removal.

The sprockets are made of stainless steel and are provided with self lubricated ceramic bearings and Garmax bushes. This results into minimum maintenance and long life in aggressive environments.

The entire screen structure incorporates minimum welding and precision machined bolted on assembly. This allows for minimum distortion and accurate assembly of screen resulting into high performance in a screen having low spacing.

Item No. 18, 20,21 & 22 : MECHANICAL / MANUAL SCREENS, Belt Conveyor, Control Panel for Mechanical Screen & Cast Iron Manual Sluice Gate :-

Coarse screen at the inlet channel shall be provided as per arrangement of channel for screening of floating debris. The screen shall be front raked type multi rake screen made from 50 x 10 mm bar size and 20 mm bar spacing with angle of inclination 75 degree. The traversal speed for rake shall be 4 m/min. The distance between two rakers shall be 2 to 3m. For the movement of the screens, there should be geared motors drive with chain arrangement. The type of movement shall be double chain & Sprocket type. Material for chain, sprockets, drive shaft, bottom shaft, chain guide, dead plate,

screen member structural frame, rake arms, rake tine, debris removal arm, lifting lugs shall be S.S.316. The motor shall be 3 phase, 1440 rpm with IP-55 protection and with class-F-1 insulation. The gear box shall be in lined helical with output of 30 rpm at shaft. The final output for drive shaft of screen shall be 10 rpm. The chain pitch shall be 50 mm & sprocket thickness of 16 mm. The control panel shall be suitable to operate 1 screen and belt conveyor with IP-55 protection with necessary switch gear, starter ,MCB & required Cable with test & trail. The logic for screen shall be SCADA compatible & with level sensor.

Item No. 19 Mechanical Coarse Screen (01 Nos for 01 PS)

Providing, Erecting, testing & commissioning of Manual Coarse bar Screen having 50 mm wide x 6 mm thick bars and 20 mm spacing between the bars. Screen will be inclined 75 deg. to horizontal. MOC: SS 316, Screen size 800 mm wide x 1100 mm depth.

A4. MATERIALS OF CONSTRUCTION:

The materials of construction for various components of the offered screen shall be as under, unless specifically stated otherwise in our offer in respect of any particular component.

Fixed Bar	: Stainless Steel ASTM A 240, Grade
Screen Frame	: Stainless Steel ASTM A 240, Grade
Screen Raking Mechanism	: Stainless Steel ASTM A 240, Grade
Chain Guide	: Stainless Steel ASTM A 240, Grade
Drive Chain & Sprocket	: Special Grade Stainless Steel 316
Overload Device	: Stainless Steel, Grade 316L
Drive Shaft	: Stainless Steel ASTM A 276
Fasteners	: Stainless Steel, Grade 316

A5. SHOP TESTING & INSPECTION PARAMETERS &PROCEDURES :

Testing and inspection parameters and procedures shall be as stated here-under

MATERIALS TESTING:

Stainless steel materials: For major components made of stainless steel material, a Tensile Test Certificate as well as Chemical Analysis Certificate of important elements of metal - one certificate for each lot purchased will be furnished. For other stainless steel items such as fasteners a chemical analysis certificate for important elements of the metal will be furnished. This test will be carried out for each screen. additionally all the stainless steel material used on the assembled product will be checked for correct chemical composition using Positive Material Identification equipment at the time of inspection in presence of your inspector.

DIMENSIONAL VERIFICATION:

Actual dimensions of the screen will be verified with reference to the important dimensions given in the approved general arrangement drawings. Variations in dimensions, if any, shall be within the permissible limits as per the applicable international standards. This test will be carried out for each screen.

MOVEMENT TEST:

The assembled screen will be mounted horizontally and will be checked for interference free movement for 5 minutes. The screen will be checked for auto jam removal incorporating forward – reverse cycle and for higher operating speed in event of flooding. This test will be carried out for each screen.

A6. STANDARD FINISHING :

Stainless steel components shall be fabricated and then pickled and passivated on all surfaces to remove any ferrous contamination taking place during the process of welding, cutting, machining and handling.

To ensure superior workmanship and performance of screens we follow the best manufacturing practices as per international norms as stated hereunder:

All the critical components are manufactured in house using state of art manufacturing capability to ensure that there is no sacrificing of quality.

The manufacturing and assembly of Stainless steel screens is carried out in a clean area where other than Stainless steel no other carbon material is processed. This clean area is maintained in line with good manufacturing practices to be observed while working with Stainless steel so as to avoid ferrous contamination which results into corrosion impregnation in Stainless steel.

Conduct welding using the welding process described in AWS D 1.6 and ASME Welding code - Section IX using qualified welding process and welders.

ensure that all the submerged weld joints are continuous welded and not stitch welded so as to avoid start of inter-granular and crevice corrosion under submergence.

ensure that all the weld joints are at the minimum dye penetrative tested using qualified inspectors. If required, for critical applications we can also offer in-house MPI testing of weld joints.

ensure that after manufacturing the weld joints are pickled and passivity.

ensure that all the Stainless steel material used on the assembled product is checked for correct chemical composition using Positive Material Identification equipment. This shall be re-verified at the time of inspection in presence of your Inspector.

All screens are shop tested to ensure that they perform as per the requirement. The process of testing employed is such that it is simulation of operation as at site thereby leaving no scope for doubting the testing process and procedure.

ensure that all the stainless steel material used on the assembled product is checked for correct chemical composition using Positive Material Identification equipment. This shall be re-verified at the time of inspection in presence of your inspector.

FACTORY TEST

All the equipment's and Machineries shall be inspected and tested by third party agency approved by M.J.P. or from the approved list of TPI agencies appointed by Govt. of Maharashtra in presence of Engineer-in-Charge, Shegaon Municipal Council or His Representative.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 21:- Diesel Generating Set (D.G Set)

Supplying, Erecting & testing of silent diesel generating set of following capacity with AMF Panel, alternator, control panel, fuel tank, base rail, batteries, acoustic enclosure including on load four pole automatic transfer switch of suitable capacity etc. as per detailed specification with water cooled engine set including TPI, MJP, AMC, MSEDCL & Electrical inspector inspection & testing charges etc complete. The Cost of Fuel will be reimbursed to the Contractor on Submission of Log book Duly signed by engineer in charge & Diesel Purchase Vouchers in original. D.G Set as per Specified in PWD CSR for following Capacity.

Sr.no	Sub work No./ Item No.	Capacity of D.G. Set	Qty
1	SW No.9A/ Item No 21	50 kVA	1
2	SW No.9B/ Item No 21	140 kVA	1
3	SW No.9C/ Item No 21	25 kVA	1

FACTORY TEST

All the equipment's and Machineries shall be inspected and tested by third party agency approved by M.J.P. in presence of Engineer-in-Charge Municipal Council or his representative

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 22:- AMF Panel for D.G Set

Providing, erecting, testing and commissioning of microprocessor based AMF panel suitable for diesel generating set of above 62.5 kVA up to 82.5 kVA capacity Three phase, 415 Volts, 50Hz A.C. with all standard features, safeties etc as per specification no. GEN-AMF. with TPI

Sr.no	Sub work No./ Item No.	Capacity of AMU Panel for D.G. Set	Qty
1	SW No.9A/ Item No 22	50 kVA	1
2	SW No.9B/ Item No 22	140 kVA	1
3	SW No.9C/ Item No 22	25 kVA	1

FACTORY TEST

All the equipment's and Machineries shall be inspected and tested by third party agency approved by M.J.P. or from the approved list of TPI agencies appointed by Govt. of Maharashtra in presence of Engineer-in-Charge Municipal Council or his representative

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

AUTOMATION & SCADA SYSTEM

Name Of Work :- Designing, providing, erecting, testing and commissioning of Automation system for Non clog pumping machinery, including, Ultrasonic level sensors, pressure sensors, quality monitoring instruments, PLC, SCADA, including Electrical/Electronics/Mechanical/Civil Works with Six years comprehensive maintenance At National Highway STP Pumping station

Specifications of SCADA & Automation of pumping machinery at proposed wet well no. 1, 2 & 3 Shegaon

The overall objective of the automation is to reduce human intervention, reduce man power requirement, increase efficiency and increase managerial control with ease.

This work includes, complete DESIGNING, PROVIDING, ERECTING, TESTING AND COMMISSIONING OF SCADA AND AUTOMATION FOR PUMPING

MACHINERY AT PROPOSED PS-1,PS-2,PS-3 PUMPING STATIONS. This includes flow monitoring of Sewage water at intake. It is responsibility of contractor to design the SCADA for all pumping machinery and other allied electrical/electromechanical components at wet well, considering all items mentioned in schedule "B". It is binding on contractor, if any changes & modification required as per site condition then same shall be carried out with no extra cost. The entire SCADA/ Automation operation system should be self-sufficient to operate the complete wet well pumping station with and without manual operation. It should allow the valve controls, pump operations, treatment, etc. automatically. The system should be robust and tamper proof and should maintain and build database of all inflows and outflows at every lifting and delivery points. The details of item wise specifications and requirements are as follows.

The details of complete automation system / SCADA, make of equipment's / sensors / software etc. shall be submitted to the Engineer-in-Charge & shall be got approved before actual execution of work.

SCOPE OF WORK :-

The scope of work includes Design, supply, installation, testing and commissioning of Automation system for Sewage water pumping machinery, at Proposed Wetwell PS-1,2&3 including instrumentation, control valve, PLC, SCADA, Electrical/Electronics/Mechanical/Civil Works with six years comprehensive operation & maintenance at following places as directed by Engineer-in-charge
Important Note:-

The construction work including all civil/mechanical/electrical and electromechanical of Three Wetwells is allotted to another agency by the department. In that contract, work of SCADA and Automation of complete STP is included excluding SCADA and automation of pumping machinery on wet well.

Therefore it is responsibility of contractor to complete the work of SCADA and Automation of pumping machinery on STP & wet well included in this contract suitable and compatible to main PLC SCADA system of 8.5 MLD STP Wetwell, in such a way that SCADA and Automation of both should run smoothly without any interruptions and disturbances.

For this if some additional components and accessories are required, same shall be supplied and successfully erected by contractor with no extra cost. Any Extra payment will not be paid regarding this.

PLC Panel for collection and transmission of field data to main PLC Panel of complete at PS-1, PS-2, PS-3 pumping stations. which will be supplied and erected by another agency.

Important

The contractor shall study the actual manual operation of the complete sewage pumping machinery. And following documents in standard format shall be submitted for approval before starting execution.

Process and instrument Diagram. (P&I)

Process Description document (PDD)

Instrument Index sheet

Specification Sheet in ISA format.

Control strategy

Architecture

The Scope of work shall be as below:-

The installation of following equipments shall be done under the guidance & supervision of representative of Manufacturer.

PLC Panel

Flow Meters – Electromagnetic full bore suitable for sewage water

Ultrasonic level sensors for wet well sump

Smart Pressure Transmitters for Sewage pumps–.

Power analyzers for Sewage water pumps.

PLC based control monitoring and communication software as per IEC 61131as per Schedule B

Sewage water pumping machinery

PLC Panel for collection and transmission of field data .

Power cables, Communication cables & Signal cables with Cable trays.

All other related items

The guarantee period starts from date of commissioning of entire system. The defect liability period for the Flow meters, Valves, Ultrasonic Level Transmitters/sensors, pressure sensors, multifunction meters, PLC, etc. will be counted from the date of Trial Run of entire scheme. During this period all wear and tear to Flow meters, Ultrasonic Level sensors, pressure sensors, multifunction meters, PLC Field data transmitters & Data Communication System is to be borne by the Contractor, considering this offer may be quoted.

Important Note:-

Total comprehensive operation and maintenance period of SCADA and Automation work included in this contract shall be six years from the date of satisfactory testing of complete SCADA.

1.0 GENERAL SPECIFICATIONS:- .1.Equivalency of Standards and Codes:- Wherever reference is made in the contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise stated in the contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure an equal or higher quality than the standards and codes specified will be acceptable subject to the Engineer's prior review and written approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the contractor and submitted to the Engineer at least 8 days prior to the date when the contractor desires

the Engineer's approval. In the event the Engineer determines that such proposed deviations do not ensure equal or higher quality, the contractor shall comply with the standards specified in the documents.

Standard and Codes:- Generally the specifications for supply, implementation and support of the product and services shall be governed by relevant Indian Standard (IS) issued by the Bureau of Indian Standards (BIS) & CPHEEO manual on Water Supply, IEC. In the absence of ISS the British Standards (BS) or American Standards (AS) shall be followed. In all the cases the later issue/ version/ amendment shall apply. Where no ISS or alternatives are available, the specification suggested by the employer from other standard shall be adopted. The relevant international standards for software development deployment and maintenance shall be incorporated to the system and produced to the engineer for reference. The employer shall clear the doubts and give final decisions based on the request of the contractor. The decision intimated in writing shall be binding on the contractor. Only SI system shall be followed. A conversion utility as required by the engineer shall also be provided.

Sign Board:-

The Contractor shall provide a sign board at the site of the works of approved size and design which provides (i) the name of the project (ii) the names and addresses of the Employer, the Contractor and the Consultant; (iii) the name and short description of the project, (iv) the amount of the Contract Price; and (v) the starting and completion dates.

Protection of Utilities:-

The Contractor is required to carefully examine the location of the Works and their alignments and to make special enquiry's with all authorities concerning all utility lines such as water, sewers, gas pipe, telephone (underground and/or overhead) lines, electric cable (underground and/or overhead) lines, etc.; and to determine and verify to his own satisfaction the character, sizes, position and lengths of such utilities from authentic records. The Contractor shall be wholly responsible for the protection and/or facilitating relocation of such utilities as may be required, and shall not make any claim for extra work or extra time that may be required to protect or facilitate relocating such utilities. If any major shifting or realignment of water, sewers, gas pipes, electric and telephone lines is necessary due to their interference with the proposed Works, the same may be done by the Employer. The cost of such relocation will be borne by the Employer.

In case the alignment of the pipeline crosses the high tension electrical transmission lines belonging to the MSDCL or other authorities, the Contractor shall take all precautions necessary to see that the work is carried out with care and safety, without disturbing such transmission lines. The Contractor will be responsible to carry out all construction activities in such reaches in consultation with the owners of such facilities. However, satisfactory completion of the entire work will be the responsibility of the Contractor.

Functions required at Pumping Station:-

Pumps shall stop when the sewage water level in the inlet sump/ reservoir is reached below minimum set water level.

When the water level reaches to maximum, system shall give alarm.

The pump(s) shall stop when the water level in the destination sump/ reservoir reaches to Maximum.

When the pressure level in delivery pipe near pump house reduces below set limit, the pump shall stop and the delivery valve of the particular pump shall close.

When the power shuts down (Pump-off), the pump delivery valve has to be closed.

When the power is restored, application software and RTU shall start the pump on the basis of duty pump selected and mode of operation viz. Auto/ Semi-Auto/ Manual and the signal shall be sent to the MCS.

If the power is restored within 30 minutes, the standby pump has to start and if the power is stored after 30 minutes, the duty pump shall start duly opening the relative valves. When 'set duty hours' of the pump running are over then during next power cut and restoration stand-by pump will become duty pump and that running as stand-by.

Electrical parameters, like voltage, current, power factor, Frequency, Energy consumption etc., for each pump shall be monitored using Load Manager (Electrical Parameter Monitoring System) and if any of the parameter crosses set min or max limits alarm shall be generated.

All other safety devices like level sensor, pressure sensor, installed in the pumping station shall be interfaced with PLC/RTU and Min & Max limits for each parameter shall be set. Any parameter crossing the set limits, there shall be an alarm.

Any other functions as desired by the Engineer in charge of the plant to make it more easy for day-to-day operation and not involving any price implications shall be included in the system.

Information / data for various parameters at pre-defined interval (say 15 minutes) shall be recorded at each location along with trends and alarms data. Generation of local Reports, Trends & Alarm shall be provided.

General Technical specifications:-

Design Criteria :-

System shall be designed, manufactured, installed and tested to ensure the high standards of operational reliability and suitable for continuous operation.

All electronic components shall be adequately rated and circuits shall be designed so that change of component characteristics shall not affect plant/ pump operation.

All equipment shall be new, of proven design, reputed make and shall be suitable for continuous operation.

Unless otherwise specified, all instruments shall be tropical zed. The outdoor equipments shall be designed to withstand tropical rain. Wherever necessary space heaters, dust and water proof cabinets shall be provided. Instruments offered shall be complete with all the necessary mounting accessories.

Electronic instruments shall utilize solid-state electronic components, integrated circuits, micro controllers etc., and shall be of proven design.

Unless otherwise specified, the normal working range of all indicating instruments shall be between 30% and 80% of the full-scale range.

The instruments shall be designed to permit maximum interchange-ability of parts and ease of access during inspection and maintenance.

The field instruments i.e. the instruments mounted outside the control panel shall be mounted at a convenient height of approximately 1.2 m above grade platform.

The instruments shall be designed to work at the ambient conditions of temperature, humidity and chlorine contamination that may prevail. The instruments shall be given enough protection against corrosion.

All field instruments and cabinets/ panel mounted instruments shall have tag-plates/ name- plates permanently attached to them.

The performance of all instruments shall be unaffected for the $\pm$ 10% variation in supply voltage and $\pm$ 5% variation in frequency simultaneously.

CONTROL, INSTRUMENTATION AND AUTOMATION:-

2.2.1 General:-

For uniformity of appearance all panels shall have a common appearance and color. Adequate size shall be provided to accommodate all the necessary equipment.

In order to reduce the holding of the spares to a minimum, the instruments and, electrical, control and instrumentation equipment and components of similar type and purpose, used throughout the works shall be of the same manufacturer and type / series.

All ventilation grills provided to the control panel shall be provided with fly screens to prevent the entry of insects.

Glossary:-

The following abbreviations have been used in this document:

(a)	AC	Alternating Current
(b)	DC	Direct Current
(c)	I & C	Instrumentation and Control
(d)	A	- Ampere
(e)	mA	- Mille-ampere
(f)	V	- volt
(g)	Hz	- Hertz (cycles per second)
(h)	MCB	- Miniature Circuit Breaker
(i)	CP	- Control panel
(j)	UPS	- Uninterruptible Power Supply
(k)	RTU	- Remote Terminal Unit

(l)	I / O	-	Input/ Output
(m)	OIU	-	Operator Interface Unit
(n)	LAN	-	Local Area Network
(o)	PC	-	personal computer
(p)	MCS	-	Master Control Station
(q)	ppm	-	Parts Per Million
(r)	HLR	-	High Level Reservoir
(s)	CSR	-	Central Storage Reservoir
(t)	VHF	-	Very High Frequency
(u)	UHF	-	Ultra High Frequency
(v)	RTU	-	Remote Terminal Unit
(w)	PLC	-	Programmable Logic Controller
(x)	IPS	-	Intermediate Pumping Station
(y)	BPS	-	Booster Pumping Station

INSTRUMENTATION SYSTEM DESIGN CRITERIA:-

The design criteria to be applied to instrumentation systems shall be as follows:

All instruments shall be suitable for continuous operation

All transmitting instruments shall have a 4-20 mA linear output

All digital outputs shall be volt free

All instruments shall be designed for the ambient conditions of temperature (43oC) and humidity (Average level – 800M MSL)

All wetted parts of instruments sensors shall be non-corrosive and suitable for use with potable water containing residual chlorine of maximum 5 ppm.

All displays shall be of the digital type with no moving parts utilizing back-lit liquid crystal diode technology

Instrumentation shall utilize solid state electronic technology and avoid the use of any moving parts wherever practicable

Instruments shall resume operation automatically on application of power following a power failure

3 INSTRUMENTATION & CONTROL SYSTEM POWER SUPPLY:-

230V/ 415V AC, 50 Hz feeders shall be made available for power supply to instrumentation & control equipment. UPS shall be provided as a back-up power supply for complete instrumentation & control, SCADA and VSAT AND GSM/GPRS Data Communication System. The required DC voltages for these systems shall be derived from the UPS supply by providing necessary converters.

4. CONTROL OF DIFFERENT PUMPING UNITS:-

The control of diverse elements of the system such as pumping will be made in two ways : Local and Remote.

The LOCAL way of operation is detailed further ahead in the section referring to PLC, where as the REMOTE way is handled from Control Centre Room at 3 Pumping Stations main PLC Panel. The decision on which way will the equipment operate is based on a precedence order and it will be taken in the site by means of a control switch (LOCAL/REMOTE).

The REMOTE operation to be executed by the Control Centre will be REMOTE/AUTOMATIC or REMOTE/MANUAL. AUTOMATIC operation refers to the way of operation pre-programmed according to the criteria established for each site in individual, and the operation.

MANUAL will be performed under the command and supervision of the system operator, according to the effective instructions for normal or emergency operation, which is practically a forced way, executed directly by the operator.

LOCAL CONTROL PANEL FOR PUMPING STATIONS:-

Each one of these installations shall have a local control panel or PLC Local Control Panel shall be housed with a PLC Controller for Local Operations.

Local PLC Controller shall work in coordination with Main System in fully auto mode. However, in event of requirement of Local Operation local PLC Controller shall be fully capable of handling all local operations independently.

In LOCAL mode the equipment will be operated by means of the PLC according to the information available in the site, automatically. The Control Center will not be able to send command to operate the equipment in this mode, while it shall still be normally receiving the information. Also, the possibility exists of programming a clock that allows the operation during 24 hours.

Additionally each PLC will be equipped with an amount of control switches equal to the same number of devices (pumps, valves, etc.) to be controlled. This switch will have three positions: AUTOMATIC/O/MANUAL. The state of this switch will be transmitted to the Control Center and displayed in the corresponding screens. The switch will allow choosing, for each pumping or valve unit, its operation mode, according to the decision of the operation personnel in the PLC site. In the AUTOMATIC mode the equipment will be controlled by means of the PLC according to the state of the control switch REMOTE/LOCAL.

In the "O" mode the equipment will stop and it will not allow any operation.

The MANUAL mode will disconnect the PLC equipment and it will be handled in conventional manual form. In this way the PLC will not have any possibility of taking part in the operation of the equipment, not even in the activation of the hydraulic protections, but if it will continue with the data collection and its transmission to the Control Center for its processing and normal presentation.

Local control Panel (LCP) or PLC with following facilities:-

Selector switch for Local/Off/Remote for LCP. to choose the mode of operation of PLC

Auto mode is selected all the pumps/valves/gates etc. can be operated from the SCADA START/STOP push buttons for corresponding Pump

SCADA at STP receive the following feedback from the PLC(LCP):

RUN and combined TRIP feedback for corresponding Pump

Local/Off/Remote feedback for corresponding Pump

Emergency Stop feedback for corresponding Pump.

Auto/Off/Manual soft switch shall be provided at SCADA.

Start Permissive for different Modes:-

In Remote Manual /Auto Modes the Logic shall execute only when the following conditions are met:

The water level is not out of the operating range Duty Mode has to be selected in SCADA.

Respective mode is available (Remote mode, Non Failure of mains power supply) for operation.

Respective on – off discharge valves (if any) are available (Remote mode & Non Failure of mains power supply for operation.

No trips are generated by protection

Stop Permissive for different Modes:-

The drives shall trip under the following abnormal conditions to ensure safe operation and protection of Pumps:

Wet well Sump level out of range.

Respective drive is not available

Any trip alarm generated.

Pumps & Motorized valve/gate operation;

Local Mode:-

When Local/Remote selector switch in pumps & valve/gate is in Local Mode, each pumps & valve/gate can be operated through Push Button (PB) provided in at LCP or PMCC/MCC valve/gate actuator panel.

Remote Mode:-

When Local/Remote selector switch in pumps & valve/gate is in Remote Mode, each pumps & valve/gate can be operated through RTU and /or SCADA in Control room.

Auto Mode:-

When the selector switch is in Auto mode, each pumps & valve/gate shall operate automatically based on the Control sequence logic built in the PLC or SCADA in Control room

Manual Mode:-

The operator in the Control Room can select Manual mode from SCADA for enabling Manual operation from SCADA. In this mode all the pumps & valves/gate can be operated individually.

Signal Interface to PLC Drives:-

The following signals are hardwired between PLC and MCC/Soft Starter Panel

Drive Run feedback

Drive Trip feedback

Drive in Local/Off/ Remote Mode status

Drive Start/Stop Command
Drive Emergency Stop feedback

Motorized Valves/Gates:-

The actuators for electrically operated Gates have their own inbuilt display board and local control logic in built with the Actuators. The following controls are provided:-

Each actuator has the following facilities for local operation:-

Lockable Selector switch for LOCAL / OFF / REMOTE.

OPEN / STOP / CLOSE push buttons

Lamp indication for Fully OPEN position / Fully CLOSED position

Lamps for Fault indication including HIGH Torque and other Fault indications as per manufacturer requirement in the Display Board.

Lamps for status indication of Actuator towards Open Position, Actuator towards Close position, Actuator in Local mode, Actuator in Remote mode and other status as per manufacturer requirement in the Display Board.

PLC receives the following feedback from the actuators:-

Collective fault indication for Actuator including the High Torque Fault

LOCAL / OFF / REMOTE position feedback

Valve/ Gate Fully open / fully closed position feedback.

Position indicating transmitter shall be available along with each control valve actuator for position control based on desired set points.

OPERATION AND CONTROL PHILOSOPHY OF SEWAGE WATER NORMAL PUMP STARTING / STOPPING SEQUENCE:-

Starting the Pump set

Switch ON START Push Button. Following sequence shall take place, with the suitable delay timers for respective operations.

Confirm Sluice Valve on delivery side is fully closed, if confirmed go to b) Other wise first give command to the actuator motor to close the sluice valve completely.

Start actuator motor to open the sluice valve. Simultaneously give command to the electrically operated solenoid valve at air vent connection of pump, to open.

Give command to main motor starter to start the pumpset. Allow sufficient time as required for opening the sluice valve completely.

Give command to Automatic Power Factor Controller Relay Panel to switch on required bank of capacitors.

Monitor the delivery head pressure and display it on the screen continuously. Close the air vent solenoid valve.

Monitor all the electrical parameters of the main motor like Average Voltage, Average Current, Active Power KW, Reactive Power KVA, Intentional Power Factor etc. by gathering respective information from the sensors like CTs, PTs etc. directly or by computation and display all of them on a suitable LCD window.

Monitor all mechanical parameters of the pump set like pressure, discharge, run time counter, total lifetime counter, bearing temperature and status display etc. by gathering respective information from the respective sensors of pressure gauge, flow meter, thermocouples/ RTDs etc. directly or by computation and display all of them on a suitable LCD window. **There shall be sufficient battery backup for the timer counter so that even if the pumpset is switched off**, it shall take care of the lifetime counter and it shall read in continuance when the pumpset is switched on next time.

Stopping the Pumpset:-

Switching OFF operation, Push down the OFF Push Button. Following sequence shall take place.
Give command to actuator motor of sluice valve to close. Confirm sluice valve is completely closed.
Give command to APFC Panel to switch off the banks of capacitors one by one. Give command to switch off the main motor.
If needed switch off the LCDs.

Emergency stopping of pumpset:-

Simply push down the Emergency Push Button.

In addition to above following monitoring of components on hourly basis is required and to be logged and stored. Necessary reports shall be generated and printed and filed on daily basis.

1. 11 /0.450 KV side :-

Voltage (V)

Current (I)

Kwh

Kvah

Rkvh

P.f.

11/0.450 KV approx capacity 315kVA & 500 KVA Transformer :-

Winding Temp.

Oil Temp.

Bucholz Relay condition

11/0.450 KV Main In-comer :-

Voltage

Current

Frequency

Kwh

Kvah

Rkvah

P.F.

Breaker on/off/trip position

L.T. Main panel:-

Current

Kwh

Motor bearing NDE temp.

Motor bearing DE Temp.

Pump thrust bearing Temp.

ON/OFF/Trip position

Pressure Sensor on Inlet Manifold to measure positive head on Pumps

Valve actuators

Valve open/close position

Manifold pressure sensor reading

Raw water flow meter reading

Efficiency of Pumps

Under routine working conditions the pumps will be in operation as per Availability of water

For each pump rotation will be automatically initiated to insure equal working record. The pumps shall normally run in Remote AUTO mode. In case the water level in the wet well is below the pre-set minimum level the pumps could not be started.

In automatic mode pumps are starting and stopped after a pre-set delay. In case, the water level in the wet well is below the pre-set level, the pumps will be stopped. This could be a rare event in case the intake suction pipes are clogged.

If the sewage water level reaches the pre-set high level, a soft alarm shall be raised at the SCADA for alerting the operator. If the level continues to rise and reaches the pre-set High High Level, again a soft alarm shall be raised at the SCADA and also transmitted to the CCR.

If the pump continues to operate in MANUAL mode and the level in the reservoir reaches pre-set low level, a soft alarm shall be raised at the HMI for alerting the operator. If the level continues to drop further, a soft alarm shall be raised at pre-set low low level and all the working pumps shall be tripped at this level. The pumps shall also trip on Low Low or High High Pressure feedback from the Pressure Transmitter in the pumping main to STP.

Apart from the level and pressure protection, the Pumps shall also trip under the following conditions to ensure safe operation and Protection of Pumps:

Discharge valve open feedback not available, within the specified time after the start of the pumps.

The flow meter reading is out of pre-set range.

Low Low Level Switch Feedback (Hard wired control)

Pressure is out of pre- set range (Min, Max)

Reverse Rotation Protection (Hard Wired control)

Check valve remain closed (Pressure switch)

In case all local conditions are met, Control of the sewage water Pumping station will be related to the status of the sewage treatment Plant and to the water level in the Treated water Reservoir.

PLC shall continuously register the running time of each pump and display the same reading in hours in PLC Screen. A pre-determined high limit of running hours shall be attributed to each pump and when running-hour count crosses this limit, an alarm shall be prompted at the PLC to alert the operator and the pump sequence will be changed automatically. This sequence shall be continuously rotated to achieve equal running time of all the pumps. In view of any running pump getting tripped due to overload, the next pump shall automatically take over in AUTO mode.

Control room proposed at pure water sump shall have a PLC, Operator work Station, Ethernet switch, GPRS gateway, and Field instruments etc, for facilitating automatic operation of the pumping station. However provision shall be made to operate manually as and when required.

ITEM NO. 1, 12 & 23 and 23, 13 & 24 :- ULTRASONIC LEVEL TRANSMITTER AND PRESSURE TRANSMITTER:-

This job includes, Designing, Supplying, Installing, commissioning & testing of Ultrasonic Radar type level transmitter CE marked with following technical parameters at Water sewage Pump House to Measure Sewage Water level of Wet Well and Interfacing with PLC panel at STP including mounting arrangement etc. including TPI agency approved by MJP or from the approved list of TPI agencies appointed by Govt. of Maharashtra & Engineer-in-Charge, Shegaon Municipal Council or His Representative inspection.

Medium- Sewage Water

Range- 0 - 30 mtrs

Output- 4-20 mA

Power supply - 24V DC ext. Display - 4" LED

Accuracy - +/- 0.25% of Full Scale or better Enclosure- IP 67

Mounting - on PLC panel or as per site condition.

COMMON TECHNICAL SPECIFICATIONS:-

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	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
Mounting	As indicated on the datasheet
Nominal frequency range	Manufacturer's Standard suitable for the application
Operating conditions	- 40 to + 950C 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 guided operation
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	0.2% full scale measuring distance OR 4mm (+/- 2 mm) which-ever is 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 than1.0 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	Contractor to confirm during detail Engineering
PROCESS CONDITIONS	10	Fluid	Sewage water
	11	Fluid State	Liquid
	12	Operating Pressure	Atmospheric
	13	Operating Temperature	50 Deg C
	14	Operating specific gravity	Suitable for sewage water
	15	Operating Viscosity	Suitable for sewage water
	16	Min./ Max Pressure	Atmospheric
	18	Design Temperature	75 Deg C
TRANSMITTER	19	Application	1) Wet well water level measurement before trash rack & after trash rack and 2) Wet well pit level measurement
	20	Type	Ultrasonic
	21	Principle	time-to-flight / Pulse Time of flight
	22	Housing	Aluminium
	23	Paint	Epoxy or polyurethane- coated
	24	Protection	IP 68 NEMA 6P (IP68)
	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

TRANSMITTER	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	± 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
COMMUNICATION AND SOFTWARE	45	Lightning Protection	YES Required
	46	Communication Type	HART
	47	Communication with:	PLC –SCADA
	48	Configuration from:	Factory
PURCHASE	49	Internal Diagnostics	Required
	50	Approved Manufacturer	Emerson/ABB/E&H/Siemens
	51	Model	ngineer-in-Charge or representative to confirm
	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	:	0.01 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

Acceptable Makes:- No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026. Removal of Vendor List for the purpose of DTP.

Third party Inspection or from the approved list of TPI agencies appointed by Govt. of Maharashtra of each Ultrasonic level transmitter is compulsory at manufacturing work as per relevant IS/ISO and latest standard and as directed by Engineer-in- charge. Necessary TPI and other reports are compulsory at the time of delivery of material.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's or from the approved list of TPI agencies appointed by Govt. of Maharashtra valid prevailing approved agency. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ItemNo.2 :- Pressure Transmitter :-

This job includes, Designing, supplying, installing, commissioning & testing of pressure transmitter CE marked to Measure Pressure of each pump and total pressure on common manifold with following technical parameters at wet well pump House and interfacing with PLC panel at STP or as per site conditions including mounting arrangements etc with TPI from the approved list of TPI agencies appointed by Govt. of Maharashtra (One for each pump delivery + one for common manifold)

Medium- Sewage Water

Pressure 0-40 Kg/Cm²

Output 4.20 MA

Power supply 24 V DC ext. Display- 4" LED

Accuracy +/-0.1% of full scale or better Temp- suitable for Ambient temp Enclosure- IP 67

TECHNICAL SPECIFICATIONS:-**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 +/- 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	± 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	± 0.05% of span or better
10	Stability	± 0.1% of calibrated span for 6 months up to 70 Kg/cm ² and ± 0.25% for range more than 70 Kg/cm ²
11	Sensitivity	0.05% of span or better
12	Zero and span drift	± 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	Diaphragm seal, pulsation dampers, siphon etc As required by service & operating conditions 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 ± 10%
26	Adjustment/	Total five (5) no. of handheld calibrators shall be provided.

	calibration/maintenance	
27	Response time	Suitable to meet closed loop control reaction time specified else where

Acceptable Makes:- No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026. Removal of Vendor List for the purpose of DTP.

Third party Inspection from the approved list of TPI agencies appointed by Govt. of Maharashtra or MJP and Engineer-in-Charge, Municipal Council or his representative for each Pressure transmitter is compulsory at manufacturing work as per relevant IS/ISO and latest standard and as directed by Engineer-in-charge. Necessary TPI and other reports are compulsory at the time of delivery of material.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 3, 14 & 25: POWER ANALYSER

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

Item No.4, 15, 26 & 36: PLC PANEL :-

This job includes, Designing, supplying, installing commissioning & testing of PLC Panel including PLC with CPU & Power supply unit, power supply cable, interfacing cards, interfacing cables, wireless modules with 25% extra quantity of accessories including TPI agency approved by MJP or from the approved list of TPI agencies appointed by Govt. of Maharashtra inspection in presence of Engineer-in-Charge, Shegaon Municipal Council or His Representative.

(Local PLC panel at Wet Well for all pumps and field instruments installed at Wet Well)

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.

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.

All field instrumentation signaling from Field Instruments shall be cabled up- to the respective Hardware panels.

The PLC hardware shall have following basic features.

PLC shall be programmable in a structured programming language for ease of programming and ease of de-bugging.

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.

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

The PLC should be completely unaffected by a momentary loss of Power of the order of 20 milliseconds.

The PLC's shall be configured such that failure of an individual module shall not affect the integrity of the unit as a whole.

The high performance PLC must be designed to log the parameters with time stamping.

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.

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.

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

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

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
		Self Diagnostics	Required
3	I/O Modules	Type	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,
		Digital Module	16 CH (Max), opto- isolated,
		Communication Module	ADN with Ethernet & Serial connectivity using MODBUS or any other standard communication protocol
4	Relay Boards		All Digital outputs in the PLC will drive Relays 24V DC 2 C/O and field signals routed through relay contacts

General:-

Each pumping station control system shall be based on the use of programmable logic controllers (PLCs). Remote input / output modules (I/O modules may also be used to link remote areas of a given process. Each PS control panel (CP) shall be provided with its own local PC based Operator Interface Unit (OIU).

The control systems shall be designed for fully automatic operation of the pumping systems. However, in the event of failure of the automatic controls or by operator choice it shall be possible to revert to manual operation of each item of Plant independently of the PLC function.

The PS control systems shall be designed to recover fully to a normal operational state on restoration of power following a power failure without manual intervention.

The control system hardware at each PS shall comprise the following:

PLC

Control system power supplies;

OIU ;

Field cabling interfaces;

The site instrumentation shall also form an integral part of the control system.

The equipment detailed in the aforementioned list and some components of the instrumentation system shall be housed within the CP. The CP shall be located in the control room.

PLC Control Panel:-

Control panel shall be provided at each pumping station for automatic operation of pumping station.

Each control panel (CP) shall provide control and human machine interface facilities for the following:

Pumping station;

Instrumentation systems;

Interface to the Water Management and Control Communications System

The surge suppression equipment shall be provided with its own self contained motor control, control and instrumentation system. The pumping stations control system shall monitor the operation of the surge suppression system.

Control panel shall be provided at wet well for monitoring of the water levels and controlling motorized valves.

The control panel shall be pre-fabricated floor mounted and be environmentally protected to IP 52. It shall present a vertical front face to the operator on which shall be placed the MMI. The CP shall be designed for bottom cable entry and rear access. The external colour of panel shall be shade RAL 7032 and internal shade shall be glossy white.

The CP shall provide separate areas for the PLC, internal power distribution, instrumentation, field cabling termination and for surge protection devices (SPDs). A separate instrumentation earth bar mounted on insulating supports (a 'clean' earth) shall be provided within the CP. Instrumentation and control cable screens shall be connected to this earth.

Construction:-

Cubicles for PLC shall be prefabricated out of sheet steel. Adjacent frames, dividers and covers shall be securely bolted to ensure earth continuity throughout.

The exterior corners and edges shall be rounded to give a smooth overall appearance with projections kept to a minimum.

Lifting lugs shall be provided for installation purposes and shall be replaced with corrosion-resistant bolts after installation.

Unless otherwise specified assemblies shall be prefabricated and floor standing with lockable hinged front doors and bolted removable rear panels where access to live equipment and terminals is possible.

Instrumentation shall not be positioned above 2000 mm or below 500 mm and devices for isolation and switching shall be accessible within the zone 500 mm to 1600 mm above floor level. Suitable warning labels and instructions for earthing and isolating shall be fitted where necessary.

Unless otherwise specified cable entry shall be from the base and shall enter an accessible cabling compartment via suitable cable glands and gland plate. Access to cable terminations shall be via bolted panels either from the rear or front as specified.

Cubicles for outdoor locations shall be fitted with lockable outside doors and housing so designed that all controls, instruments and such like are fully enclosed with the whole assembly weatherproof and vandal proof. The doors shall be fitted with stays arranged to prevent overstraining of the hinge fixings and allow fixing of the doors in the open position.

The internal cubicles shall also be weatherproof to allow operation of the controls when the outside doors are open during inclement weather.

Control panels and instrument enclosures, shall give a degree of protection as follows:

Indoor installations

Non air-conditioned areas : IP 52

Air-conditioned areas : IP 44

(iii) Outdoor installation: IP 65

PLC Control Panel Power Supply:-

The PLC control panel primary power supply shall be derived from the LV switch board at 240 V AC. Power for the control system shall then be derived from this source via an uninterruptible power supply (UPS).

The 24 V shall be derived from the UPS backed 240 V supply within the PLC control panel by providing a regulated DC power supply unit in redundant configuration and failure of each power supply unit shall be monitored and alarmed.

PLC Control System Protection:-

Short Circuit

All circuits shall be protected against short circuit by the provision of adequate numbers of fuses or miniature circuit breakers.

For ease of maintenance and system security power supplies to each instrument loop and each PLC output shall be protected with an individual fuse (terminal type).

Earthing

An instrumentation earth shall be provided in each control panel. This shall comprise a copper bar of cross section not less than 25 x 6 mm and length to suit the number of connections. It shall be mounted on at least two insulated supports and be provided with a single earth connection to the instrumentation earth. If due to the physical size of a control panel more than one instrument earth bar is required the additional bar shall be connected again with a single earth connection to the same point as before on the control panel instrument earth bar. In this fashion all instrument earths shall be connected radial from the same earth point.

Assemblies shall be provided with earthing facilities as follows:

For small single compartment assemblies an earth stud shall be provided. For large single compartment or multi-compartment assemblies a clearly marked continuous copper earth bar shall run the length of the assembly and shall be provided with terminals for connections to the metal cladding or armouring of all incoming and outgoing cables.

The short-term rating of the earth bus bar and connections shall be not less than that of the associated equipment, or the maximum through-fault current of the power source. The temperature rise of the bus bar and connections under fault conditions shall not cause damage to the connections of any equipment to which they may be connected.

No earth terminal bolts or studs shall be less than 8 mm diameter.

An earth bond of minimum size 6 mm² shall be made to all enclosure doors. Labels

The assembly as a whole and each compartment shall be clearly and unambiguously identified.

The labels shall be engraved letters and numbers filled black on a white background.

Warning labels shall be engraved and filled black on a yellow background.

Labels shall be affixed with non-corrodible rivets or screws.

Internal labels shall be used to identify all components and terminal strips. They shall be of plastic in construction and shall be affixed adjacent to the component.

Surge Protection

Surge protection devices (SPD s) shall be provided for analog signal and power supply loop of all instruments located outside the control room. One SPD shall be provided near the instrument at field end and the other SPD near the control panel end. The SPDs shall be connected to earth and shall be suitable for arresting the surge arising out of high energy static discharge / lightning strikes and protect the equipment from damage. SPDs shall provide protection through quick acting semiconductor like

transorb, zener diodes, varistors and an automatic discharge and reset circuit. SPDs shall be a passive unit and shall require no power for its operation. During the lightning strike it shall clamp on the allowable voltage and pass the resultant current to the ground. The SPD shall operate without in any way affecting normal operation i.e., they should pass signal without attenuation while diverting surge currents safely to earth and clamping output voltages to specific levels. SPDs shall be of self resetting type to minimize the down time of the measurement loop. SPDs shall be weather proof casing. There should be total isolation between input, output and ground terminals. SPDs shall have a minimum surge rating of 10 kA. The SPD s shall be grouped in a specific area within the CP to ensure 'dirty' signal cables do not come into direct contact with 'clean' signal cables.

Input / Output Schedules (Sample)

Sr No	Instrument / Equipment	Ethernet	RS 485	PLC I/O SDI12	DI	DO	AI	A O
1	Pumping Station	1	1	1				
	Pump status Running, Fault, Remote, Local Maintenance, Duty, Command Start, Stop				16	8		
	Control Valve status Open, Close, Trip, Overload, Remote, Local, Maintenance Valve position, commands Open, Close, Stop				24	8	1	
	Electrical Parameter monitoring System		1					
	Temperature Scanner		1					
	Flow Meter						4	
	Pressure Transmitter						4	
	Ultrasonic Water Level Transmitter.						1	
	Residual Chlorine Measurement System						1	
	Turbidity Measurement System						1	
	pH Measurement System						1	
	Multi-function Controller 5 CH		1					
	Multi-function Controller 2 CH		1					
	Auto Manual switch				1			

The I/O Schedule detailed is indicative only. The Contractor shall provide all I/O necessary in order to achieve the control and monitoring requirements for each site at various locations of the scheme.

Important: 25% extra for each type I/O cards duly wired up to terminal box shall be considered while designing a system.

CONTROL PHILOSOPHY:-

General

The fundamental control requirements of the pump control system is to:

Match the average pumping rate under steady state conditions to the steady state output from each pumping station;

Maintain the water level in the reservoirs within set limits;

Provide automatic system start-up and shutdown routines;

Provide alarms and fail-safe tripping circuits to protect plant and equipment;

Prevent an overflow at a downstream pumping station reservoir as the result of a local power failure at that pumping station;

Provide information on the operation of the system to enable the operator to be aware of conditions both locally and at up stream and downstream sites;

Provide facilities to permit the manual control of the system in the event of failure of the automatic controls;

It is required that the transmission pumps be controlled using a start stop method in order to effect the required flow balance whilst at all times maintaining acceptable levels within the reservoirs. In addition the selection of suitable reservoir switching levels shall limit to an acceptable value the number of start / stop cycles each pump motor is subjected to.

The control modes proposed for the system are as follows:

Automatic mode;

Semi-automatic mode;

Local manual mode.

The control algorithms associated with each mode of control are as follows:

Automatic Control Mode:-

General

The automatic control mode is manually selected independently at each pumping station by the positioning of a selector switch on the control panel. This mode selection shall be accepted and retained by the control system.

Pumps for operation as duty or standby shall be manually selected by the operator from the OIU.
Pumps shall accept duty or standby status if they are available. i.e.

The pump motor starter 'manual-off-automatic' selector switch is set to 'automatic';

It has no faults;

Power is available at the starter;

The emergency stop device is not operated;

Any associated device such as the outlet valve is available.

There shall not be a limit on the number of pumps that may be selected as duty or standby however the default status shall be all pumps as duty.

Pump Start Routine

The pump automatic mode start routine shall be as follows:

Permissive conditions to start

Suction valve is open

Discharge isolation valve is open

Discharge control valve is in throttled position

Common discharge header valve is in open position

Pump drive available

Start sequence

Start pump drive and open discharge valve simultaneously

Duty pump fails to start, standby pump shall be started

Pump starts & discharge valve opens; start sequence is completed

A software based pump start 'sequence failed to complete' alarm shall

be provided. If a start sequence fails to complete within a set time (not operator adjustable) an alarm shall be raised.

Stop Sequence

The pump automatic mode stop routine shall be as follows:

Close discharge valve command

Stop pump drive, when discharge valve is closed by 70% (70% close signal shall be derived using timer)

when the pump stops, the stop sequence is complete

A software based pump stop sequence 'failed to complete' alarm shall be provided. If stop sequence fails to complete within a set time an alarm shall be raised.

The pump shall stop immediately without going through the aforementioned sequence in case of power failure and hardwired trip condition.

The discharge valve shall close after the pump has stopped. In case power supply is not available the valve shall close on resumption of power.

Duty Rotation

The automatic system shall call on duty pumps to start or stop in accordance with the dictates of the reservoir level control algorithm. The control system shall decide which pumps are to be start or stop using the following procedure.

If the control system requires a duty pump to start it shall select the duty pump which has been standing (not running) for the longest time and start it.

If the control system requires a duty pump to stop it shall select the duty pump which has been running for the longest time and stop it.

If a duty pump should fail (either when running or not) then the lowest numbered standby pump shall be selected and started if required to run. The pump shall now run in all respects as a duty pump until reselected manually as a standby. If a duty pump is selected as standby when it is running it shall stop.

Catch Up Mode

Catch up mode is a hybrid of the automatic mode and is typically used following a prolonged power outage or some other severe disturbance to the system in order to temporarily increase the throughput of water. It can be manually selected at each of the pumping station using the OIU and is then automatically applied to all the other pumping stations (only if automatic mode is selected at that station).

It may be deselected at any of the pumping stations at any time

Level Control Mode

The duty pumps at a given pumping station shall be primarily controlled by the level within the local source reservoir.

The level based controls use the signals from the local reservoir and downstream reservoir(s).

Time gap between starts or stops of pump is 5 minutes Auto-manual Control Mode:-

In order to make the system responsive to changes within the system an

additional 'background' level control algorithm is necessary. This is identified as 'auto-manual control' and is detailed as follows:

The purpose of this mode is to get the system up and running following a disturbance. In this mode the operator (whilst the system is in automatic mode) may prompt the starting of a duty pump by manual initiation. The operator may start as many pumps as required up to the maximum permitted by the algorithm.

Conversely the operator may also stop a duty pump at any time.

The above actions shall be carried out by the operator either by depressing a duty pump start or duty pump stop push button once in order to start or stop a duty pump. After a delay a further depression of either button shall cause a further duty pump to start or stop as required and so on.

Semi-Automatic Control Mode:-

The operator may select this mode of operation at the CP at any pumping station. The control mode when selected shall only apply to that pumping station.

In this mode the operator may start and stop 'available' pumps (i.e. pumps available for automatic control) at will by using controls on the OIU. The control commands shall be routed through the PLC. The PLC shall prevent simultaneous starts or stops and shall carry out automatically any start up or shut down routines necessary in order to start or stop a pump.

Local Manual Control Mode:-

This mode of control will normally be used for maintenance purposes or in the event of a PLC failure.

In order to start a pump in this mode the operator must go to the drive starter and set the 'automatic -off- manual' selector switch to 'manual'. The drive can then be started or stopped using the local start and stop buttons or the start / stop controls local to the drive if fitted. The operator will be required to carry the operation of discharge valves etc. manually.

In this mode only hardwired interlocks shall operate to stop the drives.

Valve actuators shall be operated manually at the actuator by selecting the 'local- off-remote' selector switch to 'local' and using the local controls at the valve. Additionally open and close push buttons shall also be provided for the pump discharge motorized valves on the starter panel of respective pump. These push buttons shall be active only when the automatic / off / manual selector switch is selected in manual mode.

The valve closed contact shall be hard wired into the pump start circuit to prevent starting of the pump when the discharge valve is not closed.

Control System Modeling :-

In order to ensure that commissioning takes place on site in the most efficient manner the Contractor shall computer model the control algorithms and demonstrate the stability of the system using theoretical flows from the treatment works and from the pumping stations with different numbers of pumps running. The model shall have a graphical interface and shall be free running (i.e. it shall be possible to set the model running and be able to observe steady state and transient operation). Facilities shall be provided to simulate pump failures, power failures etc. in order to

study their effects. The model shall be demonstrated to the approval of the Engineer. All modifications and improvements to the control algorithms identified during this stage of design shall be incorporated into the Works.

Protection against Pipeline Burst:-

A signal shall be derived in PLC from the pressure transmitter provided on common discharge header of each pumping station. This shall operate if the pressure in the line falls for a set time period below the static pressure expected at that point. This shall raise an alarm and prompt the operator to switch off the pumps.

An Stay put type push button shall be provided on the control panel to switch off all pumps simultaneously in such an emergency. The device shall be covered or shrouded in some way to prevent accidental operation.

Before operating the pipeline control valves the system will:

Compare the flow from the master balancing reservoir flow meter with the flow in the pipeline at the control valve, if the difference is greater than 2000 l/s or a value to be decided during execution stage, a burst will be assumed and the outlet valve at the MBR shall be closed and an alarm shall be raised. It shall be possible for the operator to disable the closing of the outlet valve in response to burst detection.

Level switching points shall be derived in the appropriate PLC from the MBR level analogue signal. The analogue value used shall be the controlling value as selected by the operator from the central SCADA.

Interface to the Temperature scanners and Power Analysers

Temperature scanners for each pump shall be mounted on the front face of control panel in the control room. These temperature scanners shall be interfaced with the PLC system through suitable communication link for monitoring the winding & bearing temperatures and alarm and trip settings on the OIU.

Power Analyser shall be provided for the main incomer and individual pumps. These Power Analysers shall be interfaced with the PLC system through suitable communication link for monitoring of all the parameters of Power Analysers like three phase voltages, currents, kW, kVA, kWh, kVAh, power factor etc., on the OIU.

Acceptable Makes:- No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026.
Removal of Vendor List for the purpose of DTP.

Third party Inspection from the approved list of TPI agencies appointed by Govt. of Maharashtra or MJP **and** Engineer-in-Charge, Shegaon Municipal Council or his representative of PLC Panel is compulsory at manufacturing work as per relevant IS/ISO and latest standard and as directed by Engineer-in-charge.

Necessary TPI and other reports are compulsory at the time of delivery of material. PLC Based control monitoring and communication software :-

This job includes, Designing, supplying, installing, commissioning & testing of PLC based control monitoring and communication software as per IEC 61131 at Wet well suitable for monitoring and control of Sewage water pumps, Pressure Transmitters, Level, Transmitter, Flow Transmitter etc complete with TPI agency approved by MJP or from the approved list of TPI agencies appointed by Govt. of Maharashtra and in presence of Engineer-in-Charge, Shegaon Municipal Council or His Representative Inspection.

The item includes software as well as hardware required to install the system. Central computer and peripherals are not in the scope of material supply for the item.

Necessary PLC based control monitoring software and communication software system of following specifications .

Programming options according to IEC 61131-3

PLC with integrated quad band modem

Frequencies 850 MHz, 900 MHz, 1800MHz, 1900 MHz

Support data logging functionally.

Supports SMS/email functionally.

Supports FTD protocol.

HTTP-HTML 5 supported, web pages can be downloaded to controller and can be accessed from central location. 8. Supports remote communication to SCADA using GPRS.

Micro PLC Design

Micro PLC with minimum I/Os (AI, AO, DI and DO), capable of measuring the values from the above mentioned instruments shall be supplied. I/O cards shall have 4- 20mA input / output. Spare card shall be provided for manual switchover incase of failure of the primary connected card. All the necessary hardware accessories for mounting, powering and operating the PLC shall be provided by the contractor. The operating consoles / computers will be supplied by Contractor.

All equipment of the PLC System shall operate at 230 Volts AC $\pm 10\%$, single phase, 50 Hz ± 2 Hz obtained from UPS supplied and installed by the Contractor. Bidder to provide UPS and necessary cables for the same. Any converters required for powering the system / sub system shall be contractor's scope of supply. The UPS (load includes PLC and other supplied equipment etc). At any point of time, UPS shall be able to cater to 20% above the total load requirement of the system.

PLC shall be provided with suitable hardware for GSM / GPRS connectivity.

PLC shall be equipped with a miniature LCD for digital read out of all the monitored parameters, along with date and time in a graphical format.

Software

MMI (Man Machine Interface) software shall be based on Windows operating system platform working over internet browsers like "IE", "Chrome" etc. Software will display the measured values of all parameters in a graphically designed, over web browser. Pre-defined reports shall be embedded on the proposed software. Details of these reports will be provided during FDS preparation. Software shall have authentication based of ID / password provided by SMC,Shegaon. All the measure values shall be stored on the central server.

Bidder shall supply all the necessary software licenses for the proposed system and are inclusive of one time license fee.

Proposed software shall have a database adequate for handling the monitoring operations of all parameters over the life time of the system. The updating of complete database at centre for the system to acquire fresh measured values from all instruments and required time shall not exceed 10 seconds.

Mobile Version

Entire data should be made available over mobile platform (either by virtue of APP or mobile browser) with proper authentication. This job includes, Designing, supplying, installing, testing SIM card in field data Transmitter based on GSM/ GPRS system for duplex communication with central server for sharing data & daily reports through GPRS network as directed by Engineer-in-Charge, Shegaon Municipal Council or His Representative.

DOCUMENTATION

The Contractor shall be responsible for the development and supply of all the work schematic drawings, termination details etc. along with the instruments dispatched for the instruments being supplied. These documents shall enable a separate contractor engaged by Owner to install the instruments under the supervision of the contractor without any difficulty. Contractor shall include the same in his scope.

EXPANDABILITY

Provision shall be kept so as to cope up with future requirements without any major modification and programmer's support in the proposed System. Special attention is brought on PLC and the necessary communication software, which shall be modular in structure and conforming to ISO/OSI architecture. While designing the master data centre features / facilities, the Contractor should consider and equip necessary memory requirements, communication ports in the networking hardware interrogation facility and software packages for the future expansion of the system with appropriate ports / I/O expansion blocks. In this regard the Contractor shall supply all the necessary documents, information, codes & details which are essentially required for development of these software packages so that required modifications can be incorporated by the owner at a later date as per system requirement. Also, Contractor shall confirm that all necessary help shall be extended by the Contractor for implementation of these future expansion plans as and when these are implemented and required by SMC, Shegaon.

Hardware and software are to be based on distributed and open system architecture facilitating expansion and system growth over the life of the system. Expansion shall be performed by addition

of equipment and resources. Expansion shall not require the replacement of computer central processor or restructuring of software or database of previously installed equipments. Expansion of database and scan load shall not cause degradation of circuit responsiveness.

Calibration, Inspection & Testing

4.7.1 All analyzers shall be factory calibrated

The Contractor/bidder's quality plan shall include a comprehensive fully documented inspection and testing plan.

Shegaon Municipal Council reserves the right to reject any or all test and calibration work if found not complying with the Specification requirement. The contractor/vendor/bidder shall complete and submit documentation for all calibration, inspection & testing. Company Representative prior to shipment shall check out instruments & accessories for their compliance with specification requirements.

Installation and commissioning:-

The Erection, Installation and Commissioning of the system shall be done by the bidder. In brief it includes the supply & transportation of equipment, erection, installation, cable termination, wiring, testing and commissioning of PLCs and associated I/O sub systems and all other equipment.

This shall cover....

Delivery of the equipment to the stores and transporting to the location.

Supervision for field wiring termination with appropriate ferruling and dressing of cables inside the PLC panel.

Loading of PLC configuration and Logics for mentioned functionality

Field data verification and validation.

Creation and Loading of HMI graphics, creation and loading of Database and association of the field database points for dynamic data display and also creation of Reports, trends, Alarm points and all associated graphics.

Supply of field instruments and supervision of its commissioning by other contractor of Owner.

Acceptable Makes:-

Instruments : No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026. Removal of Vendor List for the purpose of DTP.

PLC : No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026. Removal of Vendor List for the purpose of DTP.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

Item No. 6, 17 & 28: -CONTROL CABLE 2CX1.5 SQ.MM (POWER CABLE):-

This job includes, Designing, supplying, installing, commissioning & testing with terminating & Interfacing of 2 Cx1.5 Sq.mm as per IS 694 twisted, shielded copper armoured conductor at Wet Well, in GI tray or in ground suitable for supplying D.C voltage to all field instruments at Wet Well such as Ultrasonic Level Transmitter, Pressure Transmitter, Flow Transmitter, PLC Panel etc. from Main PLC panel at STP.-

Design criteria:-

Power and control cables shall be suitable for installation in a tropical monsoon area having a hot humid climate. The reference ambient temperature to be considered for the purpose of this specification is 50 Deg C.

The de-rating factor for various conditions of installation including the following shall be considered while choosing the conductor size and calculations shall be submitted for Owner's approval:

Maximum ambient air temperature.

Maximum ground temperature

Depth of laying wherever applicable

Grouping of cables

The maximum continuous conductor temperature and the maximum allowable conductor temperature during short circuit are to be taken as 70 deg C and 160 deg C respectively in case of PVC insulated cables and 90 deg C and 250 deg C respectively in case of XLPE insulated cables.

The cables shall be capable of continuous satisfactory operation under a power supply system

frequency variation of $(\pm)5\%$, voltage variation of $(\pm)10\%$ and combined frequency and voltage variation of 10% (absolute sum).

The cables shall generally comply with the requirements of the latest revision of IS- 1554 (Part- I) for the LT PVC power and control cables or the relevant IEC International Standard unless otherwise specified in this specification. The design, manufacture, installation, testing and performance of the cables, shall comply with the latest revisions of IS/ IEC/ NEMA/ ASTM Standard and the most stringent conditions specified in these specification shall be applicable.

General technical requirements:-

Type of cable:-

The cables shall be multi-core/single core (XLPE), PVC and any polymeric/ elastomeric insulation type as specified.

Conductor:-

The cable conductor shall be made from standard copper to form compact conductor having resistance within the limits specified. Conductor Shield The conductor having a semi-conducting screen shall ensure perfectly smooth profile and avoid stress concentration. The conductor screen shall be extruded in the same operation as the insulation, the semi-conducting polymers shall be crosslinked for XLPE cables.

Insulation:-

The insulation of the cable shall be extruded type and shall be designed and manufactured for the specified system voltage. The manufacturing process shall ensure that insulation shall be free from voids. The insulation shall withstand mechanical and thermal stresses under steady state and transient operating conditions. The extrusion method should give a very smooth interface between semi-conducting screen and insulation. The insulation of the cables shall be of high standard quality. The minimum volume resistivity of the PVC insulation of all the PVC insulated cables shall be $1 \times 10^{14} \text{ ohm-cm at } 27^\circ\text{C}$ and $1 \times 10^{11} \text{ ohm-cm at } 70^\circ\text{C}$.

Insulation shield:-

In XLPE cables, to confine electrical field to the insulation, a non-magnetic semi conducting shield shall be put over the insulation. The insulation shield shall be extruded in the same operation as the conductor shield and the insulation by triple extrusion/process. The XLPE cable insulation shield shall be strippable. Metallic screening for all type of power, control and special cables shall be provided.

Inner Sheath:-

The sheath shall be suitable to withstand the site conditions and the desired temperature. It shall be of adequate thickness and applied by a continuous process to produce a sheath of consistent quality free from all defects. PVC sheath shall be extruded.

Armour:-

Hard drawn Aluminium wire armouring / galvanized steel tape/ wire armouring shall be used for single core and multi-core cable respectively. The hard drawn aluminium wire for armour shall be of H4 grade, as per IS-8130 (having tensile strength above 150 N/mm) The diameter of the aluminium wire shall be as per the table for the dimensions of the galvanized steel wire armour given in the relevant standard.

Serving/outer sheath:-

Extruded PVC serving as per IS: 5831 or as specified otherwise shall be applied over the armouring with suitable additives to prevent attack by rodent and termites. All serving must be given anti-termite treatment.

Codes and standards:-

All cables to be supplied shall conform to the latest revisions of IS or any other international standards acceptable to Owner. Some of the Indian Standards/ IEC considered relevant to the cables are given below:

Sr. No.	Standard	Description
1	IS:1554 (Part-I)	PVC insulated (heavy duty) electric cables for working voltage up to and including 1100V.
2	IS:1554 (Part-II)	PVC insulated (heavy duty) electric cables for working voltage from 3.3kV up to and including 11kV.
3	IS:3961	Recommended current ratings for cables.
4	IS:8130	Conductors for insulated electric cables and flexible cords.
5	IS:5831	PVC insulation and sheath of electric cables.
6	IS:2982	Copper conductor in insulated cables and cords.
7	IS:3975	Mild steel wires, strips and tapes for armouring cables
8	IS:5609	Specification for low frequency wires and cables with PVC insulation and PVC sheath.
9	IS:6380	Spec. of elastomeric insulation of sheath of electric cables.
10	IS:434 (I and II)	Specification for rubber insulation cables
11	IEC:540	The methods for insulation and sheaths of electric cables and cords (elastomeric and thermoplastic compounds).
12	IEC:230	Impulse tests on cables and their accessories.
13	IEC:60	High voltage test techniques.
14	IEC:287	Calculations of the continuous current rating of cables (100% load factor).
15	IEC:288	Nominal cross-sectional area and composition of conductor of insulated cables.
16	IEC:502	Extruded solid dielectric insulated power cables for rated voltages from 1.00kV up to 30kV.
17	NEMA-WC-5	Thermoplastic insulated wires and cables for transmission and distribution of electrical energy.
18	IEEE:383	Standard for type test for class IE electric cables, filled splices and connections for nuclear power generation stations
19	IEC: 332-1	Test on electric cables under fire conditions.
20	ASTM-D-2843	Standard test method for density of smoke from burning/decomposition of plastics.

21	ASTM-D-2863	Test for determination of Oxygen Index.
22	IEC-754-I	Test method for acid gas generation.
23	IEC-331	Fire resisting characteristics of electric cables.

Constructional requirements:-

Cable shall have suitable fillers laid up with the conductors to provide a substantially circular cross section before the sheath is applied. Fillers shall be suitable for the operating temperature of the cable and compatible with the insulating material. All materials shall be new, unused and of finest quality. Workmanship shall be neat, clean and of highest grade.

415V system power cables - The cable shall be 1.1kV, grade, heavy duty, stranded aluminium conductor, PVC Type-A Insulated galvanized steel wire/strip armoured, flame retardant low smoke (FRLS) extruded PVC type ST1 outer sheathed.

Control cables - The cable shall be 1.1kV grade, heavy duty, stranded copper conductor, PVC Type-A insulated, galvanized steel wire / strip armoured, flame retardant low smoke (FRLS) extruded PVC of Type-ST1 outer sheathed.

Identification of cores

The insulated cores of LT power cables shall be identified by color code. The control cables shall have identification by means of printing of numbers of its cores at intervals not more than 75mm. At least 20% cores shall be kept as spares in the multi-core control cables.

Arrangement of cables

As far as feasible, separate cables shall be provided for circuits of different plant and auxiliaries, for circuits of different voltages, and for circuit used separately. Power, control and instrumentation circuit shall invariably be taken through different routes, which shall not be laid together on the same cable trays.

Drum lengths

Drum lengths of the cables shall be so chosen that straight through joints are eliminated. However, the drum lengths shall not be less than the following lengths:

415V, 1.1kV grade power cables 500M

1.1 kV grade control and instrumentation cables 1000M

Installation of cables and earthing system

The GI/Al cable trays, and accessories, supports, conduits, cable glands, lugs, ferrules, tags, clamps and other accessories for installation of cables in cable trays, trenches etc. earthing system network/earth mat including interconnections at necessary area of plant shall be provided.

Design and Constructional Features

Inter Plant Cabling:

Inter plant cabling for main routes shall be laid along overhead trestles

/ductbanks. However, from tap-offs, same can be through shallow trenches. In case of Duct banks, pull-pits shall be filled with sand and provided with a RCC covering. Directly buried cables, if essential, shall not have concentration of more than 4 cables in one route.

Cable entry: Shall be decided during detail engineering

Trenches: PCC flooring of built up trenches shall be sloped for effective drainage with sump pit and sump pumps.

Junction boxes

Junction Boxes with IP:55 degree of protection, shall comprise of a case with hinged door constructed from cold rolled sheet steel of minimum thickness 2 mm. Top of the boxes shall be arranged to slope towards rear of the box. Gland plate shall be 3 mm thick sheet steel with neoprene/synthetic rubber gaskets. All junction boxes shall be of adequate strength and rigidity, hot dip galvanized as per relevant IS, and suitable for mounting on wall, columns, structures etc. The boxes shall include brackets, bolts, nuts, screws M8 earthing stud etc. required for installation

Terminal blocks shall be 650 volts grade, rated for 10 Amps and in one piece moulding. It shall be complete with insulating barriers, Clip-on type terminals and identification strips. Marking on terminal strip shall correspond to the terminal numbering on wiring diagrams. It shall be Elmex type CSLT-1 with

insulating material of Melamine conforming to ISI Standard 12.1 or equivalent. Terminal block shall be suitable for terminating 2 wires of 2.5mm on both sides arranged to facilitate easy termination

Terminations and straight through joints

1.1 kV grade straight through joints shall be of proven design. A suitable care to be taken during joint and termination.

Cable glands

Cable shall be terminated using double compression type cable glands. Cable glands shall conform to BS:6121 and be of robust construction capable of clamping cable and cable armour (for armoured cables) firmly without injury to insulation. Cable glands shall be made of heavy duty brass machine finished and nickel chrome plated. Thickness of plating shall not be less than 10 micron. All washers and hardware shall also be made of brass with nickel chrome plating. Rubber components shall be of neoprene and of tested quality. Necessary cable dimensions shall be furnished to the successful Contractor.

Cable lugs/ferrules

Cable lugs for power cables shall be Aluminium solderless crimping type conforming to ISI:8309 suitable for aluminium compacted conductor cables. Cable lugs and ferrules for control cables shall be tinned copper conforming to ISI:8309. The cable lugs for control cables shall be provided with insulating sleeve and shall suit the type of terminals provided on the equipments.

Cable clamps and straps

The cable clamps required to clamp multi core cables on vertical run shall be made up of Aluminium strip of 25x3mm size. For clamping the multi core cables, self-locking, de-interlocking type nylon clamps/ straps shall be used. The clamps/ straps shall have sufficient strength and shall not get affected by direct exposure to sun rays and outdoor environment

Acceptable Makes:- No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026.
Removal of Vendor List for the purpose of DTP.

Third party Inspection and Engineer-in-Charge, Shegaon Municipal Council or His Representative for control cable is compulsory at manufacturing work as per relevant IS/ISO. and latest standard and as directed by Engineer-in-charge.

Necessary TPI and other reports are compulsory at the time of delivery of material.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

Item No.7, 18 & 29: COMMUNICATION CABLE :-

This job includes Designing, supplying, installing, commissioning & testing with terminating & Interfacing of CAT 6 As per ISO/IEC-11801 std. cable for networking on wall, in GI tray or in ground required for Ethernet communication for giving communication from Main PLC Panel at STP to Wet Well PLC Panel.

1. SCOPE:-

This specification is based on the specifications of UL 444, ANSI/TIA/EIA-568-B, ISO/IEC 11801, UL 1685(CM) and covers the requirements for Unshielded Twisted Pair (UTP) cables of 100Ω, Cat6 (U/UTP 6+) for Wideband Technology. Applicable cable size and type: 4 pairs, PVC sheath, CM Grade.

CONDUCTORS:- each conductor shall be solid bare copper wire, circular in cross-section, uniform in quality and free from defects. The diameter of each conductor shall be AWG 23 (Nom O.D. 0.54 +/- 0.005).

INSULATION

Each conductor shall be insulated with solid high density Polyethylene (HDPE).

It shall be applied uniformly around the conductor with a minimum concentricity of 90%.

The nominal insulation diameter shall be 0.98mm±0.03mm and the specific maximum diameter shall be 1.22mm. If the concentricity of the conductor can be tested on the manufacturing process before completing the product, it could be omitted in the test.

PAIRS

Two insulated conductors, designated "A" and "B" shall be uniformly twisted together to form a pair. The insulation shall be coloured and striped longitudinally, as per Table 1.

The stripe colouring shall not be removable by normal stripping and wiring operations.

CABLE CORE ASSEMBLY

Two insulated conductors shall be twisted into a pair. Four twisted pairs shall be assembled into a cable core. The cross-shaped filler shall be inserted between pairs for sufficient isolations of pairs to improve crosstalk characteristics. Rip cord forms part of the cable construction.

SHEATH

The material shall, as a minimum, meet the requirements of UL 444. The sheath shall be applied over the cable assembly by an extrusion tubing technique, being close fitting, but not adhering to the insulation, and readily removable for installation termination. The sheath shall have a minimum wall thickness of 0.50mm and nominal 0.55mm. The acceptable maximum cable diameter shall be 6.4mm. The sheath colours are given in Table 2.

SHEATH MARKING

The cable shall be marked on the sheath to designate the transmission performance and others. The marking shall be printed through the outer sheath clearly.

The specific legend requirements are given in Table 3.

PHYSICAL PERFORMANCE

SHEATH

The unaged tensile strength and elongation, measured in accordance with clause 7.8 of

UL 444 shall be minimum 13.5MPa and 150%, respectively. The heat-aged tensile strength and elongation, measured in accordance with clause 7.8 of UL 444 shall be minimum 12.5MP and 125%, respectively.

CABLE COLD BEND

All cables shall meet the requirements of clause 7.10 of UL 444. Cold bend (20deg +/-2deg x 4h): 8 x Cable O.D. , no visible cracks. Page 4 of 5 Document ID: 130520_CAT6PLUS_UTP_Specification_Ver4_Z_Cust

FLAME REQUIREMENT

A cable marked CM shall comply with the vertical-tray flame test specified in UL 1685 or IEC 60332-3.

CROSS-SHAPED FILLER

Cross-shaped filler (separator) complies with ROHS requirements. O.D. 4.5mm, thickness 0.45mm

Acceptable Makes:- No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026.
Removal of Vendor List for the purpose of DTP.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 8(A)&(B), 19(A)&(B) and 30(A)&(B) : SIGNAL CABLE :-

This job includes, Designing, supplying, installing, commissioning & testing with terminating & Interfacing of 2 pair x 1.0Sq.mm as per IS 694 copper shielded, twisted, multistranded armoured conductor for giving signal from main PLC panel at STP to Wet Well field instruments for field instruments such as Ultrasonic Level Transmitter -1 No., Flow Transmitter- 1 No. & Pressure Transmitters -8 Nos. on wall, in GI tray or in ground. (100 Rmt for each, 100 Rmt x 10 = 1000 Rmt) including TPI & Engineer-in-Charge, Shegaon Municipal Council or His Representative's Inspection.

Acceptable Makes:- No Vendor List required As per MJP wide GR No. 268 Dated.01/04/2026.
Removal of Vendor List for the purpose of DTP.

Third party Engineer-in-Charge, Shegaon Municipal Council or His Representative Inspection of Signal cable 4.5 pair x 1sqmm is compulsory at manufacturing work as per relevant IS/ISO. and latest standard and as directed by Engineer-in-charge. Necessary TPI and other reports are compulsory at the time of delivery of material.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO. 9, 20 & 31 : CABLE TRAY :-

This job includes M.S. fabricated cable trays of size a) 500 mm width and 20 mm height for laying cables of pumps and b) 300 mm width and 100 mm height shall be provided for proper installation of cables where cabling in duct or trench if not possible as per site condition. M.S. cable tray shall be fabricated by suitable size M.S. angles / channels / M.S. flat as suggested and approved by Engineer-in-charge. Fabricated M.S. cable tray shall be install on ground by suitable iron legs made from suitable size channel approved by Engineer-in-charge by providing & casting C.C. foundation & proper clamping arrangement for cable.

Cabletrays, fittings and accessories:-

GI Cable trays shall be ladder/ perforated type as specified complete with matching fittings (like brackets, elbows, bends, reducers, tees, crosses, etc.) accessories (like side coupler plates, etc. and hardware (like bolts, nuts, washers, GI strap, hook etc.) as required. Cable tray shall be ladder type for power and control cables and perforated for instrumentation cables.

Cable trays, fittings and accessories shall be fabricated out of rolled mild steel sheets free from flaws such as laminations, rolling marks, pitting etc. These (including hardware) shall be hot dip galvanized as per relevant IS.

Cable trays shall have standard width of 100mm, 200mm, and standard length of 2.5 metre. Minimum thickness of mild steel sheets used for fabrication of cable trays and fittings shall be 2 mm. The thickness of side coupler plates shall be minimum 3 mm.

Cable trough shall be required for branching out few cables from main cable route. This shall be U-shaped, fabricated of mild steel sheets of minimum thickness 1.2 mm and shall be hot dip galvanized as per relevant IS. Trough shall be standard width of 50mm and 75mm with depth of 25mm.

The size of the cable tray (80mm to 600mm width) depends on the size of the cables and routing of the trays. Bidder has to decide based on site visit. The tray loading should not be more than 70% of tray capacity, none of cable will be laid over the cable. The cable cost include cost of tray and no separate payment will be made for cable tray.

Support system for cable trays

Cable tray support system shall be pre-fabricated.

Support system for cable trays shall essentially comprise of the two components

i.e. main support channel and cantilever arms. The main support channel shall be of two types:

Having provision of supporting cable tray on one side and

Having provision of supporting cable tray on both sides.

In general, the support system shall be as follows :

Cable supporting steel work for cable racks / cables shall comprise of various channel sections, cantilever arms, various brackets, clamps, floor plates, all hardware such as lock washers, hexagon nuts, hexagon head bolt, support hooks, stud nuts, hexagon head screw, channel nut, channel nut with springs, fixing studs, etc.

The system shall be designed such that it allows easy assembly at site by using bolting. All cable supporting steel work, hardware fittings and accessories shall be prefabricated factory galvanized.

The main support and cantilever arm shall be fixed at site using necessary brackets, clamps, fittings, bolts, nuts and other hardware etc. to form various arrangements required to support the cable trays. Welding of the components shall not be allowed. However, welding of the bracket (to which the main support channel is bolted) to the overhead beams, structural steel, insert plates or reinforcement bars will be permitted. Any cutting or welding of the galvanized surfaces shall be brushed and red lead primer, oil primer and aluminium paint shall be applied.

All steel components, accessories, fittings and hardware shall be hot dip galvanized after completing welding, cutting, drilling and other machining operation.

The main support channel and cantilever arms shall be fabricated out of minimum 2.5 thick rolled steel sheet conforming to IS.

Cantilever arms of 300 mm, 600 mm and 750 mm in length are required. The arm portion shall be suitable for assembling the complete arm assembly onto component constructed of standard channel section. The back plate shall allow sufficient clearance for fixing bolt to be tightened with tray in position.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

Item No.10, 21 & 32: EARTHING

Providing, making, separate earthing arrangement SCADA and Automation System with copper Earth plate etc. complete

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

Item No.11, 22 & 33: SURVEILLANCE SYSTEM

Designing, supplying, installing, commissioning & testing of CCTV IR water proof camera suitable for upto 100ft. with control key board, DVR, Hard Disk, cables, UPT transreceivers etc. complete with not less than following specifications.

1. Four numbers of IP Camera with night vision functionality with range up to 30 meters.

Camera construction shall be suitable for weather proof outdoor installation.

2. Eight Channel DVR with metal body construction, having software features of motion detect recording.

3. 3.5 inch 2 GB HDD

4. 8 port POE Switch

5. 32 inch LED Screen, Keyboard & mouse.

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

Item No.35: SCADA SYSTEM FOR STP

Supply, Installation, Commissioning, Testing, Terminating & Interfacing Software Design to PLC and commissioning of SCADA software with required hard tags plus 25% extra and with unlimited soft Tags & life time license Development version QTY-1 Job

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO 36:-LCD MONITOR

Supply, Installation, Testing, Integration & Commissioning of 46" LCD monitor at Conf. Room for display of total water system (Online).

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO 37:-SPLIT TYPE ROOM CONDITIONER

Supplying, installing, testing & commissioning split type room conditioner variable speed inverter technology with minimum 3 to 1 convertible mode for compressor. room air conditioning unit 2.1TR to 2.3TR capacity having ISEER minimum 5.0 suitable to operate on 250V, 50 Hz, A.C. supply having 1 no of air handling unit hi-wall/floor mounting type complete with refrigerant R32 having copper condenser, minimum 2.5PM filter, self diagnosis feature, stabilizer free operation condenser, minimum 2.5PM filter, self diagnosis feature, stabilizer free operation & temperature display on indoor unit, noise level maximum 50dBA at position in provided recess with wooden frame complete specification no. AP-AC/WAC.

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO.38 :- CENTRALISED COMPUTER STATION(SECONDARY WORK STATION PC)

Supply, Installation, Testing, Terminating & Interfacing Centralized Historian Server grade Historian PC with Window 7 or latest window operating system & Historian software development cost etc. complete QTY-1 No

Mode of Payment: 65% payment shall be released against providing. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO.39:- COMPREHENSIVE O&M

Operation and Maintenance Charges of the whole water supply scheme on SCADA and generation of daily report of water quality parameters and electrical parameters with specific consumption in kWh/ml . The report shall be mailed daily to the head quarters for monitoring purpose.(Cost of material Rs 8536345.00 without cable trays & earthing)

During Second year - 3% of Total Cost

During Third year - 5% of Total Cost

During Fourth year - 7% of Total Cost

During Fifth year - 7% of Total Cost

During Sixth year - 7% of Total Cost

NAME OF WORK :-FLOW METER FOR WET WELL NO 1,2 &3 TO STP 1,2 & @ PHASE-3

SUB WORK NO.14 :- DESIGNING, PROVIDING, ERECTING AND COMMISSIONING AND TESTING WATER FLOW METER INCLUDING ALL ACCESSORIES .

ITEM NO. 1:- FULL BORE (INLINE) ELECTROMAGNETIC FLOWMETER

Supply, install and commission Electromagnetic Flow Meter (EMF) As Per ISO 4064, for Raw/Pure water with accuracy +/-0.5% of measured value & protection as per given specifications for size 100 mm-1000mm including sensor, transmitter surge arrestor, cable GI duct if suitable size for 25 mtrs built in GSM/GPRS (with Simcard and its charges,valid for 36 months) including the pipe cutting, leveling and installation of flow meter in the pipelines with necessary tool tackles, cranes including 36 months guarantee etc complete, as may be required at site & based on technical specifications.

Dia. With Location	QTY
300 mm for Wet Well 1 to 2.5 MLD STP	1
500 mm for Wet Well 2 to 8.5 MLD STP	1
250 mm for Wet Well 3 to 8.5 MLD STP	1

The device shall be capable of averaging the velocities across the entire pipe cross section and measure the same with given accuracy.

A] Mandatory Accessories:

The sensor coil housing shall be powder coated cast aluminum or painted steel with NEMA 4X rating (IP-67 / IP-68). The paint should be anti-corrosive grade.

The transmitter shall have one scalable pulse output, one 4 – 20mA current output. The current output shall be galvanically isolated.

It shall have built in switched mode power supply capability 85-260 V & 45-65 Hz to cope with power transients without damage.

Coaxial signal & power cable-25 m each with each flow meter.

100mm GI duct for routing of cables including suitable digging, laying & concealing the duct – 25m.

UPS working on 230 V AC, 50 Hz power supply suitable for 12 hrs continuous operation. – 1 No.

Data storage capacity with built in or separate for date, time, actual flow rate, totaliser & error messages if any with storage capacity of 4 MB for 8 hrs interval data logging. – 1 No.

Dot matrix printer of EPSON/WIPRO/Hewlett Packard make with printer interface unit for printing of stored data as per 8, 132 column – 1 No.

Suitable Surge Suppressor (arrestor) for protection from lightning on incoming signal cable from transducer and power supply cable of meter – 1 set.

Suitable over voltage protection unit for protection of instrument from higher voltages in the range of 275 V – 300 V AC.

The meter shall be in accordance with ISO 6817-1992.

The meter shall be micro-processor based with remote mounted Indicator/ Controller/ Transmitter.

The meter shall perform well even with any disturbance in line pressure.

The remote mounted module shall not require any signal boosting up to a distance of 50m from the sensor tube.

The sensor body shall be of carbon steel, epoxy/ polyurethane painted, double flanged with carbon steel flanges. The liner material shall be hard rubber. The electrodes shall be SS 316/ Hastelloy C. The protection shall be IP68.

The controller/ transmitter shall be IP 67 or better protected, cast aluminium, polyurethane painted, wall mounting type.

The communication from transmitter shall be through Modbus protocol. This protocol is expected to allow easy communication amendment in future.

The display shall be 2 or more lines alphanumeric LCD with backlight and shall indicate flow rate, totalized value, diagnostic message etc.

The accuracy shall be +/- 0.5% of flow rate.

The meter shall have features as bi-directional flow measurement, empty pipe detection, programmable function, password protection, built-in diagnostics and data retention in case of power failure.

The meters shall be calibrated with three point calibration at manufacturing place.

The following data shall be impressed either on the primary device or the name plate:

Instrument type and serial number,

Rated pressure and temperature,

Power supply- voltage, frequency and power.

The following data shall be mandatorily impressed on the name plate:

Instrument type and serial number,

Power supply: voltage, frequency and power,

Output signals,

Limiting load impedance,

Enclosure protection rating,

Nominal diameter,

Lining and electrode material,

Date of manufacture.

The overall lengths of the meters shall be in accordance to ISO 13359-1998.

B) Working Condition & Specifications:

Water Temp: 10 Deg to 50 Deg.

Water Quality: Raw water, turbid in nature.

Operating pressure: 10 - 15 Kg /cm²

Pipeline MOC: CI, DI, MS with / without mortar lined.

Pipe condition: Pipe shall be running full.

The supplier should have fully traceable calibration methods to either of the two primary standard means of testing i.e. mass (ISO 4185) or volume (ISO 6817).

Each meter shall be wet calibrated at the place of manufacturing with 3 point calibration at sufficient flow rates. The testing facility shall be in accordance to ISO 17025.

The sensor shall be of standard length as per ISO 13359.

The Sensor shall have Stainless steel Grounding Electrode & Empty Pipe Detection feature.

The liner material shall be either Hard Rubber (HR) or Polyurethane (PU) or Teflon.

The sensor & transmitter shall be capable of working in tropical environment.

The meter body shall be flanged.

The flow meter shall be suitable for both submergence as well as burial installation & shall withstand all necessary natural shocks.

The transmitter & sensor shall not have any EMI interferences in the actual flow meter reading.

The transmitter shall be capable of full programming with push button. It shall have a set-up menu so that all relevant parameters may be user-set from the self-prompting driven menu.

The totalizer value shall be protected by EEPROM during power outage, and utilize an overflow counter.

MS/DI/CI INLINE ADAPTORS

Providing, fabricating and fixing MS/ DI / CI In-line adapters with mechanical joints & Concentric tapers with flanges along with suitable gasket of SBR, complete with mild steel nut bolts coated or otherwise protected from rusting and suitable for DI pipes as may be necessary for the line size x flow meter sizes.

SENSOR, TRANSMITTER CABLE

Sensor / Transmitter cable of following specifications:

4 x 0.38 mm² PVC cable with common, braided copper shield (~ 7mm dia) and individually shielded cores, with Empty Pipe Detection.

COIL CABLE

The coil cable shall be 3x 0.75 mm² PVC insulated with braided copper shield.

ITEM NO 2:- GI DUCT OF 100MM

GI duct of 100mm used with all the necessary fittings, joints etc., for laying underground the cables between sensor & transmitter to minimize the risk of damage during excavation. All cables shall be laid at a minimum depth of 0.5 M below the ground.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO 3:- PANEL CABINET

Fixing of flow meter transmitter to internal walls of building / inside suitable designed panel cabinet with proper locking arrangement with glass window on front door for seeing reading of flow transmitter and data logger without opening of panel cabinet. It should house complete ancillaries and including the provision of connection of electrical power supply from nearby apartments. The panel cabinet shall be pre wired and suitable gland entries etc.

Mode of Payment: 65% payment shall be released against providing, after submitting third party inspection certificate from MJP's valid prevailing approved agency or from the approved list of TPI agencies appointed by Govt. of Maharashtra. 25% payment will be made after the complete Erection. 10% payment will be released after satisfactory testing is given by contractor.

ITEM NO.4 :- EXCAVATION FOR CHAMBER & METER FIXING

Excavation for Foundation/ pipe trenches in earth soil of all types, sand, gravel and soft murum including removing the excavated material up to a distance of 50 mtr. And lift 1.5 mtr. Stacking and spreading as directed, manual dewatering preparing the bed for foundation and as per detailed specification. Size : 3 x 1.5 x 1.5 x 1.5 (Average) .This excavation for fixing of Meter,Stainer,Distance Pieces 11 x 6= 66

Mode of Payment: payment shall be released against completion of work on actual meter basis.

ITEM NO.5 :- MS PIPES AND SPECIALS :-

Providing and supplying ISI standard MS specials of required thickness with 3 coats of approved make epoxy paint (Shalimar, Ciba or Mahindra & Mahindra make) from inside and outside including all taxes (Central and local), octroi, inspection charges, transportation to stores / site, and stacking, etc. complete..

Mode of Payment: payment shall be released against completion of work on actual KG basis.

ITEM NO. 6 :- RCC VALVE CHAMBERS

Providing and constructing RCC valve chamber with 15 cm thick 1:2:4 proportion PCC bedding, RCC raft including, excavation, RCC slab cover, etc. complete as directed by Engineer-in-charge.

Mode of Payment: payment shall be released against completion of work on actual cu.meter basis.

Part- B:-

Comprehensive Operation & Maintenance :-

This Job Includes, Operation and Maintenance of the SCADA and automation of Wet well pump house and generation of all necessary daily reports of required parameters and all electrical parameters with specific consumption in KWH/ML. The report shall be mailed daily to head quarters for monitoring purpose.

This item includes 6 years operation & comprehensive maintenance period including 1 year guarantee period from the date of satisfactory commissioning.

Period of O & M	5 Years + 1 Year Free O&M = Total 6 Years
Replacement of Parts	Maintenance of the hardware includes supply & replacement of parts free of cost.
Preventive Maintenance	Periodical preventive maintenance should be made once every month.
Quality of Spares	The equipment parts replaced must be new and equivalent in performance of existing parts.

Working Hours	The maintenance work shall normally be done during working hours. However, in case of emergency maintenance may have to be done beyond office hours and even on holidays prior arrangement through proper communication should be worked out in all cases by the servicing agencies.
Response Time	Normal response time for repair is 24-hours.
Reporting Authority	The Service Engineer will be allowed to handle the respective equipments only with permission of the officer in-charge of Systems.
GSM/GPRS & Annual subscription	GSM/GPRS/3G for remote web communication as per Indian telecom standards In case of GSM/GPRS/3G failure, the device should send data through SMS every 15 mins The system shall communicate 24x7 with Web based software and continuously send data at least 50MB or more per month. It shall also have sufficient buffer memory for 72 hrs in case the remote connection with the server could not be established. Two way communication shall be established between Controller and Web based Software via GSM/GPRS/3G as well as SMS Web based software shall provide option to reset the firmware/software of any controller remotely to handle network and data issues both via GSM/GPRS/3G and SMS.
Communication charges	All communication charges required in 5 + 1 = 6 years O & M period should be paid by the contractor with no extra cost.
1	Software :- The application software should be controllable through a web browser via Internet.
	This centralized application to provide access to users / Managers to browse through the history reports, and current Dashboards for the Efficiency of the pumping stations. Web Based software Solution Provider's proposed solution should be based on industry standard. The software shall be purely web based and shall not need any client installation. The system shall very reliable data collection mechanisms from the field and shall be scalable to support large number of meters on the field. The system should be equipped with rugged field device interface Data Collection Server.
1.1	a) Reporting :-

	Export report facility.
	Select individual sensor/equipment for Remote Monitoring.
	Online display of Graphical Charts for various Process Parameters.
	Define group of equipments / Sensors/ Meters to get more detail report & to compare.
	Define Reports on the basis of Quality of Power supply like Voltage inbalance, Current inbalance, Voltage fluctuations etc.
	System should generate reports for all measured parameters.
	Special Reports suggested by SMC, Shegaon for detailed analysis
	KWH /ML report
	Voltage inbalance report
	Current Inbalance report
	kWH / totalized flow
	KWH /Efficiency report
	KWH / Running hour report
	Dash board for analysis of whole day data on a single screen
	It should have
	Pump status ON /OFF
	Running hour report with chart & graph
	Current Flow rate with chart & graph
	Totalized Flow rate with chart & graph
	Minimum & Maximum voltage on a same day
	Minimum & Maximum Current on a same day
	Minimum & Maximum Power factor on a same day
	Minimum & Maximum KVA on a same day
	Minimum & Maximum KWH on a same day
1.2	b) Alerts /Alarms :-
	Tamper switch shall detect attempt to open enclosure
	Power Failure and Power Restoration alerts shall be sent to server , during this mode device shall operate on battery powered mode
	Disconnection Intimation generated by server when device gets disconnected from server
	Alert should be generate for
	Low Voltage /current / frequency / kWH/Active power etc.
	High Voltage /current / frequency / kWH /Active power etc.

	Low Voltage /current / frequency / kWh /Active power etc.
	High Voltage /current / frequency / kWh /Active power etc.
	No load on one phase-total
	No load on phase-Fundamental
	Phase A Voltage Missing
	Phase B Voltage Missing
	Phase C Voltage Missing
	Phase A No Load
	Phase B No Load
	Phase C No Load
	Voltage Sag
	Over Current
	Over Voltage
	Phase Sequence Error
	Earth Leakage
	Peak Current Available
	Low efficiency
	Low kWh/Meter cube value
	Low/High flow rate value
	Low/High totaliser value
	Peak Voltage Available
	Efficiency of pump
2	Report printing :-
	The control panel shall have an inbuilt thermal printer to print a daily report automatically.
	The operator shall be able to identify to the controller with his smart card, and press print button to get the print out of the daily report. These reports will be

	maintained in the local register. Report is expected to occupy maximum 10 lines.
	Each control panel shall be supplied with thermal paper rolls capable of meeting the 6 years of printing requirements.

Calibration check for data on web

All data collected on server must be verified with site data. There should not any difference between collected data & stored data Equipment / meters used on site must be calibrated from certified agencies. All equipments must be certified.

All meter shall got calibrated from authorized lab for every year. All collected data must include following reports

Instantaneous Parameters:- Voltage per phase (V1,V2,V3) Voltage (V1-2,V2-3,V3-1)

Current per phase (1-1,1-2,1-3) kW per phase

kVAR per phase kVA per phase

Power Factor per phase Total kW

Total kVAR Total kVA Frequency Neutral Current

Total Power Factor

Voltage & Current unbalance

Energy parameters:-

Total kWh Import Total kWh Export Total KVARH Import Total KVARH Export Total kWh Net

Total KVARH Net Total kWh

Total kVAh

kWh Import per phase KVARH Import per phase kVAh per phase

Active, reactive and apparent energy for each quadrant.

Submitting hard copies to MJP Hard copies of all these reports to be submitted to SMC, Shegaon after every month , as per requirement from SMC, Shegaon.

ADDITIONAL SPECIFICATIONS RELATED TO ABOVE MENTIONED WORKS

Panel Board Electrical Actuators for Valve Control:-

Providing erecting cubical type panel board including all necessary electrical accessories for all actuators.

Cable Tray:-

Providing and fitting of G.I. perforated cable trays of suitable size including fixing on provided angles. Length as per actual requirement.

MAKING TRENCH:-

Making trench of suitable width and 0.9 m deep and laying provided cable and refilling the same with screened sand bed of 0.2 m thick to embed the cable and bricks placed on both side length wise and on top width wise all over the cable run and refilling as per actual site condition.

Junction Box:-

Weather proof, IP55 as per standard specification & requirement.

Cable Gland:-

Supplying and erecting heavy brass cable glands of suitable size for PVC armoured cable as mentioned below with brass washers, rubber rings, complete erected with cable ends and lead connection.

Integration of hardware:-

The integration of hardware supplied should be in such a way that it completes the project requirement scheme, as described in the concept for automation, to be complete.

Headstock for Valves:-

Providing, erecting and commissioning of CI headstock of required size, capable to withstand to the load of actuators and proper installation of actuators. Necessary EN- 8 shaft of required length shall be provided along with the headstock.

Fabrications for actuators canopy:-

M.S. Sheet of suitable thickness given below to be used for fabrication of boxes, panel boards etc including cutting, bending, drilling, welding, cleaning, de-rusting and painting with one coat of red lead paint and two coats of enamel paint with lock & key arrangement

MS specials for erection of flow meters and other equipments:-

Specifications as per mentioned in sub-work of pumping machinery.

Earthing for Actuator panels and instrument panel:-

Supplying and erecting Galvanized cast iron earth plate 60 x 60 x 0.6 cm buried in specifically prepared earth pit [top edge of plate 1.5 m below ground level] refilling with earthing powder & required other material with 19 mm dia GI pipe wire Funnel with a wire mesh for watering & brick masonry block CI cover complete as per para 9 of IS 3043 of 1987 with necessary length of double GI Earth wire No.6 SWG. bolted with lugs to the plate & covered in 12 mm dia GI pipe 2.5 mtr long complete connected

to the nearest switchgear with end socket as per directions & duly tested by earth tester & recording the results. (Note : GI pipe & GI / copper wire more than 8 mtr to be provided separately.

Supply and erecting Galvanized cast iron earth plate size 60 mm x 60mm x 0.6 cm complete with all materials, testing & recording the results as per specification no. EA-EP

Supplying and erecting G.I. earth wire 14 to 6 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lugs cable sockets of 30A and more at each end with necessary cadmium plated double nuts & bolts with washers & covering it with bituminous compound

All type of furniture required for this scheme shall be provided by contractor with no extra cost.

All the instruments included in this contract shall operate on SCADA and Automation, all the necessary equipments required for doing so will be born by contractor without any extra cost. It is responsibility of contractor to operate all equipments on automation.

Specification for ElectroMechanical Work

SHEGAON MUNICIPAL COUNCIL

NAME OF WORK : Shegaon Sewerage Scheme For PHASE 3 (PUMPING MACHINERY)

(Ta. Shegaon Dist . Buldhana)

**SPECIFICATIONS Of
CIVIL ENGINEERING WORKS.**

1. GENERAL

1.1 Application of Specification.

These specifications forms part of the contract and shall be read in conjunctions with other documents forming the contract.

1.2 Work Included.

The rates for all items unless specifically stated otherwise in contract, must cover the cost of all materials, labour, tools, machinery, plant, pumps, explosives, scaffolding, staging, props, bamboos, ropes, templates, pegs and all appliances and operations whatsoever necessary for efficient execution of the work.

1.3 Ground Conditions.

The contractor is to visit the site and ascertain local conditions, traffic restrictions, electricity, water supply, obstructions in the area and allow for extra likely to be incurred due to any limitations whatsoever.

1.4 Setting out and Leveling.

The contractor is to set out and level the works and will be responsible for the accuracy of the same. He is to provide all instruments and proper qualified staff required for checking the contractor's work.

1.5. Safety code.

The contractor shall take adequate precautions to provide complete safety for labour staff for prevention of accidents on the site. Barricate around the ESR site shall be provided and contractor shall provide safety equipment at site as directed by Engineer-in-charge.

1.6 Keeping works free from water.

The contractor shall provide and maintain at his own cost, electrically or other power driven pumps and other plant and equipment to keep the site and foundation pits and trenches free from water and continue to do so till the site is handed over to SMC, Shegaon to the complete satisfaction.

1.7 Rubbish.

The contractor shall clear away all rubbish, vegetation, roots, seeds, etc and dump them in the area indicated. No separate rate shall be allowed for eh above work.

- 1.7.1 After the work is completed, the contractor shall clear the area surrounding the structures of all hutments and excess stores and remnants of building materials, such as brick bats, metal, sand, timber, steel, etc without any extra cost.
- 1.8 Bench Marks and Groundwater Gauges.
- The contractor shall protect surveyor's bench marks groundwater gauges, zero line marks and base line marks from damage or movement during work.
- 1.9 Inspection.
- The contractor shall inspect the site of work and ascertain site conditions and the nature of soil to be excavated.
- 1.10 Contractor's Staff.
- The contractor must provide at all times efficient staff of trustworthy, skillful and experience graduate Engineers and their Assistants capable of carrying out the work in accordance with the drawings and specifications and to correct levels. The cost of this establishment should be included in this rates.
- 1.11 Execution of works.
- The contractor is responsible for the correct execution of his work in accordance with the drawings approved by the department and for all mistakes due to working to wrong levels or center lines. When levels, center lines and bench marks have been once given to him, it is his responsibility to record, Protect and maintain the said marks, and to work the same, and no complaints can afterwards be attended to for excess works done in consequence of such levels not having been kept up and maintained by the contractor.
- 1.12 Method of Measurement.
- Unless otherwise specified, the method of measurement for structural works shall be as per IS:1200. This is applicable in the tender for proportionate payment for civil job items.
- 1.13 Specification Referred To.
- The specifications contained here in are not exhaustive and for such items of work which may arise and which are not covered by these specifications the provisions in the relevant Indian standards latest edition shall apply.
- 1.13.1 A list of few important India standards is given in Schedule-"S".
- 1.13.2 Wherever reference to the Indian Standards mentioned in the Schedule-"S" appears in this specification, it shall be taken as a reference to the latest version of the standard.
- 1.13.3 Work will be carried out as per P.W.D. Hand book (Red Book), Published by P. W. Department, relevant I.S.S. and stipulations in N.I.T. and practice in vogue.

For building work, relevant specification from Red Book shall be referred.

2. Earth and Excavation.

2.1 General.

2.1.1 Applicable provisions of conditions of contract shall govern work under this section.

2.1.2 The Indian Standards wherever referred to here in shall be the latest edition of such standards.

2.2 Excavation for foundation trenches, pits etc.

2.2.1 All foundation trenches shall be excavated to the full widths and depths shown on the drawings or to such greater or smaller depths. As may be found necessary or so ordered to him.

2.2.2 Should any excavation be taken down below the specified levels, the contractor shall fill in such excavation at his own cost with concrete as specified for foundations, well rammed in position unit it is brought up to the level.

2.2.3 The contractor shall notify when the excavation is completed and no concrete or masonry shall be laid until the strata for each individual footing, rafts, etc is approved.

2.2.4 The contractor shall keep the site clear of water at all times. To this end he shall provide arrangements for bailing and pumping or any special arrangement as required with in his quoted prices.

2.2.5 All foundation pits shall be refilled to the original surface of the ground with approved material, which shall be suitably consolidated.

2.2.6 No extra will be paid for dewatering by any methods in excavation.

2.3 Blasting.

In the event of blasting being necessary, all the principles of blasting, calculation of charges and particulars of explosives as specified shall be strictly followed. All Govt. / Local body regulation should be followed.

2.4 Earth Filling.

The space around the foundations in the trenches or sites shall be cleared of all trash and loose debris and filled with approved excavated earth, all clods being broken filling shall be done in 200 mm layers; each layers to be moistened and well rammed.

- 2.5 Shoring.
- 2.5.1. Shoring shall be done at no extra cost when sides of excavation do not stand up by themselves and sloping or stopping is not feasible or economical.
- 3. Concrete.
- 3.1. General.
- 3.1.1 Applicable provisions of conditions of contract shall govern work under this section.
- 3.1.2 All concrete work, plain or reinforced shall be carried out in strict accordance with this specification and any working drawing or instructions given from time to time to the contractor.
- 3.1.3 The contractor's rates shall allow for wastage in all materials as well as for all tests of materials and for concrete.
- 3.1.4. No concrete shall be cast in the absence of the Engineer-in-charge or any other person duly authorized by him. The contractor's Engineer shall personally check that both the formwork and reinforcement have been correctly placed and fixed, and shall satisfy himself that all work preparatory to the Engineer -in-Charge, Shegaon Municipal Council for final inspection and approval and for which purpose at least 24 hours notice shall be given by the contractor.
- 3.1.5 The Indian Standards wherever referred to here in shall be the latest edition of such standards.
- 3.2. Cement.
- Cement shall conform to IS:269, cement tests shall have to be carried out at Contractor's expenses as and when directed in his own interest to satisfy about the quality.
- 3.3. Aggregate.
- The fine and coarse aggregates shall conform to IS:383 and IS:515 and shall have prior approval of the Engineer-in-charge Wardha river sand shall be used only for all components of scheme.
- 3.4 Reinforcement
- 3.4.1. The steel reinforcement shall conform to IS:226, IS:800, IS:1786 & IS:1139 as per type of Reinforcement approved by SMC, Shegaon.
- 3.4.2. The reinforcement shall be bent to the shapes shown on the drawings prior to placing and all bars must be bent cold. The steel shall be placed in such a way that it is rigidly held in position while concrete is being cast. The correct clearance from the form shall be maintained by either precast mortar blocks or by metal supporting chairs to be supplied by the contractor free of charge HYHD (TISCO) make reinforcement shall be used only.

3.4.3 The intersections of rods crossing one another shall be bound together with soft pliable wire No. 16 to 18 S.W.G. at frequent intervals so that reinforcement will not be displaced in the process of depositing concrete. The loops of binding wire should be tightened by pliers. M. S. pins shall be kept between the bars to avoid honeycombing in concrete.

3.5 Water

Water shall be arranged by the contractor at his own cost. It shall be clean and free from alkali, oil or injurious amounts of deleterious materials. As far as possible, the water should be of such quality that it is potable. If any chemical analysis of the water is necessary and ordered, the same shall be got done at an approved laboratory at the contractor's expense.

3.6 Concrete Proportioning.

3.6.1. The concrete proportion shall be as indicated on the approved drawings and shall conform to IS:456 and IS:3370.

3.6.2 The minimum cover to main reinforcement shall be 25 mm or the diameter of the bar whichever is greater. In the case of surfaces exposed to corrosive action of sewage, the cover may be increased up to 50 mm or as directed.

3.6.3 Type of joints, spacing of joints, use of all jointing materials and other features pertaining to the provision of movement joints in liquid-retaining structures shall be got approved prior to commencement of construction.

3.6.4. All reinforced concrete work shall be thoroughly and efficiently vibrated during laying.

3.6.5 For liquid retaining structures whose external faces are exposed, the same shall be deemed to be satisfactorily watertight if the external faces show no signs of leakage and remain apparently dry over the period of observation of 7 days for inspection shall be kept filled with water for 7 days and thereafter the drop of water over the next 2 days shall not exceed totally a depth of 6 mm approved corrective measures, if necessary, shall be undertaken by the contractor at his own expense.

3.7. Workmanship.

3.7.1 All concreting work shall be carried out according to the IS : 456 " Indian Standard Code of practice for plain and reinforced concrete for General Building Construction" and IS:3370 for concrete structures for storage of Liquids.

It should, however, be noted that for every 30 cum of concrete placed or for every one day's work, a minimum of 3 (three) cubes shall be cast for test purposes and tested at the contractor's expenses. The number of test cubes may be reduced or increased at the discretion of Engineer in charge and it is restricted to the contractor that the number of test cubes shall be taken as per recent circular of MJP.

3.8 Form Work :

The form work shall conform to IS:456. Design of form work for bottom slab and beam shall be got approved from SMC,Shegoan.

3.9. Curing

The concrete shall be cured according to IS:456 or as directed.

3.10 Concrete Finish.

The concrete surface on removal of form work shall be such that no finishing is necessary. If, however, the surface is not satisfactory, the contractor shall, if so instructed, remove unwanted projecting parts by chipping and smoothen the surface with cement rendering at his own expenses.

3.11. Construction Joints.

3.11.1. These shall be in accordance with IS :456 or directed.

3.11.2. The centering for forming the construction joint shall be firmly fixed and adequately slotted for reinforcement extending beyond the joint. If any concrete flows past this slot. It shall be nacked off as soon as the concrete has set. Care shall be taken not to disturb the reinforcement steel in casting the second half of a member with a construction joint and thereby crack the concrete previously placed.

3.11.3. The joints shall be of the 'Keyed type' inclined 'Feather' or straight joints, shall not be permitted.

3.12 Expansion joints.

Expansion joints shall be provided at positions as directed and shall comply strictly with more details shown on construction drawings. Reinforcement shall not extend across any expansion joint and the break between the tow sections must be completed. Unless otherwise specified, the gap shall be filled with an elastic joint filler consisting of the following ingredients (by weight), preheated to a temperature of 190C (357F).

- a] Very fine Sand - 60%
- b] Hot Bitumen emulsion – 33%
- c] Cement - 5%
- d] Fine chopped hemp - 2%.

3.13. Contractor's Supervision.

The contractor shall provide constant and strict supervision of all the item of construction during progress of work, including the proportioning and mixing of the concrete and bending and placing of reinforcement.

4. Brick Masonry

4.1.1 The proportion of cement-sand mortar shall be approved.

4.1.2. Unless otherwise specified, the proportions of cement sand mortar for various classes of work shall be as under.

Type of work	Cement	Sand
A] Ordinary brick work for building	01	04
B] Brick work in pillars.	01	04
C] Half –brick thick or brick-on edge partition wall	01	03

4.2. Workmanship

4.2.1 The cement and sand shall be thoroughly mixed dry in specified proportions. Water shall then be added by a sprinkler just sufficient to make a stiff and workable paste. The mortar shall be used within half an hour of mixing and shall be removed from the site.

4.2.2. Brickwork.

4.2.2.1 All the bricks shall be kept in water till they are completely soaked and only thoroughly soaked bricks shall be used in the work.

4.2.2.2 The contractor shall set out and build all brickwork to the respective dimensions, thickness and height, as shown on the approved drawings.

4.2.2.3 The Contractor shall build all brickwork uniformly, no one portion being raised more than 1 M above another at one time.

4.2.2.4. The contractor shall keep wet all brickwork at least 10 days after laying. The surface of unfinished work shall be cleaned and thoroughly wetted before joining new work to it.

4.2.2.5 In curved brick work, the bricks shall be dressed to shape to obtain joints radial to the curve. The joints shall not exceed 12 mm in thickness and should extend the full thickness of the curved brickwork.

5. Plastering, Pointing and Surface Treatment.

5.1 Cement Plaster.

Unless otherwise specified cement plaster shall be composed of 1 part of cement and 3 parts of sand. For ceiling plaster, the composition shall be 1 part of cement and 4 parts of sand. The thickness of ceiling plaster shall be 12 mm. the thickness of plaster to fair faces of brick work shall be 12 mm and to rough faces of brick work shall be 20 mm. The contractor shall allow in his rate for any rubbing out due to the inequalities of brick work. Extra plaster required to be done due to uneven surface shall not be paid for.

The rates shall also include for forming of any throating moulding drip courses etc, and for extra thickness due to corbelling of brick work in parapet or at any other place. If required, all internal angles shall be rounded off as per drawing or as directed by the Engineer-in-charge without any extra charges.

Cement and sand shall be measured and mixed dry thoroughly to a uniform colour on a platform specially constructed for the purpose. Care should be taken to see that no foreign matters get mixed to take the mix workable. The mix shall then be turned over and over again to a uniform colour and texture. No more cement mortar shall be mixed at a time than can be used within twenty minutes of mixing.

Surface to be plastered are to be brushed clean, wetted for 24 hours before the plaster is put in and the joints of the brick work raked out 12 mm deep minimum. The concrete faces to be plastered shall be chipped, roughened and brushed and soaked with water for achieving required bond with plaster without any extra cost.

The surface of the plaster shall be finished absolutely in one plane. If desired by the Engineer-in-charge, the unevenness shall be rubbed down by the contractor with carborundum stones. Care shall be taken to see that no mark remains at the junction of plaster done at different times. If necessary, the junction shall be rubbed with carborundum stones to eliminate such undesirable marks. The contractor may be required to use normal sprinkling of thin cement slurry on the surfaces for satisfactory finishing of the plaster work for which no extra payment shall be made.

Plaster shall be protected and cured by keeping it thoroughly wet with sprinkling of water for 10 days continuously.

The rate for plaster work shall also include necessary scaffolding, staging etc for the work.

5.2 Rendering Sand Faced Cement Plaster.

The surface shall be cleaned off, all dust and dirt and brick work thoroughly watered. The backing coat shall be 12 mm thick of cement plaster proportion 1:3 (1cement;3Sand) coat sufficiently, the finishing coat 8 mm thick consisting of grey cement and screened coarse sand to required gradation (1:3) shall be applied and finished to the desired texture to the satisfaction of the Engineer in charge.

5.3 Cement Pointing to Exposed Brick Facing.

Exposed brick facing to walls shall be one with stock wire cut bricks of uniform size and colour and with clean sharp edges as specified in section.

Where shown on drawing or as directed by the Engineer-in-charge, exposed brick faces shall be cement rule pointed. The mortar shall be raked out of the joints to a depth of 6mm. The dust shall be brushed out of the joints and the wall well wetted. The pointing shall be made with cement and sand mixed in proportion 1:3. The joints of the pointed work shall be neatly finished truly vertical and horizontal or as directed and the lines shall be kept wet till the cementing materials have set and become hard. If desired, after the joints have been cured, the whole brick face shall be rubbed and polished with fine grade of carborundum stones to the satisfaction of the Engineer-in-charge. This rate shall also include necessary scaffolding etc particular care shall be taken to see that no brick face or brick edge is damaged during this work.

5.4 Surface Finishing.

The rates of all the items of work under this section will include necessary scaffolding, staging, preparing sub –base, removing stains from the floor, skirting, woodwork, glass etc caused through execution of the work etc and is for the complete works in all respects.

5.4.1 White Washing.

White washing shall be done with 5 parts of stone lime and one part of shell lime with necessary gum (about 2 or to cft of lime) using a small quantity of blue as per direction of the Engineer-in-charge. The lime shall be brought to the site unslaked and shall be slaked at site with an excess of water and allowed to remain under water for 2 days. To the mixture fresh water may be added to bring the consistency to that of a thin cream. When thoroughly mixed, the wash is to be stained through cleaned before the white washing is applied. Each coat of the white wash means one continuous strike of brush with the prepared wash from top to downwards. Another similar strike bottom upward over first strike followed by another similar strike from right to left and another from left to right over the first application of brush before it dried. Each coat must be perfectly uniform when finished and free from brush marks etc.

3 coats of white wash as mentioned in the specification will mean a minimum of 3 coats to produce an opaque white surface to entire satisfaction of the Engineer-in-charge. If the surface is blotchy or otherwise unsatisfactory more number of coats shall be applied till the desired effect is produced to the satisfaction of the Engineer-in-charge without any extra cost.

5.4.2 Colour washing.

Colour washing shall be carried out in the same manner as that of white washing, colouring ingredient being added to the prepared white wash so as to produce the approved colour

and shade. The coloring ingredient shall be obtained by the contractor from an approved source.

Coats of colour wash will mean a minimum of 2 coats to produce the desired effect to the entire satisfaction of the Engineer-in-charge. If the surface is blotchy or otherwise unsatisfactory more coats shall be applied till he satisfactory of the Engineer-in-charge without any extra cost.

5.4.3. “Snowcem” or similar Decorative Cement finish.

External surface of ESR’s shall be finished with Three coats of “Snow-Cem” or similar decorative cement finish of approved colour shade and manufacture. The surface to be finished is to be previously cleaned down to remove loose dust or dirt by use of a stiff wire brush. All inequalities to be rubbed down and defects rectified. The surface to be wetted well with water and the surface water is to be allowed well with water and the surface water is to be allowed to run-off. The “Snowcem” or equivalent shall be applied to the surface with a rush of a good quality. The first coat should be well brushed into the surface to form a good bound. Second coat should be applied carefully to give a good bound. Second coat should be applied carefully to give a good finished appearance. Each “Snowcem” or equivalent application shall be wetted at the end of the day with a fine water spray. Under no circumstances should additional water be added to the mix, if site conditions cause delays and the mix can not be applied within one hour of preparation.

The “snow-Cem” or equivalent application shall only be done with trained labourers in order to achieve the high grade finish to the entire satisfaction of the Engineer in charge.

5.4.4 Painting to steel work.

Any shop coat of paint shall not be considered as a coat of paint for the purpose of specification.

Ready mixed paint of “Shalimar” or equivalent quality and of approved colour and shade shall only be used. The primer shall be best red lead or white lead or nay other anticorrosive priming as approved and directed by the Engineer in charge.

The surface to be painted shall be properly cleaned, de-rusted, all loose scales removed and smoothed with emery paper. Then a coat of anticorrosive priming shall be evenly applied. After this has dried up two successive coats of best quality ready mixed paint shall be given to the entire satisfaction of the Engineer-in-charge. Brush of approved size and make shall only be used for application of paint and use of cloth is definitely prohibited.

The tendered rate shall include cost of all preparations mentioned above and is for the completed work.

6. Damp Proofing work.

6.1 Cement concrete Damp Proof Course.

Unless otherwise specified, damp proof course shall be 25 mm thick cement concrete with stone chips proportion 1:2:4 with 3% "Cico" or specified percentage of "Rela" or similar approved water proofing compound by weight of cement. The proportioning, mixing, laying etc shall be done in conformity with specifications for cement concrete work. Under doors no damp proof course shall be laid. No more concrete shall be mixed with water proofing compound which can not be used in 15 minutes. Necessary shuttering for laying concrete shall be provided to the satisfaction of the Engineer-in-charge. After the concrete is laid and compacted with "Thappies" the surface shall be made ribbed for adhesion of mortar for eh brick work over it. The concrete shall be kept thoroughly wet for 7 days after it is laid.

7. Additional Specifications for Civil Engineering works.

While quoting civil prices on Lumpsum basis on the design of the tenderer the following specifications in addition to those stated in the preceding pages shall be considered.

1. All water retaining structure shall be in grade M-25 mix nominal with stress limitations etc according to IS:3370 and the other RCC structures not in contract with water excluding domes of digesters, shall be in grade M-25 as per code IS:456-1976. Domes shall be in grade M-25 mix or richer.
2. Superstructure panel walls of eh building wherever details are not mentioned shall have 20 mm thick cement plaster (1:4) from inside and 20 mm thick cement plaster (1:4) sand faced from outside.
3. Mass concrete of the following mixes should be placed as specified below :-
 - a) 1:2:4 In mass concrete under foundation an in lean concrete fill between foundations.
 - b) 1:2:4 Using 20 mm size stone chips, in foundation of masonry wall footings, slabs resting on ground inannex chamber, in encasement of pipes under structures.
- 4 First class brick work in cement shall be used for following:
5. All external faces of R.C.C. structures above ground level shall have snowcem paint and all other inside faces all have three coats of cement wash. Variation to above, if any, will be as per direction of Engineer-in-charge.
6. The roof of all buildings shall be provided with approved number of layers of polyurethane water proofing treatment.

7. All ventilators and windows shall be of steel and their patterns shall be up to date and got approved by Engineer-in-charge. All fastening and fixtures shall be of heavy oxidized brass or chromium plated type. The windows and ventilators shall be fully glazed and fitted with glass s directed by the Engineer-in-charge. Total shutter area of doors, windows and ventilators shall be not less than what has been specified in the drawing.
8. All M.H. covers shall be of heavy duty type of cast iron.
9. Structural Concrete.

The nominal mix of concrete should be exercised by the contractor for a specified strength, and shall be fully agreed upon before commencement of work.
- 10 Other work.

All other works for which specification is not mentioned either in this chapter or anywhere in the contract document shall be done as per the Maharastra Jeevan Pradhikaran specification, IS specifications on Sewerage and Sewage Treatment, Central Public Health Engineering Organization to the complete satisfaction of the Maharastra Jeevan Pradhikaran / SHEGAON MUNICIPAL COUNCIL, Shegaon.

SCHEDULE-“S”

MODE OF STANDARDS

Following Indian Standard and Codes Shall be treated as guideline for selection of Material. Wherever the leastest edition is published by Govt. . that should be considred for guidelines.

I.S.No.	Description.
General	
IS : 1200	Measurement of Building works.
IS: 1642	Method of measurement and details of construction.
Cement	
IS:269	Ordinary, Rapid hardening and low heat Portland cement.
Sand	
I.S.:1542	Sand for plaster.
Aggregate	
IS:383	Aggregates, Coarse and Fine, from Natural sources for concrete.
IS:515	Aggregates for use in Mass Concrete Natural and Manufactured.
Concrete Plain and Reinforced.	
IS:456	Code of practice for plain and reinforced concrete for General Building Construction.
IS:3370	For concrete structures for storage of liquids.

IS:875	For structural safety of buildings>Loading Standard).
Brick work	
IS:1077	Common Burnt Clay Building Bricks.
Pavings and Floor Finishes	
IS:1237	Flooring Tiles, Cement concrete.
IS:1443	Laying and finishing of cement concrete flooring tiles.
Plastering and Pointing.	
IS:1661	Cement and cement lime plaster finished on walls and ceilings.
Steel and Iron works.	
IS:226	Structural Steel (Revised).
IS:1786	ColdTwisted Steel bar for concrete
IS:1139	Hot Rolled M.S. Medium Tensile steel and High Strength Deformed bars for reinforcement in concrete.
IS:800	Code of Practice for use of Structural Steel in General Building Construction.
IS:432(Part-I) –1982	Mild steel and Medium tensile steel bars & Hard drawn steel wire for concert reinforcement.

Note:-The contractor should keep all above I.S. Codes in office at the site of works during execution

Drawings

**Note : attached drawings are
only tender purposes not for
construction purposes.**

Signature Not Verified

Digitally signed by POOJA SANJAYRAO
UMAP
Date: 2026.04.27 19:56:01 IST
Location: Maharashtra-MH

