

**CONTRACT NO.**

**GUJARAT WATER SUPPLY & SEWERAGE BOARD  
GANDHINAGAR**

**(GOVERNMENT OF GUJARAT UNDERTAKING)**



“Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch”.

**Part 2: RHS – Bharuch**

**Estimated Cost (O&M for 10 Years): Rs. ₹ 93,36,06,487.80**

**VOLUME – V**

**Operation & Maintenance**

Chief Engineer  
Gujarat Water Supply & Sewerage Board  
Zone – VI, Surat

# GENERAL CONDITIONS OF CONTRACT FOR OPERATION AND MAINTENANCE

## I - ADMINISTRATIVE PROVISIONS

The following additional clauses shall apply only during the Operation and Maintenance period.

### 1. DEFINITIONS AND INTERPRETATION:

#### 1.1. Definitions:

In these Conditions of Contract ("Conditions") the following words and expressions shall have the Meanings hereby assigned to them, except where the context otherwise requires.

1. "Applicable Law" means all national (or State) legislation, statutes, ordinances and other Laws And Regulations and by laws of any legally constituted public authority.
2. "Contract" means the contract agreement, these conditions, the employer's requirements, the Tender and the further documents (if any) which are listed in the contract agreement.
3. "Contractor's Equipment" shall mean all equipment, instruments, tools, machinery and other appliances and things of the Contractor at the Site required for the fulfillment of the Obligations of the Contractor under these Conditions.
4. "Contractor's Personnel" means the contractor's representative and all personal that the Contractor utilizes on site, which may include the staff, labour, & other employees of the contractor and of each sub-contractor & any other personnel assisting the contractor in the execution of the work.
5. "Dispute" shall have the meaning given to it in Clause 15 of these Conditions.
6. "Employer's Risk" shall include the risks mentioned as employer's risks in the General Conditions and shall include any negligence or misconduct on the part of the Employer and also any event of Force Majeure as provided in Clause 12 of these Conditions.
7. "Employer's Personnel" means the Employer's Representative, the assistants and all other staff, labour and other employees of the employer and of the Employer's representative, and any other personnel notified to the contractor, by the employer or the employer's representative, as employer's personnel.
8. "Employer's Requirements" means the document entitled employer's requirements, as Included in the contract, and any additions and modifications to such document in accordance with the contract. Such document specifies the purpose, scope, and / or design and / or other

Technical criteria,  
for the works.

9. "Facility" shall mean the entire system to be designed and constructed including the buildings, structures, ramps, pits, pipes, fencing, lighting, testing and analysis equipment, tools, computers, software programs, safety equipment, plant machinery, supplies, instruments and inventory incorporated therein, as well as all open areas within the Site, and including any additions, modifications, alterations, replacement and repairs as may be made thereto from time to time.
10. "Force Majeure" shall mean those events mentioned in Clause 12 of these Conditions.
11. "General Conditions" shall mean the conditions of tender issued by GWSSB for O&M works of projects.
12. "Good Operating Practices" means the standards, practices, methods and procedures as Practiced internationally and in India conforming to all Applicable Law and that degree of skill, diligence, prudence and foresight which would reasonably be expected from a skilled and experienced contractor engaged in India in the same type of undertaking under the same or similar circumstances as the Contractor pursuant to these Conditions.
13. "O & M Contract" shall mean the contract or part of any other contract having scope of operation and maintenance of facilities, entered in between the Employer and the Contractor pursuant to these Conditions.
14. "O & M Completion Certificate" shall mean the certificate to be issued by the Employer on the Completion of all the obligations of the Contractor under these Conditions
15. "O & M Services" shall mean those services specified in Schedule [1] which the Contractor is Obligated to perform under these Conditions.
16. "O & M Standard" shall mean the standards:
  - a) As set forth in the O & M Manual as accepted by the Employer, b) As required pursuant to Applicable Law;
  - c) Set out in the Performance Guarantee; and
  - d) For the functioning of the Facility as required in accordance with the Contract including Such requirements as may be mentioned in the Employer's Requirements. e) For the functioning of the Facilities set forth in these Conditions.
17. "O & M Manual" shall have the meaning for manual of Operation and Maintenance.
18. "O & M Period" shall have the meaning set out in Clause.
19. "O & M Price" shall mean the amount stated in Price Schedule.
20. "Party" shall mean each of the Contractor and the Employer and Parties shall mean both of Them together.
22. "Performance Guarantees shall mean the guarantee that the Facility shall be operated Satisfying the minimum performance parameters set out in Schedule.
23. "Successor Contractor" shall have the meaning given to it in Clause.
24. "Site" shall means that specific area specified in the bid documents & shall include any other places as may be specifically designed by the employer from the time to time as forming part of the site.

25. "Taking over Date" shall mean the date of issue of the taking over certificate at the end of  
Operation and Maintenance period.
26. "Taking over Certificate" means the certificate to be issued by employer to the contractor at  
The successful completion of the Operation and Maintenance period.
27. "Termination" shall have the meaning given to it in Clause [13] of these Conditions.

### 1.2. Interpretation:

In these Conditions, except where the context requires otherwise.

- a) Words indicating one gender include all genders,
- b) Words indicating the singular also include the plural and words indicating the plural also  
Include the singular,
- c) Provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing;
- d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and  
Resulting in a permanent record;
- e) The marginal words and other headings shall not be taken into consideration in the Interpretation of these Conditions;
- f) The words "include", "includes" and "including" is not limiting;
- g) As used in these Conditions, all defined terms include the plural as well as the singular;
- h) Any agreement, document or drawing defined or referred to in these Conditions shall include  
amendment, modification and supplement thereto and waiver thereof as maybe come effective from time to time, except where otherwise indicated;
- i) Any reference to any Clause or Sub – Clause shall unless specified otherwise mean Clause or  
Sub-Clause of these Conditions; and
- j) Any rights of the Employer to make any inspections or to review any document shall not create  
Any obligation on the Employer to conduct such inspections or reviews to detect any errors, inaccuracies, ambiguities or other potential problems. No inspection or approval by or on  
Behalf of the Employer shall operate as a waiver of any provision of these Conditions, any  
obligation of Contractor under these Conditions, or any of the rights of the Employer hereunder, except as expressly agreed in writing by the Employer.

### 1.3 Commencement and Duration of O & M Contract:

- 1.3.1. "The O & M Period" shall commence from the date of issue of certificate of  
successful  
Commissioning (after 3 months of Trial run) of the facilities and shall continue  
for a period of  
10 years there from. **The Employer may propose an extension to the O & M Period by giving 90 days prior notice to the Contractor.**
- 1.3.2. **The O & M period may then be extended subject to mutual consent and on terms and conditions agreed to by both the Parties.**

**1.4. Applicable Law:**

- 1.4.1. The Contractor shall comply with all Applicable Law relevant to the Contractor's Personnel, including Applicable Law relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.
- 1.4.2. The Contractor shall require his employees to obey all Applicable Laws, including those concerning safety at work.
- 1.4.3. In the event Employer becomes liable to any Employers Personnel, any governmental authority (including but not limited to any fines or penalties levied by or payable to such authority) or any other third party under the provisions of any Applicable Law resulting from Contractor's failure to comply with such Applicable Law, Contractor shall reimburse Employer for all payments required to be made by Employer to such Employers Personnel, governmental authority or any other third party, plus the actual expenses that Employer may incur in investigating, settling or defending any litigation or threatened litigation.

**1.5. Assignment:**

The Contractor will not be entitled to sub-contract any part of his obligation under these Conditions to any third party without prior approval of the Employer. Neither party may assign their rights and obligations under these Conditions without the consent of the other Party. However the Employer may assign any rights under these Conditions to any financial institution from whom any financial assistance/credit facilities have been availed by the Employer.

**1.6. Safety:****1.6.1. Emergencies:**

In the event of an emergency endangering life or property, the Contractor shall immediately take action as may be necessary to prevent, avoid or mitigate injury, damage or loss and shall, as soon as possible, report any such incidents, including his response thereto to the Employer.

**1.6.2. Contractor Action:**

The Contractor shall utilize his personnel to take such action as may be necessary in accordance with Good Operating Practices in the event of an emergency. Notwithstanding anything to the contrary herein, the Contractor may incur any expenditure or take any other operating actions as the Contractor deems to be necessary (in accordance with Good operating practices) in the case of emergencies affecting the Facilities or the operation of the Facilities to counteract the effects where the Contractor considers immediate action is required to safeguard lives or property. In case such emergency was caused due to an Employer's Risk then the Employer shall reimburse such reasonable expenses that might have been incurred by the Contractor in relation thereto acting in accordance with Good Industry Practices.

**1.7. Notification:**

- 1.7.1 In the event of an emergency the Contractor shall forthwith notify the Employer of the emergency, the expenditures made and the operating actions taken.
- 1.7.2 If the Employer considers that an emergency has arisen in relation to the Facilities, the Employer may give written notice to the Contractor specifying the nature of the emergency which it has identified and the manner in which it requests such emergency to be rectified. The Contractor shall rectify such defect with all due diligence. If such emergency is on account of an Employer's Risk then the Expenses reasonably incurred by the Contractor for any actions taken by it pursuant to such direction or notice. If the Contractor fails to comply with such direction or notice promptly, the Employer shall be entitled to procure that it or any third party takes such actions as may be necessary to remedy such breach by the Contractor. Any costs that

may be incurred by the Employer in this regard shall be reimbursed to him in full by the Contractor and shall be a debt due to him from the Contractor.

**1.8. Inspections:**

Notwithstanding any provisions of these Conditions and without prejudice to any of the other rights vested by the Contractor under these Conditions, The Employer shall have the right at all times to inspect the Facilities and the Contractor shall co-operate in every manner with the representatives of the Employer inspecting the Facilities and allow them access to every part of the Facilities and produce any records requested.

**2. OPERATION OF THE FACILITIES:**

**2.1. Operation of the Facilities:**

- 2.1.1. The Employer appoints the Contractor to perform and undertake the O & M Services and all other obligations set out and in accordance with these Conditions during the O&M Period. The Contractor accepts the appointment and acknowledges a duty to perform such obligations.
- 2.1.2. The Contractor shall be in complete charge of and have custody and control over and responsibility for the Facilities, and the Contractor shall perform or cause to be performed on behalf of the Employer all O & M Services for the Facilities and shall supply or cause to be supplied all materials required therefore in accordance with the O & M Standard.
- 2.1.3. The Contractor shall also acknowledge that the Employer and the Employer's Personnel and other contractors may be carrying out work at the Facilities and shall Endeavour to fully co-operate and work in a manner so as not to cause any obstruction or hindrance to them.
- 2.1.4. The Contractor shall remain an independent Contractor and not an agent, employee and nothing in these conditions or the O & M part of contract shall be deemed to create a joint venture between the Employer and the Contractor.

**2.2. Responsibility of the Contractor:**

The Contractor shall be solely and exclusively responsible for:

- 2.2.1. Obtaining all necessary permits and consents required by Applicable Law or any governmental authority for the Contractor to carry out the O & M Services;
- 2.2.2. The procurement of all goods and services necessary to ensure compliance with its obligations under these Conditions,
- 2.2.3. Making available suitably qualified and trained personnel to perform the O & M Services;
- 2.2.4. Perform the O & M Services in accordance with the O & M Manuals and maintain the Facilities in good repair and condition and ensure that the Facilities are well and suitably maintained at all times in accordance with Good Operating Practices and in accordance with these Conditions;
- 2.2.5. Procuring and administering all chemicals and other consumables, tools, equipment, spare parts and other materials (which shall be of good quality and unused) necessary for the operation and maintenance of the Facilities;

- 2.2.6. Maintaining a system of records to identify all inventories related to the Facilities and preparing and providing to the Employer a complete accounting of such inventory for every fiscal quarter;
- 2.2.7. Arranging for the testing and recalibration of all scales, meters, gauges and other measuring devices at the Facilities on an annual basis and maintain the calibration certificate as records unless otherwise stated in the O & M Contract; and
- 2.2.8. for providing any and all relevant information required by the Employer.

### **3. DUTY OF CARE BY THE OPERATOR AND PERFORMANCE STANDARDS:**

#### **3.1. Duty of Care:**

- 3.1.1. The Contractor shall manage, operate and maintain the Facilities in accordance with Good Operating Practices and in accordance with the O & M Standard so that the Facilities are capable of meeting the outputs and specifications set out in the Contract.
- 3.1.2. The Contractor shall take full responsibility for the care of the Facility from the date of start of O & M period, till the end of the O & M Period.
- 3.1.3. If any loss or damage happens to the facility, during the O & M Period due to any breach by the Contractor of any of his obligations under these Conditions including any willful misconduct, negligence and non-conformity with Good Operating Practices then the Contractor shall, at his own cost, rectify such loss or damage so that the facility conforms in every respect with the provisions of these Conditions.
- 3.1.4. The Employer shall be liable only in case of any damage caused due to any Employer's Risk.

### **4. OBLIGATIONS AND RESPONSIBILITIES OF THE EMPLOYER:**

The Employer shall employ the Contractor to provide the O & M Services and shall:

- 4.1. Follow the issue of certificate of successful commissioning, hand-over the custody of the Facilities to the Contractor for its use during the O & M Period; and
- 4.2. Pay the Contractor all sums required to be paid in accordance with the terms of these Conditions. Notwithstanding anything else herein contained the Employer may set off any sums owed by the Contractor under the Contract for monies owed to the Contractor by the Employer under these Conditions or as a debt due from the Contractor.

### **5. REPRESENTATIONS AND WARRANTIES OF THE CONTRACTOR:**

The Contractor hereby represents for the benefit of the Employer as follows:

#### **5.1. Performance of O & M Services:**

- 5.1.1. That the Contractor has the required skills and capability to perform, and shall diligently perform, the O & M Services in a high-quality, timely and professional manner utilizing sound engineering principles and project management procedures in accordance with Good Industry Practices;
- 5.1.2. That the Contractor shall perform his obligations hereunder in accordance with the requirements of these Conditions and shall meet the Performance Guarantee; and
- 5.1.3. That it shall not use any spare parts or material that are not new and which shall be of a quality that is in accordance with Good Industry Practices.

**5.2. Knowledge of Adverse Information:**

- 5.2.1. As of the Commencement Date, Contractor is not aware of any facts, conditions or events which would affect the ability of Contractor to provide the O & M Services in accordance with these Conditions.
- 5.2.2. Contractor has familiarized itself with the nature and extent of the O & M Services required To be provided under these Conditions and with all other requirements under Applicable Law

**5.3. Organization, Standing and Qualification:**

Contractor is validly existing and in good standing under Applicable Law and has all necessary power and authority to carry on its business as presently conducted and to perform its obligations under these Conditions. Contractor is, or will be prior to the date on which the O & M Services are to be commenced duly qualified or licensed to provide these services.

**5.4. Due Authorization:**

- 5.4.1. Each of the execution, delivery and performance by the Contractor of all contracts entered into pursuant to these Conditions shall be duly authorized by all necessary action on the part of Contractor.
- 5.4.2. Neither the execution and delivery by Contractor of the O&M Contract, nor the consummation by Contractor of any of the transactions contemplated hereby, requires the consent or approval of, the giving of notice to, the registration with, the recording or filing of any document with, or the taking of any other action in respect of, any governmental authority or agency, except:
- a) Such as have been duly obtained, given, registered, recorded, filed or taken and are in full force and effect or are not yet required; and
  - b) Filings and recordings expressly required pursuant to the O & M part of Contract. Contractor holds, or will obtain, any and all licenses, permits and approvals on a timely basis. Contractor has no reason to believe that any of those not yet required will not be readily obtainable or done in the ordinary course of business upon due application there for

**5.5. Litigation:**

In the aggregate, there are no pending or, to the knowledge of Contractor, threatened actions, investigations or proceedings before any court, governmental authority or arbitrator, which would have material adverse effect on the ability of Contractor to perform its obligations under these Conditions

**6. INSURANCE:****6.1. General Conditions:**

- 6.1.1. Without limiting the Contractor's obligations, responsibilities and liabilities under these Conditions, the Contractor shall be required to provide and maintain in full force and effect, at his expense the insurance coverage's specified in Schedule [5] throughout the O&M Period. Any deductibles on the insurance shall be to the account of the Contractor.
- 6.1.2. Maintenance of insurance shall not relieve the obligation of the Contractor to remedy or repair any damage to the Facility in case such damage is caused due to the fraud, negligence, willful misconduct or breach of any obligations of the Contractor under these Conditions(including failure to perform the O & M Services in accordance with Good Operating Practices)at the Contractors cost promptly and regardless of the extent of settlement of claims by the underwriters or the time taken for settlement of claims. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor to the extent any such liability or damage is caused due any breach of any obligations of these Conditions (including failure of the Contractor to perform



the O & M Services in accordance with the Good Operating Practices) by the Contractor or any willful misconduct, negligence on the part of the Contractor.

6.1.3. The terms of the Insurance shall be approved by the Employer.

6.1.4. The Contractor within the 14 days from work order shall submit to the Employer evidence that the insurances required under Schedule [5] of these Conditions has been obtained as approved by the Employer.

6.1.5. The Contractor shall not make any alteration to the terms of any insurance without the prior approval of the Employer. If the Contractor fails to effect and keep in force any of the insurance it is required to effect and maintain under these Conditions, or fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the Employer may affect insurance for the relevant coverage and pay the premiums due and may claim the same from the Contractor. The insurances;

- a) Shall be in the name of the Employer and the Employer shall be the sole loss payee,
- b) shall be extended to cover liability for all loss and damage to the Employer's property arising out of the Contractor's performance of his obligations or failure to do so under these Conditions and any fraud, gross negligence or wilful misconduct on his part, and

6.1.6. If the Contractor fails to effect and keep in force insurance which is required to be maintained under these Conditions, and the Employer neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which would have been recoverable pursuant to such insurance shall be paid by the Contractor.

6.1.7. The insurance shall cover all the electrical items, mechanical items, Instrumentation & automation items, all civil works, Storage structures etc. The insurance for the work of transmission main is optional. Since the responsibility of safety of all work lies with contractor, contractor may prefer to take the insurance of optional item also if deemed fit.

6.1.8 The natural calamity & fire etc. (standard perils) insurance shall be limited to Electrical & Mechanical equipment's / assets of the pumping station installed indoor and / or outdoor. The beneficiary shall be GWSSB on A/c of bidder and "Standard Workman Compensation Policy" of manpower engaged for the work by the bidder should be on Account of the bidder c/o GWSSB. In short the bidder has to take adequate insurance cover for electro mechanical equipment's (value shall not be less than estimated and / or accepted value) and man power engaged for O & M work as per rates / monthly amount as per prevailing minimum wages act without fail. It would be contractor's sole responsibility to see that insurance policies are bought & renewed in time. Failure to comply with this condition the contractor shall be entirely responsible for any litigation & financial liabilities.

## **7. INDEMNIFICATION:**

### **7.1. Loss or Damage to Facilities:**

The Contractor shall at its own expense make good any physical loss or damage to the Facilities occasioned by it in the course of the performance of its obligations under these Conditions if and to the extent such loss or damage is caused by the negligence, willful default or breach of statutory duty or failure to follow Good Industry Practices by the Contractor

### **7.2. Other Loss or Damage:**

7.2.1. Except as otherwise stated in this Clause 7.2 or covered by Clause 7.3, the Contractor shall indemnify, defend and hold harmless the Employer against any and all liabilities, losses, damages and claims of whatever kind and nature, including all related costs and expenses incurred in connection therewith, in respect of personal injury to or death of third parties or any employee

Of the Employer or the in respect of loss of or damage to any third party property or property belonging to employee of the Employer by:

- i) Any breach by the Contractor of its obligations hereunder and
- ii) Any negligence, willful default or breach of statutory duty on the part of Contractor

7.2.2. Except as otherwise stated in this Clause 7.2 or covered by Clause 7.3, the Employer shall indemnify, defend and hold harmless the Contractor for all claims and losses of whatever kind and nature, including all related costs and expenses incurred in connection therewith, in respect of personal injury to or death of third parties or of any person employed by the Contractor in respect of loss of or damage to any third party property or property belonging to any person employed by the Contractor to the extent that the same arises out of any Employer's Risk

### **7.3. Accidents or Injury to Workmen:**

7.3.1. The Contractor shall indemnify, defend and hold harmless the Employer or any Employer's Personnel against any and all claims for loss, damage and expense of whatever kind and nature (including all related costs and expenses) in respect of the death of or injury to any person employed by the Contractor in connection with the performance of the O&M Services and obligations hereunder except to the extent that such death or injury is caused by an Employer's Risk.

7.3.2. Neither Party shall be liable to the other Party for loss of use of the Facilities, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than under Sub-Clause [13] and this Clause [7].

7.3.3. The total liability of the Contractor to the Employer, under or in connection with these Conditions other than as provided in Clause 7.3.2 & 14 shall not exceed the sum of the O & Price and the Delay Damages payable under these Conditions.

7.3.4. This Sub-Clause shall not limit liability of the Contractor in case of fraud willful default, gross negligence and liabilities arising due to breach of Applicable Law and the liability under another Clause of these Conditions that might impose a greater liability on the Contractor

## **8. INSPECTION:**

### **8.1. General Provisions:**

8.1.1. The Employer may check the operation of the Facilities or designate an organization of his choice to carry out inspections regularly. The Employer or the organization appointed by him shall check that the Contractor is performing the tasks for which he is responsible with due diligence. The Contractor shall at his cost provide all the assistance the Employer requires to complete these inspections

8.1.2. Before any inspection, the Employer shall give prior notice to the Contractor, indicating the name(s) of the person(s) empowered to carry out such inspection in the name of the Employer

### **8.2. Measurement and Analysis:**

8.2.1. The Employer has the right to perform any analysis or inspection he deems necessary. Before any inspection, the Employer shall give a prior written notice to the Contractor.

8.2.2. The water quantity, for any such test, analysis or inspection shall be measured by flow-meters installed at the Facility, which are acceptable to the Employer, provided they are maintained and calibrated as per requirements of this contract.

8.2.3. Other parameters like Pressure temperature and speed shall be measured by certified calibrated meters provided by the contractor and, which are acceptable to the Employer

8.2.4. The flow meters shall be inspected and certified upon their availability by the Employer and the Contractor. Thereafter, the said meters shall be tested and their accuracy verified once in every six (6) months by the Contractor. After each inspection, the flow-meters shall both be sealed in the presence of representatives of the Employer and the Contractor in a manner that is adequate to prevent the tampering of said meters by any person.

8.2.5. The Contractor shall be responsible for the security and protection of flow-meters at the designated point. If there is any malfunctioning of the meters, it should be repaired at the Contractor's cost, as per manufacturer's technical recommendations.

**8.3. Plant Complex Visits:**

8.3.1. At the end of each month, or at the initiative of the Employer, a visit shall be organized so that both Parties can check the condition of the installations at the Facilities.

8.3.2. A report shall be drawn up to record the opinions of both Parties. The Employer reserves the right to call in equipment manufacturers or specialized technicians for these visits.

8.3.3. These visits shall provide an opportunity for examining maintenance programs and operating procedures and improvements requiring additional investments.

8.3.4. Any test, visit, analysis or inspection and any approval thereof shall not in any way alter/modify or dilute the responsibility of the Contractor to fulfil his obligations under these Conditions.

**9. RECORDS AND REPORTS:**

**9.1. Operating Records and Data:**

The Contractor shall:

9.1.1. Prepare and maintain, on a current basis and in accordance with generally accepted Indian accounting principles, proper, accurate and complete books and records and accounts of all transactions related to the Facilities including a log book at the site which shall contain inter alia the following details

a) Reading from the different meters, indicators and recorders (including but not limited to consumption of energy, volume of water conveyed, operating times of the different items of equipment etc. which may be updated on a daily basis); and

c) Report of visits by persons other than those of the Employer and the Contractor to the Facility

9.1.2. Establish and maintain a weekly and monthly reporting system to provide storage and ready retrieval of operating data relating to the Facilities, including such information necessary to verify calculations made pursuant to these Conditions or the O & M part of contract and provide the same to the Employer on a monthly basis

9.1.3. Provide to the Employer or such persons notified by it access to the Facilities and to data in relation to the Facilities, at all times.

9.1.4. At the Employer's request, at the end of every month, make a copy of the system performance data for that month as recorded by the instrument and control system on CDs / DVDs and printed document there from and deliver the same to the Employer with one week.

9.1.5. Provide support to the Employer to meet the data requirements of all competent authorities and under Applicable Law

**9.2. Reports:**

9.2.1. The Contractor shall submit the reports mentioned in Schedule [4] at times indicated in the said Schedule.

9.2.2. The Contractor shall also provide the Employer with such reports as are required by the Employer and shall comply with all reporting requirements prescribed under these Conditions and the O & M part of Contract. In addition the Contractor shall submit the following information to the Employer.

9.2.3. Upon obtaining knowledge thereof, shall submit prompt written notice of:

- i) Any litigation or material claims, disputes or actions, threatened or filed, concerning The Facilities or the services to be performed hereunder;
- ii) Any refusal or threatened refusal to grant, renew or extend or any action pending or threatened that might affect the granting, renewal or extension of any clearance, permit or license;
- iii) Notwithstanding the aforementioned materiality, all penalties or notices of violation issued by any authority under Applicable Law;

9.3. The Contractor shall promptly submit to the Employer any material information concerning new or significant aspects of the operations of the Facilities, any material complaint about the Facilities from any person or entity with a benefice complaint who complains directly to the Contractor and, upon Employer's request, shall promptly submit any other information concerning the Facilities or the services performed by the Contractor.

9.3.1. The Employer may from time to time specify any changes to be made to any of the format of any report or plan required hereunder.

9.3.2. If the Contractor is required by any Applicable Law to produce any projection, report or another document relating to the provision of the O & M Services of the Facilities or the Employer requests a report regarding other information relating to the Facilities, the Contractor shall prepare a draft of such document at the request of the Employer, as soon as practicable and in any event within any time limit prescribed by Applicable Law.

9.3.3. If the Contractor is required by any Applicable Law to produce any projection, report or another document, it shall prepare such report diligently and submit the same to the Employer as soon as possible thereafter. Wherever practicable, such reports shall be submitted to the Employer for review seven days before the same is issued. The Contractor shall take into account any comments or revisions proposed by the Employer thereon.

**9.4. Procurement:**

9.4.1. The Contractor is responsible for the procurement of all goods and services necessary to Ensure compliance with its obligations under these Conditions.

9.4.2. The Contractor shall procure and keep in readiness spare parts required for urgent repairs, materials, supplies and other consumable items, and maintains an adequate inventory thereof Facilities.

9.4.3. The Contractor shall submit a report for every fiscal quarter to the Employer reflecting the status of the inventory for spare parts, materials and other consumable items.

**10. PAYMENT:**

10.1. The Contractors request(s) for payment shall be made to the GWSSB in writing, accompanied by invoice(s) along with presence sheet of personnel of particular month duly certified by our Engineer on site, claims etc. as appropriate.

10.2. Payment shall be made by GWSSB as per procedure subsequent to the submission of such invoice(s)/ claim(s) by the Contractor.

10.3. The GWSSB will deduct from the amount payable to the Contractor, any amount paid by GWSSB on behalf of the Contractor (e.g. telephone bills, DISCOM AUTHORITY penalty for Power factor or any other dues and liquidated damages as per clause and, as per tender terms and condition. Any telephone bills submitted by telephone department, the payment of telephone bills will be borne by Contractor.) GWSSB will provide telephone facilities on site.

10.4. Contractor will provide Security Guards services for all assets in GWSSB head works premises For 24 hours of a day and 365 days of the year for the whole contractor period'.

10.5. The contractor will get O & M work payment only for the deployed staff and insurances during the period of defect liability for pumping machinery & electromechanical works. The base for payment will be approved estimated rates

## **11. LIQUIDATED DAMAGES:**

### **11.1. For quantity of water reaching entry of Sumps**

If the quantity of water received at sump inlet is less by more than 2.0% of the designed and planned demand as above during that period then the liquidated damages will be deducted at rate of Rs. 10/- per 1000 liters of short fall. However no liquidated damages shall be recoverable, if there is no supply from the source of water as well as from the upstream reaches.

### **11.2. Leakages in pipeline.**

The contractor shall ensure that leakages from transmission mains due to faulty air release valves, scour valves, joints, damage to pipeline are urgently attended.

If the quantity of water received at receiving sump/ water treatment plant inlet is less by more than 2% of the water pumped from the source pumping station, then the liquidated damages will be deducted at rate of Rs. 10/-per 1000 liters of short fall.

### **11.3. Misuse**

In case of Misuse of Water/ Quantity of water theft or wastage of Water/non-attending Leakages for the scope of work, the liquidated damages shall be made at the rate of Rs.10 per 1000 liters.

**11.4. If** any work specified in the scope of tender but not carried out by the contractor, the recovery will be done @ double rate of quoted price from the contractor.

**11.5. In** the event of not performing the following activities during the year, the penalty amount shall be deducted from the bill. Agency has to submit the Yearly report covering all the activities carried out during the year.

<b>Nature of work</b>	<b>Penalty, Rs.</b>
Relay Testing of all the electrical installation in the project	40,000 per year
Calibration of Flow meter	50,000 per FM per year
Calibration of all types of measuring metes	15,000 per year
Overhauling of pump set per year & computation of efficiency	25,000 per year per pump set
EOT Crane : Submission of certificate for safe working of Crane as per prevailing safety rules	10,000 per year

Fire extinguisher (Re-filling & Testing) Test report to be submitted	500 per unit per year
1,00,000 per year1,00,000 per year1,00,000 per year1,00,000 per year1,00,000 per year1,00,000 per year	
All the Pump set (working as well as stand by) must be Operated every week. In The Event Of non-operational of any Pump/Every Week will attract Penalty.	

### 11.3. For Higher Power consumption, due to lower pump efficiency:

- At Factory & site Testing / Commissioning stage, the following minimum guaranteed parameters must be achieved for the pumps and motors offered for the contract shall be as under:
  - Duty point flow, head, minimum pump Efficiency and Overall efficiency of each pump-set.
  - For each motor, the minimum efficiency, Power Factor, other tests as per electrical
    - Datasheet, BOQ.
  - Net Positive Suction Head required at duty point & maximum discharge.
  - Power Consumption at duty point and maximum flow.
- Note: No negative tolerance on flow, head, efficiency etc. shall be allowed in above.
- During Factory & Site Testing / Commissioning, each pump and motor set shall be tested and efficiency shall be worked out up to two Decimal. The combined efficiency of each pump and motor set shall also be worked out. If the guaranteed efficiency of each pump & motor set found lesser than the specified in approved documents, then the pump and/or motor set shall be liable for rejection. Therefore, the contractor shall rectify/ repair / replace the system/ part and retesting/ re-commissioning to be carried-out for the pump and/or motor set within 2 months. No delay & time limit extension shall be allowed in these circumstances. Thereafter, in case, the guaranteed efficiency of each pump and motor set not meeting the above guaranteed efficiency, then the pump and/ or motor set shall be rejected. Any claims from the Contractor against this shall not be entertained.
- The government approved testing authority shall be engaged to carry out performance test at site after installation at contractor's own cost. In no case the efficiency of the pump-set shall be less than specified in approved QAP
- During O&M Period: Minimum guaranteed combined efficiency of each Pump and motor set during the O & M period of 10 years as below table:

Particulars	At the time of commissioning	At the end of 1st year O&M	At the end of 2nd year O&M	At the end of 3rd year O&M	At the end of 4th year O&M	At the end of 5th year O&M	At the end of 6th year O&M	At the end of 7th year O&M	At the end of 8th year O&M	At the end of 9th year O&M	At the end of 10th year O&M
Efficiency of Pump set (%)	As per the test bed (but not less than specified in tender) hs	hs1 = hs	hs2 = hs1	hs3 = hs2 - 0.25	hs4 = hs3 - 0.25	hs5 = hs4 - 0.25	hs6 = hs5 - 0.25	hs7 = hs6 - 0.25	hs8 = hs7 - 0.25	hs9 = hs8 - 0.25	hs10 = hs9 - 0.25

Note:

(1)  $hs = \text{Pump Efficiency} * \text{Motor Efficiency}$

Where,

Pump Efficiency = Quoted pump efficiency by bidder or pump efficiency mentioned in approved QAP whichever is higher

Motor Efficiency = Quoted motor efficiency by bidder or motor efficiency mentioned in approved QAP whichever is higher

(2) Extra claim on energy saving due to higher efficiency than mentioned in BOQ / approved QAP Will not be given to the contractor

(3) Pump performance test shall be carried out at site every year for measurement of pump-set efficiency by engaging authorized energy auditor of CEI, Gandhinagar.

- If efficiency of pump not meet the above mentioned value then increase in energy bill (including all tax) due to decrease in efficiency will be recovered from the bill of contractor as penalty. For this amount of penalty will be derived as below by calculating actual power required to drive the motor (KW) as following.
- If Pump-set efficiency at the end of 1<sup>st</sup> year O & M will be  $hs1'$  (which is less than  $hs1$ )
  - then,
  - Increase in KW =  $(Q * H * 100 / (367.2 * hs1)) - (Q * H * 100 / (367.2 * hs1'))$  (i.e. Actual Power –
  - Guaranteed Power, as shown in above table)
- Amount of penalty = Increase in energy bill = Increase in KW \* Energy rate per unit (Rate shall be derived from the energy bill >> Total Current Month Bill Amount/Total units consumed during month)

Where H = Total Design Head in meter as per the Contractor's design.

Q = Total Design Flow

**Note:** If the combined efficiency found better than the above guaranteed parameters, no credit or benefit will be given to the contractor.

If the successful bidder does not recruit/depute the key personnel identified as per schedule, then liquidated damages will be deducted at double rate of applicable scale of GWSSB, or the rate quoted, whichever is Higher. For absence of any key personnel the same recovery on per day basis will be made.

The uniform is necessary all contractor employee if anyone found without uniform then he will be treated as absent and necessary deduction shall be made.

#### 11.4. For delay in Restoration:

The Restoration Period shall be subject to the following liquidated damages & penalties for its failure to carry out.

Sr.	Nature of work	Allowable Restoration time period
1	Replacement of M.S. Pipe	24 Hours
2	Replacement of all types of valves in Pumping Station	24 Hours / As per requirement
3	Replacement of Electro - Mechanical spares of equipment	24 Hours
4	Replacement of CI / MS / Strainer pipe from	02 Days

5	Minor Break down / Repairing	12 Hours
6	Cleaning of sump	48 Hours
7	Pump Break down	7 Days
8	Repairing of Dredging of Pump / Rewinding of Motor	Maximum 10 days in special case if dredging pump set is to be sent to OEM's Workshop (On receipt of approval from the Engineer In-
9	Pressure gauge for all dia & all types of meters	6 Hours.
Note	For major repairing shut down will be given as per requirement by the Senior	

In case of non-comply of the restoration period as above the recovery / deduction at the rate of Rs. 1000/

Per Hour shall be made from the payment due for first two hours delayed and their after Rs.1500/- per hours.

11.5. For the non-compliance of employment of key personnel: If the successful bidder does not recruit/depute the key personnel identified as per schedule, then liquidated damages will be deducted at double the rate of applicable scale of GWSSB or the rate quoted, whichever is higher.

#### **11A Penalty Clauses:**

##### **1. Non-Operational Pump Motor set:**

All the Pump set (working as well as stand by) must be operated every week. In The Event Of Non-operational of any Pump/Every Week will attract Penalty. Minimum Rs. 5000/- Per pump set, Per month shall be charged if the pump set should not operational or nonworking for minimum 30 days.

##### **2. Nonattendance of Leakages:**

Rs. 10,000/- Per Day for Delaying of attention of leakages shall be charged. The pipeline for the header pipeline to Flow meter including FM & BFV RCC chambers shall be in the scope of the agency.

##### **3. Criteria for termination of contract:**

- When Total Penalties exceed the 10% of the contract amount then the department can terminate the contract giving 15 Day's prior written notice to contractor.
- In event of termination of contract SD of the contractor shall be forfeited and department can make other suitable arrangement for the remaining work of contract.
- The contractor whose contract has been terminated shall be debarred for 03 years to purchase new tenders invited by this organization and GWSSB.

##### **4. Non-Submission of Monthly/Quarterly/Half Yearly/Yearly Reports:-**

The report to be submitted to office before 8th day of every Month in physical & soft copy. Any delay in submission will attract a penalty of Rs.5, 000.00 per month.

##### **5. Non-provide of Tool kit:**

The contractor has to provide the tool kit (as listed in the tender) at the head work site within 7 days after award of work & same to be kept till the end of the contract. Any delay will attract penalty of Rs. 5000 / Per Month & shall be recovered from the bill after giving 7days notice to contractor.

##### **6. Non-repairing of Stand by Machineries.**

Contractor has to keep all machineries including Stand-by machineries in good working Condition. If Contractor may not attend / Repair Stand by machineries due to one or another reason then department may get it repaired the Machinery. The Expenditure incurred for the same shall be deducted at Market rate / As per Actual from Contractors Bill.



**7. Power Bill:**

Discom Authority is issuing power bill to each H/W site. Time limit for payment of Bills is few days so the contractor shall have to send bill within One day from the receipt of the bill to the concerned office. If contractor fails to submit such bill within limit & department unable to pay the bill within the allowable time limit then delay charges imposed by DISCOM AUTHORITY for the delayed payment shall be recovered from the Contractors Bill.

**8. Uniform for the Manpower:**

The contractor shall have to provide uniform to all the man powers engaged for this work. Design and colour of uniform shall get approved from concern Authority.

**9 Photo identity & Bio –Data of man Power:**

The contractor shall have to submit the bio- data of man power with latest photo who are engaged for this work at the time of agreement to concern Sr. Manager. And Identity card shall be issued to all man power signed by the contractor & the concerned authority.

**10.** If water not supplied from source station or trunks line station or department may temporary close the scheme by any reason for more than consecutive 15 days in a particular month then during such duration of non-water supply, the payment shall be made at **50% rate** of approved amount. Duration of Non-Operation period shall be decided by GWSSB.

**11. Payment Clause:**

Agency shall have to prepare & submit the bill along with all the attachments enlisted in the tender on monthly basis and payment will be made on availability of funds.

**12. Special condition:**

IF GWSSB will decide to augment all Pumping Machineries and Tender for same are finalized by Department then scope of this tender work for Comprehensive O & M work shall be considered as over and for closure. No claim or compensation shall be entertained by the department in this case, department shall inform and Foreclosure the contract as & when the decision is taken.

**13. Fire Extinguishers:**

As per the prevailing rules the inspection & refilling of the fire extinguishers to be done & the certificate for the same to be submitted as per the fire & safety rules. In case of non-submission of the certificate, Rs. 500 per year per No. will be deducted from the bill.

**14. Relay Testing:**

The contractor has to carry out the relay testing of the complete electrical installation of the project every year & report for the same to be submitted. If not carried out, penalty of Rs. 40,000/= per year will be deducted from the bill. The department may carry out the relay testing work by engaging the qualified agency & the expense incurred as per actual will be deducted from the bill.

**16.** The calibration of all the measuring entities to be carried out every year like pressure gauge, all electrical meters, level gauges....etc. installed in the project for accurate measurement & report for the same to be submitted. If not carried, Rs. 15000/= per year will be deducted from the bill. The department may carry out the relay testing work by engaging the qualified agency & the expense incurred as per actual will be deducted from the bill.

**17. Calibration of Flow meter:**

The calibration of the each flow meter to be carried out every year by NABL approved agency and master calibration instrument (having accuracy more than or equal to 95%) & report for the same to be submitted to authority. Necessary arrangement for carryout calibration shall be made by contractor. If not carried out, a penalty of Rs. 50,000/= per year per flow meter will be deducted from the bill. The department may carry out the calibration of flow meter by engaging the qualified agency & the expense incurred as per actual will be deducted from the bill.

**18. Pump overhauling:**

The complete overhauling of each pump & computation of its efficiency is to be carried out per year. Casing wear rings and Impeller wear rings must be replaced every year during overhauling work. If not done, a penalty of Rs. 25000/= per pump per year will be deducted from the bill.

**19.** The agency has to submit the Industrial safety certificate for EOT crane as per prevailing safety rules every year. A penalty of Rs. 10,000/= per year will be recovered if not submitted within time.

**20** The agency has to carry out the oil paint colour every year on all the metallic parts (Excluding Motor, Electric Panel, and Transformer) of all types of the equipment installed within the Pump House under the scope (All pumps, Valves, suction & delivery piping, Header line, Metallic stairs.....etc.) with good quality (Colour code approved by GWSSB) oil paint colour during contract period.

**21.** The agency has to complete the colour work of pump house and sump (along with all associated small structures like thrust block, chambers, doors, window, shutters, jali.... etc.) four times during 10 year O&M period.

**22.** In case of Misuse of water / quantity of water theft or wastage of water / non-attending leakages the liquidated damages shall be made at the rate of Rs. 10 per 1000 liters.

**23.** As per the BOQ the colour work should be carried out at 3rd, 6th, 8th and 10th year of O&M period. If department wish to change the year of execution then colour work should be carried out in any four year (with the gap of minimum 2 years) out of 10 year of contract period (maximum four times) instead years specified in BOQ.

### **COMMISSIONING & HANDING OVER TESTS ELECTRO-MECHANICAL SYSTEM EQUIPMENT TO BE CARRIED OUT AFTER OPERATION & MAINTENANCE**

All type of commissioning & handing over test shall be carried out as per the standard industrial practice and should comply relevant IS/equivalent codal provisions.

Following Checks and tests shall be carried out by the Contractor in presence of the Officer In-Charge of the Authority. Commissioning & handing over shall be carried out only after obtaining satisfactory results, acceptable to the Officer In-Charge of the Authority.

#### **List of Electrical System Equipment**

- a) Current Transformer
- b) Potential Transformer
- c) Circuit Breaker
- d) Lightning Arrester
- e) Isolator
- f) Insulator
- g) Distribution Transformer
- h) HT Switchgear Panel
- i) Control Circuit
- j) LT Switchgear Panel(PCC/MCC)
- k) Power & Control Cables
- l) Induction motor
- m) Control panels for miscellaneous equipment
- n) Earthing system
- o) HV & LV Capacitor bank
- p) Lighting Works
- q) VFD

### **COMMISSION & HANDING OVER TESTS**

Commissioning tests in addition to mentioned in the specification requirements for various equipment as per following but not limited to shall be carried out by Contractor in presence of Employer's representative. Commissioning tests shall be carried out only after obtaining satisfactory results, acceptable to Employer's representative.

#### **1.1.1 Current Transformer**

- a) IR Values
- b) Polarity test
- c) Ratio and circuit test
- d) Knee point voltage, exciting current and secondary resistance in case of class PS

#### **1.1.2 Potential Transformer**

- a) IR Values
- b) Ratio and circuit test

#### **1.1.3 Circuit Breaker**

- a) Mechanical charging - closing - tripping of breaker
- b) Electrical charging - closing - tripping of breaker
- c) Tripping of breaker through protective relays and trip circuit healthiness
- d) Mechanical interlocks of breaker
- e) Closing and opening time measurement of each pole
- f) Contact resistance of measurement of each pole
- g) IR Values
- h) Operation of breaker auxiliary switches
- i) Electrical closing at 85% of rated control voltage
- j) Electrical tripping at 70% of rated control voltage
- k) Space heater and illumination circuits of cubicle
- l) Antidumping device operation
- m) Control circuit and operational tests in local - remote position
- n) Check on spare contacts for customer use

#### **1.1.4 Meters and Instruments**

Testing of indicating and measuring meters like Ammeter, Voltmeter, Energy meter, power Factor Meter, Frequency Meter, Trivector Meter and other measuring indicating meters.

#### **1.1.5 Lightning Arrester**

- a) IR Values
- b) Thermography, if arranged by Employer.

#### **1.1.6 Isolator**

- a) IR Values
- b) Contact resistance measurement by milli volt drop test method
- c) Manual Closing and Opening
- d) Drive motor (if applicable) operation for closing and opening in Local and Remote position
- e) Mechanical interlock between isolator and earth switch
- f) Electrical interlock between isolator, earth-switch and circuit breaker

#### **1.1.7 Insulator**

- a) IR Values of insulator
  - b) Thermography - If arranged by Employer
- #### **1.1.8 Power & Distribution Transformer**
- a) Insulation resistance test HV side, LV side and HV - LV.
  - b) Magnetizing current test.
  - c) Winding resistance test.
  - d) Voltage Ratio & Tap continuity test at all tap.
  - e) Vector group test.
  - f) Magnetic Balance Test.
  - g) Buchholz Relay Test (if any)
  - h) Neutral CT Test
  - i) Winding Temperature Indicator / Oil Temperature Indicator Test
  - j) Polarization Index Test (For LV windings 3.3 KV and above)
  - k) Cooling System.

- l) Local / Remote operations of OLTC (if any)
- m) No load test and performance observation
- n) RTCC Panel: Operational test, IR values, Insulation withstand.
- o) OLTC: Operational test from local & remote, insulation withstand.

#### **1.1.9 HT Switchgear Panels**

- a) Local / Remote operations in test as well as service position including all electrical interlocks
- b) Control circuit and operational tests
- c) Tripping through relays and trip circuit health
- d) Anti pumping device operation
- e) Protection system operation stability and sensitivity by primary injection testing method including testing of metering circuits

- f) IR values of power and control circuits
- g) HV Test - DC High voltage on switchboard
- h) Panel indication, annunciation, and space heater circuits
- i) Spare contact for customer use
- j) Termination correctness & proper installation.

#### **1.1.10 Control Circuit**

- a) Operational test of control circuits to be tested as per schematic drawing.
- b) Indications/Alarm/Annunciation circuit to be tested as per control schematic drawing.
- c) Check for panel space heater and illumination circuits.

#### **1.1.11 LT Switchgear Panels**

- a) IR Values of power circuits
- b) Mechanical charging - closing - tripping of breaker
- c) Electrical charging - closing - tripping of breaker
- d) Trip circuit healthiness and tripping through relays
- e) Remote closing / Tripping / Interlocks circuits
- f) Indication / Annunciation / Panel space heater circuit / Space contacts for customer use
- g) Secondary injection testing of protective relays/releases
- h) CT testing for polarity, ratio, IR values and magnetization for class PS characteristics
- i) PT testing for ratio, IR values
- j) IR Values of breaker
- k) Testing of modules for DOL/ Star-Delta/ATS/ Soft Starter starting or any other starting method as per the schematic drawings applicable.
- l) Check MFM, Relays and Annunciator are connected to PLC to communicate as per tender requirement.

#### **1.1.12 Power and Control Cable**

- a) IR Values before Hipot
- b) Hipot Test - Measurement of leakage current
- c) IR Values after Hipot

#### **1.1.13 Induction Motor**

- a) IR Values
- b) Polarization Index Test
- c) Interlocks and simulation tests local / remote operations
- d) No load test

#### **1.1.14 Control Panels For Miscellaneous Equipment**

- a) IR Values of all power circuits
- b) Operational test and scheme - wiring testing as per control schematics

#### **1.1.15 Earthing Resistance**

- a) Earthing resistance of each electrode
- b) Earthing resistance of grid & sub grids.
- c) Earth continuity checks

#### **1.1.16 HV & LV capacitor bank**

1. Check panels placed properly, clearance from wall as per GAD, bolted with base frame which is grouted on floor.
2. Panels shall be installed in accordance with the latest Indian Standard Code of Practice 10118.
3. Check cable entry facilities at bottom with 3 mm thick removable gland plates on breaker panels and 2 mm thick removable gland plates on other panels with necessary cable glands.
4. Check copper earth bus bars required size is provided & connected to earth pit on both side of the switchgear.
5. The earth continuity conductor of each incoming and outgoing feeders shall be connected to this earth bus bar.
6. Check power circuit and control wiring & IR value.
7. Check Indication / Annunciation / Panel space heater circuits.

8. Perform operating tests on panels to verify the proper operation of panels and the correctness of the interconnections
9. Testing of indicating and measuring meters for proper functioning.
10. Equipment furnished with finished coats of paint shall be touched up if their surface is spoiled or marred while handling.
11. Safety mats are placed in front of Panel
12. Manufacturer shall also measure and confirm the PF improvement is achieved as per committed value on actual load and throughout load variation.
13. Check capacitor gets disconnected while switching of pump- motor and get discharged as per tender requirement

#### 1.1.17 Lighting Works

1. Measure the insulation resistance of each circuit without the lamps being in place. It should be not less than 1 Mega ohms to earth.
2. Current and voltage of all the phases shall be measured at the lighting panel bus bars with all the circuits switched on with lamps. If required, load shall be re-balanced on the three phases.
3. Check the earth continuity for all socket outlets.
4. A fixed relative position of the phase and neutral connections inside the socket shall be established for all sockets.
5. After inserting all the lamps and switching on all circuits, minimum and maximum illumination level shall be measured in the area with an approved industrial lux meter.
6. Check proper working of MCB/ ELCB/Timers

#### 1.1.18 VFD Panels

1. Power and motor cables are correct- Size and termination
2. Power cable shields correctly earthed to PE terminal
3. No faults on the cables prior to energize the VFD -Megger
4. Controls cable correctly installed and terminated
5. Control cable shield correctly earthed at one end only.
6. Check cooling fan connection and conform that correct voltage tap is selected on the auxiliary transformer.

#### Pump-Set:

Sr. No.	Parameters to be checked
<b>A</b>	<b>Motor Pre- Commissioning Checks</b>
1	Motor bearing and winding temperature protection is as per approved drawing
2	Free rotation of motor rotor is checked
3	Confirmation of all check points & feedbacks of MCC & DCS as per approved drawing
4	Direction of Rotation of motor is as per approved documents
5	All instruments calibration before installation checking and set points setting as per Approved documents.
6	Motor IR Value Checking.
7	Motor earthing connection
8	Motor no load trial run and checking of all parameters as per approved data sheets and drawings
9	Motor operating parameters: I. Voltage: II. Current: III. Rpm: IV. KW:
<b>B</b>	<b>Pump pre-commissioning checks</b>

1	Coupling pins should be tightened properly after motor no lead test.
2	Coupling guard in place
3	Discharge valve opening and closing checking as per approved logic and operation philosophy
4	Pump discharge valve is 100% closed / 10 % open before starting the pump as per logic and operation philosophy
5	Gland Packing is in place
6	All discharge pipe line nut bolts are tightened properly.
7	Pump operating parameters (Pump performance test): I. Discharge Pressure (Kg/cm <sup>2</sup> ): II. Rpm: III. Duration of Trial run: III. Discharge of Pump (Cum/hr) : IV. Efficiency of pump

### Energy audit

**Name of Work: Energy Audit and Performance evaluation of Various Water Supply Pumping Stations including 200KVA and above.**

#### **3) PREAMBLE :**

GWSSB is a Government of Gujarat Undertaking working in the field of water supply of drinking water supply all over the Gujarat State, mainly in urban as well as rural areas and industrial costumes also. The aim is to carry out scientific study of our works to know the health of our system and want to improve health of our water works system by all means. Agency has to carry out Energy Audit and performance evaluation of system under the scope of this project having 200KVA and above load and by that way our intent to minimize losses of power, energy & water. The aim we want to increase efficiency in terms of energy, quantity and quality of water.

**Energy Audit of pumping machineries under the scope of this tender having load 200 KVA and above must be Carried Out over a period of three years** i.e. completion of 36 months, 72 months and 108 months after commissioning of Scheme and this will be in the scope of the contractor. Agency has to complete energy audit within two months after stipulated time limit i.e. in 37<sup>th</sup> & 38<sup>th</sup> months; 73<sup>rd</sup> & 74<sup>th</sup> months; 109<sup>th</sup> & 110<sup>th</sup> months. **If Energy audit will not be carried out then penalty of Rs. 5 Lacs (Five Lacs) per pumping station will be imposed.**

**If agency doesn't complete energy audit within the time period mentioned above then it is the right of GWSSB to directly give work to any Energy Auditor from empaneled list of GEDA or any agency who had done energy audit work in GWSSB and actual expenditure made for same and penalty amount will be deducted from the bill of agency.**

**Contractor has to carry out necessary corrective / remedial action within three months from the receipt of report of energy auditor for improving water works system otherwise deduction at the double rate proposed by auditor / as decided by engineer in charge will be recovered from the bill of contractor.**

#### **4) OBJECTIVES OF GWSSB:**

The basic objective of the proposed Energy Audit and Remedial Measures is to carry out the process of detailed energy audit, designing of remedial measures for optimum energy consumption, realistic assessment of investment required to achieve the optimum energy efficiency and related improvemental interventions in the service standards pertaining to all the installations all over Gujarat and finally, execution of the required improvements most efficiently and cost-effectively. The specific objectives of the exercise are:

- 1) Inventorying all energy intensive infrastructure and facilities and establishing the baseline of prevailing energy consumption (taking into account cyclic and seasonality on quarterly basis)
- (ii) Quantifying prevailing service levels provided by existing infrastructure stock
- (iii) Identifying Energy Efficiency Measures (EEMs) that can be implemented, taking the entire system into account, rather than stand-alone individual equipment;
- (iv) Quantifying cost benefits and commensurate investments required under both preceding and subsequent to the EEMs;
- (v) Developing a scenario where current service levels are maintained and another in which benchmark service levels are achieved;
- (vi) Evolving an optimal scenario of investments, efficiency gains and commensurate service levels that will be achieved;
- (vii) Preparing a well-structured project which can be implemented successfully and, when implemented, creates both cost and efficiency gains for GWSSB and, more importantly, leads to perceptible improvement in the levels of service for consumers;
- (viii) Implementing the project with an aim to achieve energy efficiency in a time-bound manner.

**5) ELIGIBILITY Criteria for Energy Auditor :**

**6) Contractor has to deploy any one of the energy auditor who fulfills the following criteria:-**

- 1. Energy Auditors duly authorized and empaneled by GEDA and the auditor must possess and need to submit the valid certificate issued by Chief Electrical Inspector, Gujarat State, Gujarat.**
- 2. Energy Auditors must have minimum 01 years’ experience within last 05 years in the field of energy audit work.**

Note:- Agency shall give energy audit work to energy auditor in concern with executive Engineer, P.H. Mech Division, Surat. All the required documents for approval will be submitted before one month of energy audit to be carried out.

**7) SCOPE OF WORK :**

**(i) FACILITY INVENTORY BASELINE:**

A statement of facilities and infrastructure, especially number and rating of electrical equipment’s are as per this tender document having pumping station load 200KVA and above, however the selected agency is expected to carry out extensive field level inspection to verify the same and inventoried the entire infrastructure, including single-line diagrams, flow-diagrams, etc., so as to completely map the system of installations.

**(ii) BASELINE ENERGY CONSUMPTION:**

For the entire sets of facilities, the prevailing energy consumption should be measured. Energy consumption and related parameters should be verified through field measurements, energy meter records and energy bills. Seasonal variations should be assessed on the basis of norms and past historical trends, preferably over the past three years, one year being the minimum period acceptable. Base line energy consumption will be decided in terms of Unit consumed per Kilo liters of water pumped per meter of head on pump set.

**(iii) IDENTIFICATION OF EEMs:**

EEMs need to be identified not just at the energy consuming device/equipment level, but at the level of the entire system. For instance, at a pumping station, EEMs should not just be for the motor-pump set, but the entire pumping system within pump house as related to energy consumption, capacity utilization of machineries, leakages and pressure loss in valves, piping’s within pump house

should be examined to assess the effectiveness and optimum utilization by avoiding losses. The balancing flow-rates through the consecutive pumping stations are to be examined for un-interrupted system operation. Extent of savings should be quantified and an indication should be given as to whether the prevailing service levels should be maintained or enhanced to meet the benchmark service levels.

**(iv) INVESTMENT PLANNING SCENARIOS:**

Extent of investment required for implementing EEMs while maintaining current service levels should be estimated. Investment requirement should be assessed on the basis of accepted schedule of rates/realistic price levels in the market for standard products and services. Proprietary items should be avoided. Further investment required to achieve benchmark service levels should also be estimated. A pragmatic approach should be adopted, in consultation with GWSSB to estimate the amount of investment required. If the entire infrastructure needs to be replaced or rehabilitated, the same may not be considered. However, if there are some improvements to be done, **by investing with minimum payback period** those should be considered. For example, putting in place a missing light, or relocating the pump to help reducing head loss with the ultimate object of reducing energy consumption, may be considered. Again, as an example, replacement of the entire piping network within pump house may be considered if the entire piping network is corroded.

**(v) DEVELOPING OPTIMAL SCENARIO:**

In many cases, the investments may far outweigh the savings to be achieved through energy efficiency measures, although the positive outcome may be seen in terms of improved quality of service. But the consultants shall need to devise, in consultation with GWSSB an optimal scenario that considers a combination of EEMs, commensurate investment and acceptable service delivery standards.

**8) Reporting:**

Agency has to carry out the work as per details technical specification by using NABL accredited testing equipment, meters, instrument, flow meter etc. agency has to produce NABL accreditation certificate at the time of testing and copy of the same shall be submitted to department.

- The agency has to review and analyze all the operating records like logbook of pumping stations and energy bills for past 12 months.
- After completing field work the agency has to discuss with the concerned GWSSB officer, with primary audit report.
- Complete evaluation of component-wise system study as per tender description and suggestive measures with savings potential and payback period is required to be submitted as a result of this study in the form of elaborative report and presentation thereof is required to be made to the authority of GWSSB as and when required.
- The report and presentation shall be prepared for Specific Energy consumption in terms of Rupees per Meter cube of water supplied per meter of head encountered for arriving for comparing all the pumping stations on same platform at par. Moreover energy consumed per meter cube of water delivered as per directive of departmental instruction will have to be submitted.
- Suggestions for operation philosophy for cascaded pumping network are essential.
- Based on the study of audit, options of energy savings are to be proposed with investment involved based on realistic market with payback period. These are to be categorized in stages i.e. Primary measures without any investment, Secondary with minimum investment and



minimum payback period in steps of 3 – 6 – 12 months of payback period and in the last Roll out phase with long term planning.

- To derive the best economic performance zone of existing facility in terms of MLD.
- The performance indicators with bench marking performance for existing facility are to be derived.
- **After discussion and consulting with GWSSB Officer, the agency has to finalize report and same shall be submitted to the concerned office of Chief Electrical Inspector of Gujarat for the matter concern to Chief Electrical Inspector.**
- **After submitting audit report, it is the responsibility of agency to receive “Audit Report Acceptance Certificate” from Chief Electrical Inspector and the same comprehensive report shall be submitted to GWSSB Office covering all the items of work carried out.**
- **Contractor has to carry out the remedial action as suggested by energy auditor and has to submit certificate for same duly stamped/signed by energy auditor after completion of corrective / remedial actions within 3 months. For not carrying out corrective measures penalty at the double the estimated rate proposed by energy auditor / as decided by engineer in charge will be recovered from the bill of the contractor and decision of concern Executive Engineer, P H Mechanical Division will be final and binding to the contractor in the matter.**

#### 9) **General Terms of Work:**

The Agency will have to arrange on their own for lodging. Boarding and transport facilities for himself and his staff for the audit work during the assignment period. GWSSB shall not make any payment as a reimbursement.

The Agency shall at his expense comply with all the Labour and Industrial Laws and such other acts and statutory as may be applicable in respect of his employees and deployed by him in connection with the subject audit works.

The Agency and his team working in, the GWSSB premises shall have to maintain and observe the general safety rules and security requirements. In an event of accident in which Agency and his employees are involved, during the execution of the survey/audit work, GWSSB will not be liable and held responsible in any manner whatsoever. All the standard safety rules and regulations applicable to GWSSB will have to be observed by the Agency staff during the audit work.

#### 10) **DOCUMENTS OF REPORTING:**

Following documents of reporting need to be submitted invariably:

- (A) Comprehensive energy audit report & performance evaluation report should be incorporated & same should be submitted Chief Electrical Inspector.
- (B) Audit Report Acceptance certificate from the CEI should be incorporated with final report.

#### 11) **MACHINERIES AND EQUIPMENTS:**

(ACTUAL SCOPE OF AUDIT FOR ALL INDIVIDUAL HEAD WORKS AND EACH

ITEMS UNDER HEAD WORKS – HAVING CONTRACT DEMAND 200KVA AND ABOVE)

scope of work for pumping machineries, Prime mover, Transformer, Panel, Valves, Cables, Capacitors, MVDB panel, APFCR panel, HT breakers, HT VCB, size and type of piping's with linings or without linings etc. all the required details, in terms of detail ratings and specifications.

**DETAILED TECHNICAL SPECIFICATION AND SCOPE OF WORK FOR EACH ITEM UNDER STUDY****Item No: (1) Pump Study**

Efficiency of pump set should be derived by simultaneous measurements of flow, head and power.

Operating characteristic curves of pumps should be prepared by measurements of all above parameters at various flow conditions.

Flow measurements should be made by flow meter. For the purpose of flow measurement near pump set on common header. Head measurements should be made by digital pressure gauge and power measurements should be made by power analyzer. However, measurements of head below ground may be made by suitable level measuring devices. Every data logging of flow, head and power should be made for minimum period of one hour.

Recommendations should be made to improve the overall efficiency of pumping system. Calculation of saving, investment and simple payback period should be furnished for each energy saving scheme. More over the specific energy consumption – SEC - statement for operating condition will have to be prepared and submitted in terms of Rupees per cubic meter of water delivered per meter of head encountered on pump set. And these SEC should be compared with base line norms and further energy savings / energy efficiency report is to be prepared based on SEC.

**Item No: (2) Motor Study**

More over prime mover, i.e. Electric motor performance is to be investigated in terms of proper rating – safe margin for operating at best efficiency, derivation of no load loss for deriving effectiveness of prime mover in terms of energy consumption.

**Item No: (3) Parallel pump study:**

Total flow delivered by pumps running in parallel and head & power of individual pumps while running in parallel should be measured. Every minute data logging of flow and power should be made for minimum period of 10 minutes.

Suitability of individual pumps to be run in parallel should be evaluated based on critical evaluation of pump characteristic curves and system characteristic curves. Operating efficiency of individual pumps under parallel operation should be worked out and recommendation should be made to ensure maximum efficiency under operating condition. And SEC comparison for parallel pump operating is to be submitted.

**Item No: (4) Demand Profile:**

Study of electrical services to construct Demand profile by measurements & analysis of daily load variations at mains of services & measurements of operating parameters for individual motors.

Analysis of electricity bills by calculation of ADU, TOU, NIGHT UNITS, AVERAGE PREPARED FOR 24 HOURS, MONTHWISE AND CALCULATION OF LOAD FACTORS AND METHOD TO REDUCE MAXIMUM DEMAND FOR OPTIMUM BILL so that variation and problem of power quality can be addressed.

**Item No: (5) Transformer:**

Performance evaluation through simultaneous measurement of major electrical parameters on H.T. AND L.T. side and rationalization of transformer, if needed.

**Item No: (6) Power Factor and Capacitor, APFC Panel:**

Measurement of power factor at various points of PCC , MCC, Load center etc. and analysis of the same for optimizing losses and to improve power factor by required capacitor for maximum benefits in tariff bill by means of suggesting fine tuning of capacitor operation.

**Item No: (7) Electrical Distribution Network along with all panels**

All the electrical accessories in Electrical distribution network of each service should be checked for their proper functioning and ratings such as Transformer, capacitors, etc. all. Technical analysis regarding proper location of malfunctioning overheating sparking and facilitate quick maintenance.

Checking the condition of protection system in electrical panels and inspection of panels for loose contacts, arcing chattering etc.

Recommendations should be made for ensuring the proper functioning of all installed equipment's including Transformer and need for additional control device based on technical analysis.

System unbalance with respect to voltage and current shall be checked for motors and cable termination for loose contacts and heating.

Review of existing meters for adequate monitoring requirements.

**Item No: (8) Illumination study:**

Illumination study for lighting load of electrical service for pumping station by measurements of lighting load profile & lux levels and study of switching system etc.

Electrical campaigns of half an hour to measure and log operating parameters viz. V, A, KW, PF etc. at each main lighting PDB.

To check the possibility to reduce supply voltage.

To avoid idle running.

To check lighting efficiency.

Survey for most economical & adoptable light control devices viz. High efficiency lamps/tube lights, timers, Occupancy sensors, Dimmers, Optical reflectors. Photocell control light, electrical Ballast, Translucent sheets etc.

Recommendation should be made optimizing the energy consumption in lighting system and improving the reliability of electrical system by suitable measures along with calculation of savings, investment and simple payback period.

**Item No: (9) Harmonic Study:**

Study of harmonic at HT power incomer point by measurement of THD in voltage & Current as also individual measurement of harmonics.

**Item No: (10) Valves, DPCV :**

The study/ checking the working condition of all type of existing valves & DPCV. Observations regarding pressure drops across the devices if any.

**Item No: (11) Auxiliary load :**

Study / measurements the auxiliary load like crane, hoist, air conditioner, blowers dewatering pumps etc. and identify the energy losses and suggest the remedial measure and quantum of saving if any.

**Performance evaluation:**

The performance evaluation is to be carried out not as a separate job but it is automatically included in the relevant item. And on the basis of all above calibration, measurement, calculation etc., overall Performance evaluation of existing water supply may be done. Recommendations should be done about the scope of improvement. Suggestions should be made, both economical and practical, which can be implemented by reasonable and economical method.

**TEST FOR VALVES**

**1. Butterfly valves:**

- a) Seat leakage test at rated pressure.
- b) Valve operation.
- c) Opening and closing test.

**2. Sluice valves:**

- a) Seat leakage test at rated pressure
- b) Valve operation with and without actuator

### **3. Non Return valves / DPCV valves:**

- a) Seat leakage test at rated pressure

### **4. Expansion Bellows**

- a) Leakage tests

### **PIPE AND PIPE FITTINGS**

Testing of pipes and fitting shall be carried out in accordance with relevant Indian Standard and internationally approved standard. Pipes shall be hydrostatically tested at rated pressure. No any leakage shall be observed during hydro test.

### **E.O.T. CRANE**

The cranes shall be completely assembled and shall be subjected to the tests as specified in IS 807/IS 3177 or relevant internationally approved standard.

### **FLOW METER & INSTRUMENTATION SYSTEM**

The contractor have to provide calibration certificate for Flow meter, transmitters, gauges and all other instrumentation items from a recognized NABL laboratory

### **12. FORCE MAJEURE:**

In this Clause, "Force Majeure" means an event or circumstance, which materially and adversely affects the ability of the affected Party to perform its obligations.

- i) Which is beyond a Party's control,
- ii) Which such Party could not reasonably have provided against before entering into the O & M part of Contract;
- iii) Which, having arisen, such Party could not reasonably have avoided or overcome, and
- iv) Which is not attributable to the other Party, Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:
- v) War, hostilities (whether war be declared or not), invasion, act of foreign enemies)
- vi) Rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war,
- vii) Riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel and other employees of the Contractor;
- Viii) As result of war, explosive materials, harmful radiation or contamination by radioactivity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
- ix) Natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity. Heavy rainfall, cyclone, strike and lockout.

#### **12.1. Notice of Force Majeure:**

12.1.1. If a Party is or will be prevented from performing any of its obligations under these Conditions by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 7 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

12.1.2. The Party shall, having given notice, be excused performance of such obligations for so long as such Force Majeure prevents it from performing them.

12.1.3. Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

**12.2. Duty to Minimize Delay:**

12.2.1. Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure.

12.2.2. A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

12.2.3. Notwithstanding anything else herein contained the Employer may terminate the O & Part of Contract if the Force Majeure event continues for more than a period of 90 days.

**13. TERMINATION:**

Termination shall mean the termination of the O&M part of Contract by the Employer or the Contractor in accordance with Clause 13.1 or 13.2 respectively.

**13.1. Termination by Employer:**

The Employer may terminate the O & M part of Contract by notice on:

- i) The dissolution or insolvency of the Contractor, pursuant to an order of a court or the bankruptcy of the Contractor; or;
- ii) If 45 days having passed since the Contractor is in material breach of his obligations under these Conditions, or
- iii) If the Contractor ceases to carry on its business; or
- iv) Abandonment;
- v) The subsisting Force Majeure event as provided in Clause 12.2.3 above.

**13.2. Payments upon Termination:**

13.2.1. Upon termination or as soon as practicable thereafter an account shall be taken of the net amount owing from the Employer to the Contractor or from the Contractor to the Employer (as the case may be). The Employer shall forthwith pay to the Contractor (if the balance is due to the Contractor) all moneys due to the Contractor. If the account shows a balance due to the Employer from the Contractor, the Contractor shall forthwith pay any such balance to the Employer.

13.2.2. As part of the calculation made pursuant to clause 13.1 of the amounts due to the Contractor on Termination, the following amount shall be taken into account.

13.2.2.1. The portion of the O & M Price outstanding and payable by the Employer for the period prior to the Termination;

13.2.2.2. Any Delay Damages or indemnities for which the Contractor would be liable under these conditions up to the date of Termination;

13.2.2.3. Any other amounts due to the Employer under these Conditions by the Employer including return of any amount of the O & M Price paid in advance by the Employer to the Contractor under Clause [10].

13.3. In case of a Termination by the Employer in accordance with Clause 13.1 the Employer may recover other than the amounts due to him under Clause 13.2.2.2, any costs incurred by him in finding any replacement contractor

**13.4. Successor to the Contractor upon Termination:**

13.4.1. The Contractor shall use all endeavors to facilitate the appointment and commencement of duties of any person to be appointed by the Employer to operate and maintain the facilities (the "Successor Contractor") so as not to disrupt the normal Operation & Maintenance of the facilities and shall provide full access to the Facilities and to all relevant information, data and records relating thereto by the Successor Contractor and its representatives and accede to all reasonable requests made by such persons in connection with preparing for taking over the Operation & Maintenance of the Facilities;

13.4.2. Promptly after Termination, the Contractor, shall deliver to (and shall, with effect from Termination, hold on trust for and to the order of) the Employer or (if so required by the Employer by written notice) to the Successor Contractor all property in its possession or under its control owned by the Employer or leased or licensed to the Employer;

13.4.3. The Contractor shall transfer to the Successor Contractor, as from the date of Termination, its rights as the Contractor under all contracts entered into by it in the performance of its obligations under these Conditions or relating to the Operation & Maintenance of its obligations under these Conditions or relating to the Operation & Maintenance of the Facilities. Pending such transfer, the Contractor shall hold its rights and interests there under for the account and to the order of the Successor Contractor.

13.4.4. The Employer shall be reimbursed any cost and expenses incurred by the Employer due to default of the Contractor in discharging its obligations under this Clause [13].

13.4.5. The Contractor shall, upon Termination of the O & M part of Contract, co-operate with the Employer and the Successor Contractor and comply with all reasonable requests thereof, including the execution of documents etc.

13.4.6. Upon Termination of the O & M part of Contract on expiry of the terms of the O & M part of Contract, the Parties agree that: -

13.4.7. The Contractor will use reasonable efforts to ensure a transition to the next Contractor that will avoid operating difficulties for the Facilities.

13.4.8. For a six (6) month period after Termination or six (6) months prior to the expiration of the O & M part of Contract, the Contractor shall, at his expense, provide sufficient assistance to the Employer in the hiring and training of replacement personnel for those Facilities.

13.4.9. Notwithstanding anything else herein contained the Employer shall be entitled to terminate the O & M part of Contract, at any time at the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after issuance of the notice of termination.

13.4.10. On the expiry of the O & M Contract or Termination of the O & M Contract, all the installations, works and equipment placed under the Contractor's responsibility shall be handed over to the Employer, at no cost, in good working order, except for normal wear and tear. The Employer may perform any inspections; tests or expert appraisals he shall consider necessary with a view to checking that the property is in good working order. The Contractor shall also hand over any unutilized spares, consumables etc. Purchased for the Facilities.

13.4.11. At the end of O & M Period, the Contractor shall be entitled to receive an O & Completion Certificate within thirty (30) days

13.4.12. The delivery of such O & M Completion Certificate will relieve the Contractor from his responsibility as regard to the operation & maintenance of the Facilities and confirm that the Contractor has fulfilled all of his obligations under these Conditions.

#### **14. CONFIDENTIALITY AND INTELLECTUAL PROPERTY RIGHTS:**

##### **14.1. Confidential Information:**

Subject to Clause [14.2], the Contractor shall at all times during the O & M Period and for a period of two years after that:

14.1.1. use all efforts to keep all information regarding the terms and conditions and any data or information acquired under or pursuant to these Conditions confidential and accordingly shall not disclose the same to any other person; and

14.1.2. not use any document or other information (whether technical or commercial) obtained by them it by virtue of these Conditions or the Contract concerning the Employer's undertaking for any purpose other than performance of the obligations under these Conditions; Provided that the provisions of this Clause 14.1 shall not apply to information, which at the time of disclosure was in the public domain other than by breach at the foregoing obligations of confidentiality.

##### **14.2. Disclosure of Confidential Information:**

The Contractor shall not be entitled to disclose the terms and conditions of these Conditions and any data or information acquired by it under or pursuant to these Conditions without the prior written consent of the Employer unless such disclosure is made in good faith:

14.2.1. To any outside consultants engaged by or on behalf of the Contractor and acting in that capacity, having made them aware of the requirements of this Clause [14].

14.2.2. To the lenders, any security trustee, any bank or other financial institution and its advisers from which the Contractor is seeking or obtaining finance, having made them aware of the requirements of this Clause [14].

14.2.3. to the extent required by Applicable Law;

14.2.4. To any insurer under a policy of insurance; or

14.2.5. to the Contractor's Personnel having made them aware of the requirements of this Clause

##### **14.3. Information:**

The Contractor shall:

14.3.1. make available to the Employer without charge such materials, documents and data of any nature (except any materials documents and data protected by legal privilege or which is subject to any duty of confidentiality to any third party) acquired or brought into existence in any manner whatsoever by it as the Employer may request for the purposes of exercising its rights or carrying out its duties in respect of the Facilities or exercising its rights under or performing its obligations under these Conditions.

14.3.2. make available to the Employer other such materials and documents and data acquired or brought into existence by third parties as the Employer may request for the purposes referred to in sub-paragraph (I) above

**14.4. Third Party Intellectual Property:**

The Contractor shall:

14.4.1. Procure that any intellectual property owned or developed by third parties and utilized by the Contractor in connection with the performance of its obligations under these Conditions is licensed to the Contractor for the purposes of the Operation & Maintenance or repair of the Facilities and otherwise for the purposes of the Facility; and

14.4.2. Ensure that the Contractor shall have the right to sub-license that intellectual property to the Employer and any Successor Contractor for use in connection with the operation, maintenance and repair of the Facilities. These licenses should survive termination under these Conditions. The Contractor shall grant all such sub-licenses. If any fee is payable to the licensor in consideration of any such sub-license, the Contractor shall pay such amount during the O & M Period and each such license shall be irrevocable

14.4.3. Indemnify and hold harmless the Employer against any action, claims, and damages, losses caused to the Employer by the owner of the Intellectual Property due to the allegedly unauthorized or improper use of this intellectual property by the Contractor for the fulfilment of his obligations under these Conditions.

**14.5. Successor Contractor:**

If the licenses and sub-licenses of intellectual property granted under this Clause respectively shall survive termination of the O & M part of Contract in accordance with the terms of this Clause, the Employer shall be permitted to grant sub-licenses of intellectual property licensed to it there under to any Successor Contractor of the Facilities for use only in connection with the operation, maintenance and repair of the Facilities provided that such Successor Contractor concludes an agreement with the Contractor or, as the case may be, the licensor of any such intellectual property on terms which it may reasonably require any payment in connection with those sub-licenses. Where intellectual property has been sub-licensed to the Employer under this Clause and such sub-license is not subject to revocation by the Contractor there under, the Contractor shall take such actions as the Employer may request in connection with the grant of licenses to any Successor Contractor for the purposes set out above.

**15. ARBITRATION AND DISPUTE RESOLUTION:**

A) Settlements of Disputes:

B) Arbitration:

Refer Said clause as mentioned in General Condition of Contract.

**16. GOVERNING LAW AND JURISDICTION:**

These Conditions and the O & M part of Contract shall be governed in accordance with Indian Law. The Contractor agrees that any legal action or proceedings arising out of these Conditions may be brought in the courts or tribunals at Gandhinagar in India and irrevocably submits themselves to the jurisdiction of such courts or tribunals. The Employer may, however, in its absolute discretion commence any legal action or proceedings arising out of these Conditions in any other court, tribunal or other appropriate forum, and the Contractor hereby consents to such jurisdiction.

**MATERIAL, TOOLS AND TEST EQUIPMENTS:**

All materials required for the O&M of the project shall be new and of best quality and suitable for the purpose intended. These shall be got approved from the Engineer in charge before use.



**Electricity Supply:**

Contractor shall keep good liaison with concerned Electric Authority for power supply in case of electric power failure (break down/shut down) it shall be the responsibility of the agency to inform all the concerns as well as to contact concern authorities to restore the power supply. The contractor shall keep good liaison with concern substation for voltage Up and Down and restore the power. The vehicle kept at site by the contractor shall be provided for this purpose along with operation and maintenance staff in case of requirement as per direction of Engineer in charge or his representative without any extra claims.

**Work Order Book:**

A bound half sheet size work order book shall be provided by the contractor and handed over to the owner for maintaining at the work site. This shall be a permanent record. The contractor or his Resident engineer shall sign against instructions & orders recorded by the Engineer in-charge or his representative for the maintenance work. He may take out a copy thereof if necessary. He shall take prompt action as per the instruction/orders of the owner and necessary compliance shall be recorded against each instruction/order.

**Electrical Installations:**

All electrical work shall be carried out as per the provisions of Indian Electricity Act, Indian Electricity Rules, Instructions and requirement of authority/authorities i.e. Electrical Inspector and Gujarat Urja Vitran Nigam Limited or as mentioned in the Volume of General Condition for contract.

**Accident on the works:**

The contractor shall be fully responsible for any accident that may occur to the labour on his work on duty and report the same to the Engineer in charge and concerned Govt. labour department authority and shall pay all necessary compensation as per rules. Contractor shall also be fully responsible for any loss to any individual or public property occurred due to him or his worker's negligence under the scope of this contract.

**5. Use of site:**

The contractor shall not unreasonably encroach the site with materials and equipment. The contractor shall not use land for any private purpose.

**6. Compliance:**

The contractor shall be bound by all ordinance acts, codes, rules, regulations and orders of which in any way affects conduct of works, or workmen engaged for the work. The contractor shall be responsible for any violation of any govt. rules & regulations. It shall be the responsibility of the contractor against any claim or liability arising from violation of above.

**Accommodation for Staff:**

Contractor shall provide necessary accommodation to their labours & engineers at his own cost. However, owner shall give vacant staff quarters available at each head works, subhead works or available in the jurisdiction at the rate prescribed by the owner.

**Transportation:**

Contractor shall have to make his own arrangements for conveyance of his staff at his cost. No facility will be provided by the owner.

**17.9. Medical:**

Contractor shall provide medical facility to his staff at his cost.

**18. CONTRACTOR'S STAFF & THEIR CONDUCT ETC.:****18.1. Nationality & Address:**

All employees shall be Indian Nationality and it shall be contractor's responsibility to give temporary and permanent address: Convicted or penalized person shall not be employed.

**18.2. Salary to Employees:**

Contractor shall strictly follow labour laws and shall also ensure regular monthly salary payment to his staff. The owner will not take any liability of any of his employees appointed for operation and maintenance under this contract. Contractor shall submit monthly certificate for full payment to his staff on or before 10th of every month. Owner reserves the right to conform the contents of the certificate from contractor's employee for their last pay. The owner will not be responsible for any delayed payment/ compensation/ overtime or any other claims by employees of contractor during the tender period and even after the tender period.

**18.3. Identification Dress Code with Badge/ Identity Card:**

Contractor shall have to provide special dress code with identification badge with name plate strip to be displayed on front pocket to each staff as approved by Engineer in charge along with Identity Card etc.

**18.4. Holidays and Leave:**

Holidays and leaves shall be given to staff as per relevant labour rules. During holidays/ causal leave/earned leaves etc. and contractor shall arrange for the substitute. The owner shall not make any separate payment of overtime for these substitutes provided by the contractor during above periods.

**18.5. Conduct:**

All employees of the contractor shall follow the instruction of Engineer in charge. If any employee misbehaves with Engineer in charge he/she shall be immediately removed from duty and substitute for that shall be employed by the contractor. If contractor fails to do so, non-refundable penalty of Rs.200/- (Rupees Two hundred only) per day per such case will be levied, this amount shall be recovered from the bill or any due amount of Agency.

**18.6. Visitors:**

The plant is one of its own kinds. Visitors are expected to visit this plant. It is expected that all staff and Engineers be present and follow the directives of Engineer in charge.

## **SCHEDULE 1**

### **Operation and Maintenance Services**

**The Contractor shall be required to perform the following services under these Conditions:**

The Contractor shall be responsible for corrective maintenance of civil, hydraulic structures, mechanical, electrical, instrumentation, automation and computing equipment as well as miscellaneous equipment.

The Contractor shall be responsible for carrying out regular servicing and lubrication of rotary machines, complying with maintenance instructions as defined in the Operation and Maintenance Manual and ensuring that electromechanical equipment and motors operate correctly at all times.

The Contractor shall ensure that measurement systems are calibrated, within the valid period of certification and operate correctly at all times.

The Contractor is responsible for the maintenance of the landscaped areas inside the Employer plant fences.

The Contractor shall be responsible for maintenance of civil structures like pump houses, control room, raw water sumps, compound wall, retaining wall, etc.

The Contractor will operate and maintain in a state of continuous operational readiness all plant and systems to meet the flow requirements. It shall remain the Contractor's responsibility to ensure that plant systems are at all times able to operate to the maximum capacity of the installed duty plant.

All water conveyed by the Contractor shall be metered by the meters installed at the inlet of the raw water pumping stations at terminal ends and at the entry of sumps at all pumping stations. The meters shall be inspected and certified as to its accuracy jointly by the Employer and the Contractor.

Provided here are certain standard services that GWSSB could require. However GWSSB may wish to review this and make changes depending on the exact nature of services they require from the Contractor.

The Contractor shall be entitled to appoint a representative who shall together with Employers Representative on the last day of each month or if such day is not a working day on the following day, jointly carry out a reading of water meters and jointly certify the record of such readings.

For the duration of the O & M period, the Contractor will be responsible for the supply and control of lubricants, spare parts and consumable materials excluding electrical power, necessary for the continuous operation of the works.

The Contractor will manage the consumables and utilities services to ensure their most economic consumption and to minimize wastage.

The quantities of all the unutilized spare parts and consumable materials will be fully handed-over to the Employer at the end of the O&M period.

The store's inventory, the issuing and recording of spare parts will be the responsibility of the Contractor.

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

The Contractor will make all necessary arrangements to ensure the continuous supply of spare parts and material for the works; and the rate of advance supply of these materials shall be in such quantities and amounts as would ensure uninterrupted operation.

All the furniture and administrative office equipment etc. required shall be furnished by the Contractor. Costs of operating administrative office and supplies shall be borne by the Contractor.

The Contractor shall take out subscriptions for standard telephone lines/ wireless sets. Running cost for the telephone / wireless sets will be borne by the Contractor.

Cost of operation and maintenance and housekeeping of housing complexes including domestic water supply and drainage, roads, gardens, electrical installations, etc. will be borne by the contractor.

The Contractor will provide staff personnel for the full term of O & M as per schedule of establishment given in Annexure- I.

Contractor has to do painting to Every Civil Structures including Pump House, Valves, pipeline etc. with the same quality of paint used while construction of structures or as directed by Engineer in Charge at interval of 2<sup>nd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup> year contract period. If Contractor fails to do same, this work will be carried out by GWSSB and expenditure occurred will be deducted from contractor's Bill.

**SCHEDULE - 2****Performance Guarantees**

**The Contractor shall guarantee that:**

1. During O & M period required data entry to be done by contractor for prevailing applications, software, ERP, mobile application etc. developed by department.
2. Report shall submitted as and when required by department.

**SCHEDULE- 3****O & M Price**

The Contractor shall be paid at the quoted rates per month. The amount withheld against them from the bill of the main contract shall be released by end of each year.

## **SCHEDULE- 4**

### **REPORTS**

#### **MONTHLY REPORT**

The monthly report shall include but not be limited to:

Volume of water conveyed, to each consumers off-take point end.

All the problem areas in the facility,

O & M works carried out during the month.

Electricity consumed totally.

Monthly materials consumption statement

#### **SEMI- ANNUAL REPORT**

A semi-annual report shall include the measurement of noise level at the site boundary at plant, To be indicated by the Employer.

#### **ANNUAL REPORT**

The Contractor shall provide the Employer by March 31 of the current year (n) with an annual Report for the preceding year (n- 1). This report shall include:

\*All technical statistics related to plant operation as supplied by the operation;

\*A statement of works carried out during the preceding year n-1 in connection with the contractor's obligations under these conditions.

**NOTE:** The Employer may consider if it requires these reports or requires reports and provide for the same. This will need to be looked at in the light of reporting requirements in these Conditions. The Employer will also need to determine what information is required in these reports

**SCHEDULE- 5****Insurances****Insurance against Injury to Persons and Damage to Property;**

The Contractor shall insure against each liability for any loss, damage, death or bodily injury which may occur to any physical property (mechanical, electrical, automation work, all civil works, Storage etc. excluding pipe line) or to any person which may arise out of the Contractor's performance of his obligations under these Conditions during the O & M Period.

This insurance shall be for a limit of per occurrence of not less than the amount of Rs. 5 Lacs, with no limit on the number of occurrences.

**Insurance for Contractor's Personnel;**

The Contractor shall effect and maintain insurance against liability for arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.

The Employer shall also be indemnified under the policy of insurance, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Employer or of the Employer's Personnel.

Contractor shall have to take insurance for Electrical, Mechanical and instrumentation equipment under this packages and whereas the insurance of other component like sump, pump house, pipeline will be optional. This General Insurance for the work will be in the name of GWSSB. The depreciated value is to be considered for the purpose of insurance for respective year. The insurance for skilled, semi- skilled and unskilled labour is compulsory. The same should be taken by agency as per labour act laws in force.



## **SECTION B**

### **SPECIAL TERMS AND CONDITIONS**

## SECTION: SPECIAL TERMS AND CONDITIONS OF CONTRACT

### FOR OPERATION & MAINTENANCE

#### **PART- 1: Technical Conditions**

- 1) The operation and maintenance of all the works included in this tender as per details given should be carried out by contractor at his own cost.
- 2) All the storage structures in this contract should be kept in fill-up condition as per requirement During the full day period. (24 Hours)
- 3) A weekly report for supply of water should be submitted to the office of the engineer in charge. A certificate of the concern in-charge Engineer for daily receipt of required Quantity of water at each head works / off take points at the end of week should be received and submitted with weekly report.
- 4) Electric bill for running the plant at head works site will be paid by department. Bill should be submitted to office for payment as soon as received from concern DISCOM AUTHORITY. If charges for delay in payment, levied on account of late payment, due to late submission of bill by contractor, then the same will have to be paid by contractor.
- 5) All the required electrical goods / fixtures like bulb, tube light, chock, starter, fuse, wire etc. required for operation and maintenance shall be procured by contractor at his own cost and lighting arrangement should be kept in good condition.
- 6) At the time of breakage in pipeline or valves for repairing purpose contractor shall have to make arrangement at his risk and cost for labours, fitter, required all materials like rubber packing, nut, bolts, gland, all required parts of valves in Plant & transmission main including transportation arrangement like pickup van, Jeep, welding machine, welding rods, Tractor etc. should be provided by contractor at his own cost. All consumable material should be of standard quality as approved by Engineer-in-charge of work.
- 7) All type of rising main and gravity main including chambers should be maintained and repaired by contractor at his own cost.
- 8) At the time of repairing or replacement of Pipes and valves required for repairing or replacement after verification by concerned engineer or his representative, fitting work of pipe or valves shall be carried out by contractor at his own cost including, labour, excavation cutting, fitting, welding, testing, refilling etc. complete. During the repairing work scrap materials received should be returned to concern departmental store at the cost of contractor after duly entering in register. Repairing work shall be started within One hour after breakage or leakage come into notice, care should be taken to prevent wastage of water otherwise recovery at the Rs.16/ per m<sup>3</sup> of cost of water will be made from contractor. Due to leakage and repairing work, contractor will be responsible for loss of any property or crop of private land owner and compensation will have to be paid by contractor, if contractor fails to do so and complain is received by department then department will make the payment to private owners and recovery will be made from contractors bill.
- 9) Any type of valve or part of the valve not working properly after repairing and requires replacement, as per opinion of Engineer-in-charge or his representative, then required valve will supplied to the contractor free of cost from departmental store if available. Replacement shall be done by the contractor and old valve should be shifted to department store and entered in concerned register including cost of loading, unloading, Carting stacking etc. complete.

- 10) Contractor shall have to do leak detection survey along the pipeline regularly such as Pipes joint leakage, pipe bursting etc. and leakage observations and repairing work record should be maintained section wise by contractor. All the valves fixed on it such as sluice valves scour valves, air valves, air cushion valves, butterfly valves, zero velocity valves, flow meters, water meters and valve chambers should be maintained by contractor. Quantity of water as pumped from head works same quantity should reach to distribution point. For any unauthorized connection taken or given by anybody the Contractor will be responsible for it. Prevention and removal of unauthorized connection will be carried out by contractor and intimated to department. For unauthorized consumption of water or misuse of water recovery at the Rs.100 per m<sup>3</sup> of cost of water will be made from contractor. All type of valves including air valve and scour valve should be inspected regularly by contractor, a programed for inspection for air valves & scour valve should be prepared by contractor and strictly observed it. Special care should be taken by contractor for air valves.
- 11) Roofing of the sump should be checked regularly so that water should not be polluted. Every care should be taken to prevent falling of birds and insects. All water storage structures like, sump located at head works sites shall be regularly cleaned and mud should be removed at every three months by contractor and record for it should be maintained. Planning for this work should be so done that it should not affect the supply of water.
- 12) During the period of contract a person other than responsible representative of contractor or persons employed by him should not enter into the premises of the head works site. Every care should be taken by contractor to prevent such type of unauthorized entry or interruption in the premises or surrounding the property of GWSSB.
- 13) Persons required for security of materials in the stores at sub head works sites will be deployed by contractor. No additional payment shall be made for this.
- 14) At any time during the visit of Engineer in charge or his representative if it is observed that the operation and maintenance is not carried out properly, water supply is stopped and contractor is responsible for it recovery will be made at double rate of contract for that particular day or contract will be terminated.
- 15) Operation and maintenance of meters installed at head works sites should be carried out by contractor and entry shall be made in the register at every one hours. If any meter is not working properly it should be properly repaired by contractor from any technician of such type of repairing work.
- 16) After issue of work order contractor or his responsible representative should joint visit the site of every work accompany with officer concern. A list and position of works and all valves with dia and nos. a report will be prepared and should be jointly signed by contractor and department. A copy of same report shall be issued to contractor. At the time of completion of contract period same type of report should be prepared and possession of all the works and components should be handed over to department. If repairing & maintenance work is not done

properly by contractor, the cost of repairing work will be recovered by department from contractor.

- 17) All the works executed under this project & covers in the scope of this tender will be deemed to be handed over to contractor from the date of successful commissioning of facility. Proper operation and maintenance of the same works/components shall be carried out by contractor and at the time of completion of contract period or termination of contract, contractor should have to give possession of all the work and components to the department in good working condition. Before handing over the possession to the department account of contract will not be finalized and deposit will not be refunded to contractor. For all type of legal activities and expenditure for the same, contractor will be fully responsible.
- 18) During the period of contract for any type of dispute, decision of EIC, will be final and binding to both the parties.
- 19) Prescribed registers as maintained by agency during the period of operation and maintenance period shall be submitted to the department. All the materials received during repairing and replacement shall be deposited in departmental store at the cost of contractor. All repairing work should be carried by contractor at his own cost during the period of entire contract. Contractor should be fully responsible for injury to any public person or manpower engaged by contractor for work and contractor shall be fully responsible for compensation for it.
- 20) If water storage or supply could not be continued due to any reasons it should be informed to department. As per condition of contract required steps should be taken immediately by contractor to solve the problem and start the water supply. After starting the water supply department shall be informed accordingly.
- 21) Proper care is to be taken by contractor to keep neat and clean. Every component of headwork sites and maintenance of all the components shall be done by contractor.
- 22) Servicing of all the valves cleaning of all civil works and maintenance shall be carried out regularly by contractor and entered into the concerned registers.
- 23) History sheet shall be maintained by contractor for replacement of material in pipeline, or valves, spare parts of Electro-mechanical equipment.
- 24) Leakage repairing shall be carried out in proper way and technically workmen like manner.  
Repairing by rubber tubes or by fixing wooden Peg shall not be allowed.  
Register of Leakage repairing shall be maintained with reasons properly.
- 25) All the works included in the scope of work shall be oil painted once during contract period at the cost of contractor.
- 26) All the gardens and plants situated at head works sites shall be supplied water and maintained properly by contractor. No any extra payment will be made on account of this work.

- 27) Telephone/wireless message shall be received and entered in the register and message should be conveyed to concern party head works for action. If any interruption in the system of any important message should convey immediately to concerned Engineer in charge.
- 28) All the information regarding labours, staff, vehicles etc. is incorporated in this tender for preparation of estimate. As per list staff having proper qualification/labours and vehicle shall be deployed by contractor. If due to negligence of contractor for providing sufficient staff and vehicles water is not supplied properly remaining labours/staff and vehicles will be deployed by department at the risk and cost of contractor and recovery for such expenditure will be made from the bill of contractor.
- 29) The contractor has to make all the arrangements required for the proper operation, maintenance and safety of all the works included in this contract at his own cost during the whole contract period.
- 30) Continuous patrolling with vehicle and Driver throughout the alignment should be carried out by the contractor.
- 31) Separate log book for arrival & releasing of water from each storage structure will be maintained day to day by the contractor and shall be submitted to department at the end of month.
- 32) Repairing of all electro-mechanical and civil work shall be carried out at site including valve  
 Chamber located at site without any extra cost.  
 The breakdown or deterioration in performance, under normal operating conditions, of any  
 Items, of Plant and equipment and component parts thereof is kept to a minimum.
  - b) The Contractor shall adhere to the manufacturer's recommendations with respect to equipment maintenance, the type and grades of lubricants to be used. Frequency of lubrication, adjustments to be made regularly and recommended spares to be held in store.
- 33) Except in unavoidable circumstances all the storage structures should be filled with water as per requirement & availability of electricity & pressure during the period of day or night. If electric supply is not available for 15 minute, contractor shall contact to concern DISCOM AUTHORITY to start the electric supply & intimate to Department with reasons for non- availability of electric supply.
- 34) List of all the assets, pipeline apparatus plants & machineries, all types of valves, chambers, pump houses, security cabin, office building, hydraulic civil structure, spare parts, store malts, wireless sets, telephone, air-conditioner, electric panels etc. will be handed over to contractor for Maintenance & Repair purpose & same has to return to Department with good conditions as soon as the project is taken over by department for further M&R period to any other party.
- 35) During the period of contract if water is not supplied satisfactorily at head works/ off take point at any day & reasons given by contractor is not suitable in the opinion

of officer of department recovery at the double rate of contract rate will be made for such a day from the bill of contract.

- 36) Any damage / breakage found from mischievous element found in the system, the contractor should lodge police case immediately under intimation to concern Engineer-in- charge.
- 37) The total wastage of water due to leakage & all other reason should not be more than 2%,if it is more than prescribed quantity, recovery at the rate of Rs. 10/- per 1000 letter (Or as revised from time to time) shall be made from the running bill of contractor. Quantity wasted will be decided by Engineer-in-charge will be final.
- 38) The bidder should see the continuity of pumping for 24 hours for routine checking of pumping machinery as given in the tender. Contractor should carry out this work without disturbing the continuity of pumping but for major repairing work the restoration period will be as mentioned in this document
- 40) Material consumption register in prescribed format should be maintained by the contractor. During the visit of Engineer- in- charge if required it should be produced.
- 41) Vehicles will have to be maintained and to be kept ready for whole contract period at Headwork's site by contractor and to be used for day to day routine checking. Any fault time for providing such facilities for betterment of operation period will be sublet to reduced payment by department and all logbooks to be maintained by contractor for such movement of vehicle.
- 42) "The Contractor" shall operate the complete Raw Water Pumping Stations on a continuous  
24 hours basis to supply all the flow conveyed through pipeline up to desired point of supply with assured quantity.
- 43) "The Contractor" shall operate and utilize all the control and monitoring systems, provided and if found to be necessary and if approved by the engineer, shall make adjustments within the operating range of the control system and equipment so that the plant operation matches the requirement.
- 44) "GWSSB" shall directly pay all the power bill to DISCOM AUTHORITY but the Contractor will be required to furnish Electricity Consumption in the Schedules provided.
  - a) Telephone bills will have to be paid by the contractor. No reimbursement shall be made.
  - b) Electric /Battery operated flow meter has to be maintained by Contractor in case failure of batteries, same has to be replaced by contractor at his own cost.
- 45) All miscellaneous items, for example, vehicles, tools, testing equipment, cleaning or green keeping equipment, security and safety equipment, electrical fixtures, etc. shall be provided by the Contractor at his expense.

- 46) a) The Contractor shall provide experienced managerial, technical, supervisory, administrative and non-technical personnel and labour necessary to operate and maintain the Raw Water Pumping Stations including sumps and pipelines properly, safely and efficiently on a continuous 24 hours' basis for the term of the O & M Contract Period
- b) The qualification and capability of the Contractor's personnel shall be appropriate for the task they are assigned to perform. The staff provided shall be fully trained in the operation of the Raw Water Pumping Station before being given responsibility for operating any part of the plant. If in the opinion of the Engineer, any member of the Contractors staff is considered to be insufficiently skilled or otherwise inappropriate for the task he is required to perform, he shall be replaced by the Contractor with a person with the appropriate skills and experience for the task, to the approval of the Engineer. The Contractor will be required to submit to the Employer the Schedule of 'Manpower' and 'Organization Chart'
- c) The Curriculum Vitae (CV) /Resumes of the Contractors personnel shall be submitted to the Engineer in Charge for acceptance at least 7 days before the anticipated commencement of the O & M, period. Any change of personnel shall be promptly informed to the Engineer within a day's time. Normal time duty hours for the contractors' operation & maintenance personnel may be modified as necessary and agreed by the Engineer. Rotating shift schedule shall be established by the Contractor and agreed by the Engineer which will ensure that an adequate number of the Contractor's staff, fluent in Hindi as well as Gujarati is on duty at Plants 24 hours per day, 7 days per Week, Including all holidays
- d) Contractor will submit one photograph of each personnel, with his resume, permanent address, etc. and department will issue identity cards to each personnel. Any replacement in Employment by Contractor shall have to be reported in 24 hours to Manager/ Engineer-in-charge concerned. Contractor has to put the name person on duty shift wise on display board. Display board shall be kept in each pumping station
- 47) a) The Contractor shall be responsible for safety on Site during the O & M of the Works by the Contractor.
- b) The Contractor's duties with respect to Safety shall include the following;
- i) Utilize safety awareness procedures in every element of operation and maintenance. ii) Give emphasis to site including:
- \* Safe working and safety procedures as per rules and regulations of Governments regarding use of protective clothing, gloves, boots and helmet etc.
  - \* Cleanliness of the plants as a whole.

- \* Awareness of hazardous conditions and accident reporting and necessary compliance.
- \* Safe practice in Pumping Stations.
- \* Safe practice in Treatment Plants.

48) a) The maintenance service provided by the Contractor for the period specified in the

49) The Contractor shall be responsible for:

- a) The maintenance of electrical, ventilation and air conditioning, plumbing and drainage installations.
- b) General Building Maintenance and housekeeping.
- c) Full maintenance of the site services, cabling and earthing systems, together with the site road lighting system. Painting of all Civil, Mechanical, Electrical structures which are open to sky at 2nd, 5th, 8th, 10th year.
- d) Site maintenance including the upkeep of landscaped areas. e) Sumps & pipelines maintenance & repairs.

The building services and house-keeping maintenance shall be undertaken on all building  
And services  
installation.

The Contractor shall ensure that all unwanted or redundant items are removed from the building and sites. Depending on their condition such items shall either be placed into storage or disposed of site.

50) A) the store's inventory, the issuing and recording of spare parts will be the responsibility Of the Contractor.

- b) The Contractor is also responsible for providing spare parts and material required for the operation and maintenance during the operation period, including the cost of storing and safeguarding.
- c) The Contractor will make all necessary arrangements to ensure the continuous supply of spare parts and material for the works and the rate of supply of these materials shall be in such quantities and amounts as would ensure uninterrupted operation.
- d) Spare parts shall be supplied by the Contractor and the same will be used during  
Operation and Maintenance Contract period.
- e) The contractor shall have to procure the required spares from original manufacture or authorized dealer at his cost.



- f) The required spare parts which will be available with GWSSB will be issued to the contractor from its stock and subsequently contractor shall have to replace the same without any extra cost.
- 51)
  - a) The Employer reserves the right to arrange the visits of VIP's dignitaries, public representatives and other persons of Social or Political repute, any organizations and when necessary, to the Raw Water Pumping Station. The Contractor shall offer full cooperation to the GWSSB on the occasions of such visits.
  - b) Inspection register will have to be maintained, wherein inspection officers will note their instructions duly dated signature. Successful bidder has to follow the instructions strictly.
- 52) On the date of Contract Completion or if the Contract is terminated, all the installations,
  - Works and equipment placed under the Contractor's responsibility shall be handed over
  - Tithe Employer, at no cost, in good working order. The Employer may perform any Inspections, tests or expert appraisals he shall consider necessary with a view to checking
  - That the property is in good working order and will certify to that effect to the Contractor
  - While taking over.
- 53) No accommodation/ guest house/ transportation facility will be provided by the GWSSB to Contractor.
- 54) For smooth & efficient O & M of the plant, and in case of emergency just like fire, fault, accidents, or other rescues operation, the contractor must keep at least one four-wheeler like jeep or Matador type with seating arrangement. In working condition for 24 hours of a day & 365 days of the year for the whole contract period.
- 55) While handing over the spares to the contractor, Contractor should maintain the record of spares of inventory of utilization the spares.
- 56) In the event of any dispute or difference arising, the Jurisdiction of the court shall be Gandhinagar (Gujarat) only.
- 57) It is mandatory for the contractor to operate the pumping machinery not less than limit efficiency of pump. If deviation is noted in respective energy bill for succeeding month than corrective measures shall have to be taken by the contractor immediately otherwise the difference in amount will be invoked through O & M bills of successful bidders.
- 58) All protective Relays testing, Calibration system for service and maintenance of Relay shall be carried out systematically by trained personnel authorized in Power system protection at once in a year during O & M contract Period Without any extra cost. The Contractor/Agency should be approved first prior to commence of work for such special testing of job. Proper testing equipment shall be used so to avoid the misleading of settings & call for nuisance tripping.

- 59) Contractor shall have to bear the expense for annual inspection fee for Electrical installation during the O&M contract period. No extra payment shall be given. Energy audit has been made mandatory by the Government of Gujarat; vide Gujarat Use of Electrical energy (Regulation) order, 1999. Contractor shall have to carry out energy audit per the said regulation in the first year and thereafter strictly as per prevailing regulation.
- 60) Repair of PLC based instrumentation and Automation work shall have to be carried out by System Integrator. The agency for System Integrator should be approved first prior to commence the work of such special type of job.
- 61) Contractor should provide security guard round the clock with uniform. He should also maintain register for visitors.
- 62) If any work specified in the scope of tender but not carried by the contractor, the recovery will be done at the double the market rate from the contractor.

# **SECTION C**

## **TECHNICAL SPECIFICATION**

### **AND**

## **SCOPE OF SERVICES**

## SCOPE OF SERVICES

The Scope of work / service to be done / provided by the contractor under this bid will be as under:

Operation and maintenance Scope:

- (1) The works shall include Operation & Maintenance of Sump, Approach Channel, Pump House, Pipeline, Electro-mechanical & other ancillary works etc. for 10 years. Scope of work includes operation, maintenance, repairing & replacement of spare parts of following mechanical electrical, instrumentation & civil equipment.
- (2) Operation and maintenance of following structure for the period of 120 months from the start of O&M period. All civil structures like Raw water sump, Pump House, Approach Channel etc. of the works should be maintained for their excellent serviceability and shall be painted once in 2nd, 5th, 8th, 10th, during contract period with the same type of paint originally applied at the time of construction of the structure. All the flooring and finishing of all the building shall be maintained and replacement of the same shall be done by of the flooring of same type, specification and colour. The repairs shall be carried out in such a manner that it should fully merge with the original flooring without any noticeable variation at the repaired locations.  
  
All the plumbing fixtures like taps, cocks, valves, hoses, showers, faucets, pipes shall be maintained in good working condition and replacements, if any, shall be made with the same type and style so that the repairs are not noticeable.
- (3) All the water retaining and water conveying concrete or masonry structures like all sumps, inlets of pump houses shall be maintained free from any leakages. Any cracks, if observed shall be treated with either epoxy based grout / crystalline waterproofing agents / cementations grouts or any other appropriate method suitable for the nature and location of crack, as approved by the Engineer in Charge.
- (4) All pumping main / Gravity main line of different dia and different type connected with head works should be maintained properly.
- (5) Maintenance of electrical and electrical equipment at head/ Sub head works including emergency brake down works with cost thereof.
- (6) Supply of all type of consumables material excluding material to be supplied by GWSSB as mentioned in Schedule –A of this Tender and also re-carting the un- serviceable or serviceable material to the departmental store.
- (7) All type of spare parts for Electrical / Mechanical equipment. All electrical/mechanical works including repairs shall be done under supervision of mechanical wing of GWSSB and a certificate shall be produced at the end of each month regarding satisfactory maintenance of electrical/mechanical equipment carried out during that month.
- (8) Submission of daily / weekly / monthly report to GWSSB.
- (9) Submission of running bills along with all required evidence and documents.
- (10) Two coats of oil paints / cement paint / original item paint of approved make to all metallic and wooden

Structures including over exposed piping arrangement are under scope of agency. The scope covers painting of all building's exterior with Cement paint and inside with lime/distemper point in first six months of taking over of O&M.

- (12) All necessary safety provision for the security and safety of labours, Public properties etc.as per prevailing rules and regulations shall be followed during maintenance period.
- (16) All necessary safety provision for the security and safety of labours, Public properties etc. as per prevailing rules and regulations shall be followed during maintenance period.
- (17) Maintenance of Garden/ Trees / Plantation within the premises of work site. (If Applicable)
- (18) In short, this tender includes cost of all civil, mechanical & electrical works including cost of consumables excluding electricity & irrigation charges but including routine & emergency brake down works with cost of material, labour etc.
- (19) Contractor has to depute one responsible person with mobile telephone facility at concerned Sub Division Office all the working days for attending the complaint regarding prompt repairing and leakages and quantity of water receiving at all the faced works which are under scope of the works
- (20) The details of current establishment enclosed are of indicative nature only. The agency is at liberty to provide less/more staff for smooth O&M of the scheme. The primary objective of GWSSB is to provide safe and reliable network for drinking water to villages and no compromise on this shall be made.
- (21) Scope of work of GWSSB:
  - a. Supervision of entire Maintenance of the work and scrutinizing / running account bills submitted by the agency and payment of passed bill as per the availability of funds.
  - b. Payment of Electric consumption bill to Electric Utility Company shall be made by GWSSB. However, as bills are received at site, contractor shall have to make arrangements for its submission to GWSSB within 4 days of its receipt to enable office to make payment in time. In case of delay in Submission of Bill, Penalty as imposed by DISCOM AUTHORITY will have to be borne by the contractor.
  - c. Payment to irrigation authority for usage of raw-water shall be made by GWSSB. Penalty, if any, imposed by Irrigation dept. for non-working of water meter shall be borne by Contractor.
  - d. Supply of DI / M.S. pipe free of cost in case of major break down in DI / MS pipeline. However necessary bend, tee, tapes etc. shall be prepared on site with this pipe and pipe shall be carted by contractor at this cost and for the remaining materials and condition will be as per Schedule A.

Scope of work includes operation, maintenance, repairing & replacement of spare parts of following mechanical, electrical, instrumentation & civil equipment.

- (24) The contractor would be responsible for smooth, efficient & satisfactory operation & maintenance and repairing, replacement of spares, any works related to raw water Pumping Stations & pipelines on the round clock basis for the period of 120 calendar months from the date of contract of plant shortly described as above.
- (25) The scope of work of contractor includes operation, maintenance and repair of each & every structures, all pipeline, Electro- mechanical and instrumentation and control systems constructed / installed under the said project
- (26) Each & Every structure as mentioned above like pump house, Air valve C.C. pillar, Air valve, Sluice valve, riser pipe air valve, Zero velocity valve, Butter fly valve, bypass arrangement, chamber for different type of valve should be colored by Oil Paint / Acrylic emulsion paint / black Japan as per the instruction of Engineer-in-charge at his own cost as under:
- e. Exterior paint shall be Acrylic Emulsion Paint colour (like APEX): Pump House, Channel, and Sump
  - f. Oil Paint colour: All type of Doors, Windows, Ventilation, Shutter, Pump, Motor, All valves & equipment in side pump house, Transformer yard, D.P. structure, Transformer etc.
  - g. Black Japan Colour: Air valve, Sluice valve, Riser pipe of air valve, Zero velocity valve, Butter fly valve (outdoor), bypass arrangement etc.
- (27) The scope of the contractor includes operation, maintenance & replacement of spares.
- (28) The scope of work also includes providing necessary tools and tackles for day-to-day  
O&M routine maintenance, preventive maintenance and breaking down maintenance
- (29) Also minor and major repairs to the equipment involved in the plant have to be carried out by the contractors during O&M period.
- (30) The Scope of Work also includes to repairing of Existing structures and components.
- (31) The scope also includes cleaning of sump, approach channel; removing of foreign materials like debris, sand, fish, frogs or any other dead or live animals and also cleaning of strainers of each pump quarterly so that 24 hrs. Required quantity of water is made available from the sump.
- (32) The disposal of the foreign particles like sand, dead or alive animals etc. from sump to suitable place as shown by GWSSB will be in the scope of contractor.
- (33) Repairing & replacement of damage strainer of each pump set, repairing of dewatering pump-motor sets, crane, chain pulley block etc. as well as any items to be procured for replacement will be in the scope of contractor.
- (34) The scope of works also includes the calibration of all meters e.g. pressure gauge, Ammeter, voltmeter, relay, trivector meter, Energy meters, temp scanners, flow meters etc. for measurement of accurate readings once in a year or as and when required.
- (35) All these capacitor panel must be kept in working condition to keep DISCOM AUTHORITY Power factor more than 0.95 by the contractor. If any additional capacitors irrespective of Rating required to maintain the power factor for rebate shall be procured and fitted in HT Or LT panels at his own cost. No spares for capacitor panel & LT capacitor panel in any Circumstances will be provided by GWSSB. Any penalty levied by concern DISCOM

AUTHORITY on account of poor power factor (i.e. less than 0.9) will be recovered from the Contractor from his monthly O&M bill.

- (36) Daily record about the incoming flow & outgoing flow at each & every sump of all head work site should be maintained by the Contractor as per the Performa is to be supplied by the GWSSB and will be send day to day directly to EIC.
- (37) Contractor shall have to carry out Relay testing, Scheme testing & primary injection tests once in a years' maintenance period at his own cost by specialized personnel in power system protection to ensure system operational stability & reliability for pumping station. For specialized testing of this job, contractor shall have to take the approval from GWSSB for carrying out job by specialized personnel
- (38) The scope of work also includes attending of all types of cable faults for pump motor set, street light etc.
- (39) Routine maintenance of all buildings, transmission main, installation and equipment and area lighting, gardening.
- (40) Management of the plant in administrative and financial operations connected to the plant management.
- (41) All sluice valve/B.F. Valves/Air Valves/Zero velocity valves/Air cushion valve to be kept under working condition.
- (42) Area lighting –The premises of various works are provided with mercury/sodium vapor lamps, fluorescent tubes and also ceiling fans/exhaust fans inside the various structures. Daily on/ off operation and routine cleaning of all type of electric fixtures. Replacement of lamps/ Tubes/ Fans in case of failure at contractors cost.
- (43) Roads to be kept neat and clean.
- (47) To keep watch on overflowing of sump. If such overflow take place the agency shall have to bear the damages caused to surrounding properties.
- (48) Maintaining rising and gravity transmission main. If any leakage breaking of pipe found, same shall have to be rectified within 12 hrs. All materials equipment's and labour shall have to be employed by the agency to attend such repairs.
- (49) All air valves & valve chambers shall be repainted every year and numbered with radium paint.

#### **DOCUMENTS RECORDS / LOG BOOK**

The contractor will be responsible for keeping up to date records of documents including History Card for equipment and maintaining every day log book relating to various analysis performed and to prepare and submit a daily report of Pumping Station performance. The contractor shall maintain an updated log book and details of operational parameters like pumping hours, Amperes, Flow meter reading, H.T. Voltage, Power Factor, energy meter reading, pressure and other reading required are recorded in every shift at regular interval e.g. hourly or as agreed mutually (by GWSSB).

Printing of log sheets, registers and all necessary stationery required for maintaining records of operations and maintenance has to be arranged by the contractor at his cost.

Format of log sheets, registers will be made available to the successful tenderer by GWSSB.

The Scope of work also includes attending of all HT & LT cables faults including end terminations of cables, changing of lugs or changing HT / LT cables.

#### **ADDITIONAL SCOPE OF WORK**

For additional work, if any, which is not included in the scope at present shall be executed by the contractor on authorization in writing from GWSSB.

The rate of such additional work will be worked out by the Contractor based on the cost of materials and labour and shall be furnished to GWSSB. The contractor shall be entitled for full cost of materials, direct labour and cost of operation of equipment/machinery etc. required to execute the work.

For such additional work, the contractor shall maintain time sheets of personnel engaged and equipment/machinery used for the execution of work. Only such labour and other costs based on the above records shall be applicable to the rates payable for above additional work

#### **NOTICE BOARD / DISPLAY BOARD**

The contractor shall provide a Notice Board/Display Board at appropriate locations detailing precautions to be taken by operation and maintenance personnel in work conformity with Industries and Labour Regulations and Department of Explosives.

#### **GENERAL ROUTINE MAINTENANCE**

General routine preventive maintenance schedule for various equipment shall be adopted from O&M Manual. However the general routine maintenance to be carried out by the Contractor's personnel will include but not limited to the following:

- a) If it is observed that power consumption per MLD of water pumped is increased, the contractor has to trace out the fault and rectify the same to bring to the standard Value.
- b) De-weeding and cleaning of the Transformer yard and other places.
- c) Drying and refilling of silica gel in the breather of the transformer
- d) Regular watering on the earth-pits.
- e) Check for any oil leak in the transformer and intimating and repairing of the same.
- f) Air blowing of motors, H.T & L.T. panel etc.
- g) Check for any loose connection in all electrical equipment and rectification of the same.
- h) Replacement of gland packing for the pump, sluice valves etc. whenever required.
- i) Greasing of bearing and lubricating all moving parts as per the schedule.
- j) Tightening of all loose nut-bolts and other fasteners.
- k) Cleaning of sump and strainer of each pump at regular intervals.



- l) Lubricating and test operation of the valves.
- m) General cleaning of all equipment and building.
- n) Checking and replacement of bulbs, tubes, chokes, starters, switches, control etc. thorough out plant and including street and head lights.
- o) Watering of plants and tree.

#### **PREVENTIVE MAINTENANCE CHECKS:**

The contractor shall adopt a preventive maintenance checks schedule as per original equipment manufacturer O & M schedule under intimation to the Employer. The preventive maintenance checks and their tasks frequencies will not be limited to the following:

#### **Checks to be performed daily**

- a) Vibration in the pump sets, moving assemblies etc.
- b) Tightness
- c) Check condition of oil & grease & replace if necessary
- d) Rise in temperature of bearings in motor, in moving parts and other units etc. e)

Working of gauges and other measuring devices.

- f) Observations on water quality.

#### **Checks to be performed weekly**

- i. Pipeline leakages
- ii. Tightness of all electrical connections
- iii. Tightness of all cable connections
- iv. Temperature rise due to loose connection
- v. Watering of earthing pits
- vi. Operation of all sluice and butterfly valves, scour and pressure relief valves, gates and air valves.
- vii. Contractor shall be equipped with dewatering pump of capacity of pumping water equal to 5 kilometer length of pipe line in 24 hours, the unit shall also consist of power generating set. One such set is required every 25 kilometer of pipe line section.
- viii. All parts of the machinery and electrical equipment liable to wear and tear shall be replaced by the contractor every 6 months
- ix. Current and voltages in all electrical equipment.

#### **Checks to be performed monthly**

- a) Gland packing / Mechanical Seal
- b) Wear and tear of moving parts.
- c) Adoption of electrical energy conservation consumption methods.
- d) Electrical contacts
- e) Motors
- f) Metering of electrical equipment
- g) Maintenance of EOT, Crane, Valve actuator, Battery, etc. shall be carried out as approved by the Engineer-in-charge.

#### **Checks to be Performed Quarterly**

- a) Relay testing and calibration if possible of meters, gauges, instruments, flow meters, flow indicator units, Level gauges and flow meters signals.
- b) Speed of motors
  - a) Cleaning, checking/tightening of HT and LT circuit/panel
  - b) Tightening of PMCC
  - c) Auxiliary DB, Capacitor bank d)
- B a t t e r y and Battery charger

#### **Checks to be performed annually**

- a) Overhauling requirement of all equipment
- b) Improvement required if any in operation of plant
- c) Testing and calibration of all instruments
- d) 11 KV VCB cleaning, testing.
- e) Transformer cleaning, checking silica gel, oil checking filtering/ replacing.

#### **MINOR REPAIR GENERALLY ENCOUNTERED IN THE PLANT**

Electrical works

##### a) For H.T. Installations

- i. Replacement of jumpers
- ii. Replacement of insulator (Porcelain)
- iii. Replacement of Air- Break Switch

##### b) For Both H.T. & L.T. Installations

- i. Replacement of no-volt coil for VCB
- ii. Replacement of Cable lugs including terminations
- iii. Replacement of burnt out HRC fuses

Replacement of burnt out HRC fuses

- iv. Replacement of moving and fixed contacts or contractors
- v. Repairs to isolators and switch fuse units and replacement of it and fuse base units.

**c) Pump sets**

- i. Replacement of coupling bolt and nuts including rubber bushes
- ii. Replacement of worn out impeller nut
- iii. Replacement of spindle nut in the sluice valve.
- iv. Replacement of terminal plate in the motor
- v. Replacement of faulty/dead spares in the battery charger and battery control panel.
- vi. Replacement of gland packing, graphite packing from the pump sets.

**d) Valves**

- i. Replacement of gland packing, bolt and nuts including rubber bushes
- ii. Replacement of worn out Rubber packing and nut bolts.
- iii. Replacements of Spindle and nut in the sluice valve.

**COMPUTER MONTHLY REPORT**

The contractor has to provide at site one computer with colour printer of A-4 size to keep all the records, data maintenance schedules, spares available for the plant. Monthly statements for electricity consumed, total hours of pump operation, total qty. of pumping in MLD, average power factor, monthly consumable and repair maintenance during the month shall be furnished by the contractor.

### **Extent of work (Mechanical & Electrical)**

The scope includes Comprehensive Operation & Maintenance & Repairs of pump sets with co-ordinate Accessories, piping system, pump house, Mechanical & Electrical equipments & instrument etc.

#### **1 Operation & Maintenance of Mechanical Works:**

- (a) Operation & maintenance of pumps.
- (b) Valves (butterfly / sluice / check valve etc.).
- (c) Expansion bellow, MS / GI pipe work with specials.
- (d) Flow meters on common discharge header & pressure gauges.
- (e) Material handling system viz. EOT, motorized chain pulley block arrangement with girders & accessories.

#### **2 Operation & Maintenance of Electrical Works:**

- (a) Switchyard with all required accessories.
- (b) Transformer servicing including replacement of required spares etc.
- (c) LT/HT Motor control center panel with required switch gears.
- (d) Automatic power factor correction panel.
- (e) Grounding (earthling) system with accessories.
- (g) Power (LT/HT) & control cables with jointing kits & accessories including cable carrier system.
- (h) General lighting arrangement with accessories.
- (i) Safety accessories with exhaust fan.
- (i) Installation, testing & commissioning of all the above equipment & accessories.
- (j) Licensing work with local electricity authority including Electrical department procedure for approval with including preparation of electrical Installation Drawing and release of power.

#### **3 Repairing work of Civil Works:**

- (a) Construction of thrust blocks & supports for pipe work.
- (b) Drawing of holes in sumps, pump house etc. for pipes & plugging them properly (if required).
- (c) Construction of grouting blocks for Switch Yard & chain link fencing, repairing of pedestal (plate form) of transformer as required.

#### **4 Operation & Maintenance Work:**

- (a) Comprehensive Operation & maintenance of entire electro mechanical apparatus of pumping station to provide efficient and uninterrupted service as per detailed specifications for five years.

**SCOPE OF WORK AND SERVICES:-**

The scope of work and services included but not limited to, under this contract, is Operation, Preventive maintenance and repairs of the plant Mechanical- Electrical- Instrumentations System and Equipment of Pumping stations.

**INSTRUMENTATION & CONTROL SYSTEM COMPRISING OF (on each pumping station):**

- (1) Flow measuring system.
- (2) Level measuring system
- (3) Temperature scanners.
- (4) Pressure measuring system
- (5) Instrumentation panels.
- (6) MIMICS Annunciation with Alarm system.

**ANNEXURE –I****SCHEDULE FOR ESTABLISHMENT**

The contractor shall employ the minimum staff for each package as under with qualification and experience stated below, Contractor may employ additional staff over and above minimum prescribed as per his requirement in order to run the system efficiently. The staff mention below its obligatory.

<b>Sr.No</b>	<b>DESIGNATION</b>	<b>No</b>
1	O&M Manager (7 YoE)	1
2	Maintenance Engineer (5 YoE)	1
3	Asst. Maintenance Engineer (1 YoE)	1
4	Operator at H/W	8
5	SCADA Operator (1 YoE)	3
6	Electrician (3 YoE)	1
7	Pipe Fitter/ Valve man (0.5 YoE)	6
8	Data Entry Operator	2
9	Helpers for fitter/ operator	8
10	Sweeper	2
<b>Total</b>		<b>33</b>

**Note:**

The above staff shall be required minimum as per mutual agreement between contractor & GWSSB. The arrangement of reliever for weekly off/all holidays etc. shall be made by the contractor separately.

The adequate staff is required for normal operation & maintenance. The contractor has to call respective engineer for rectification of fault at any time of the day, during contract period. The contractor shall have to provide additional manpower for maintenance and repair on as and when require basis. No extra payment shall be made for hiring services of additional manpower.

However Chief General Manager may give relaxation in qualification and experience for suitable cases and necessary recovery if any, will be made accordingly.

**ANNEXURE-II****SCHEDULE OF ROUTINE CHECKING OF PUMPS AND VALVES****A) Daily in each shift:**

- 1) Leakages through gland packing / mechanical seal and tightening, loosening to ensure that extent of leakages is in drip form.
- 2) Bearing temperature if highly checkup cause and take remedial action.
- 3) Noise & Vibration: If undue checkup cause and take remedial action.
- 4) Pressure: If high or low, checkup cause.
- 5) Check oil level for bearing lubricant and topping up if necessary.
- 6) Clean and remove dust from pumps, piping and valves etc.

**B) Weekly:**

- 1) Greasing to the stuffing boxes. Greasing to valve actuator gear

**C) Monthly:**

- 1) Check tightness of all nut bolts. Check coupling bushes for wear.
- 2) Checking and replacing gland packing / mechanical seal if necessary (Pump & valve)
- 3) Check oil in air compressor. Check valve actuator bushes.

**D) Quarterly:**

- 1) Inspection of gland packing and replacing if necessary. Cleaning and oiling of gland bolts.
- 2) Checking and lubrication of all bearings.

**E) Half Yearly:**

- 1) Removing plant packing and checking wear on line shaft at gland portion.
- 2) Replacing gland packing.
- 3) Cleaning and examination of all bearings for flaws and checking and play. Replace oil/grease of bearing.
- 4) Replacing gland packing of sluice valves.

**F) Records/Messages through Electronic Media.**

Agency has to give SMS every day to concerned officer of GWSSB stating water pumped from each station from specific pump with flow meter reading, water supplied to villages etc. as asked officers.

Sr. No	Name of Head Work	Capital cost of Electro-mechanical component
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1	All Components Included in this Contract	
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**ANNEXURE- III****LIST OF THE TOOLS AND TACKLES TO BE PROVIDED AT EACH PUMPING STATION, FOR OPERATION AND MAINTENANCE.**

<b>Sr.No.</b>	<b>Item</b>	<b>Quantity</b>
1.	For spanner set size 6mm to 22mm	1 set.
2.	For spanner set size 6 mm to 52 mm	1 set
3.	Ringspanners set size 6mm to 22mm	1 set
4.	Ring Spanners set size 7mm to 52mm	1 set
5.	Box spanners set size 6mm to 38mm	1 set
6.	Pipe wrench size 36"	1 No.
7.	Pipe wrench size 24"	2 Nos.
8.	Screw driver size 6", 9" and 12" (2 Nos. of each size)	6 Nos.
9.	Insulated pliers size 12"	6 Nos.
10.	Long Nose Pliers 8"	3 Nos.
11.	Adjustable screw spanner size 12"	3 Nos.
12.	Hammer 1Lb x 2Lb	2 Nos.
13.	Testers	6 Nos.
14.	Chisels 12" x 6" (2 Nos. of each size)	4 Nos.
15.	Hack Saw Frame	6 Nos.
16.	Hack Saw Blade	6 packets.
17.	Hand gloves suitable for 33KV	2 Pairs.
18.	Phawada	2 Nos.
19.	Ghamela	4 Nos.
20.	Tikam	2 Nos.
21.	Kaichin (For Gardening)	2 Nos.
22.	Vile (For Gardening)	3 Nos.
23.	Plastic Bucket 10 Litres	2 Nos.
24.	Rope 1/2"	30 meter
25.	Torch/Battery	2 Nos.
26.	Multi Meter Digital	1 Nos.
27.	Crimping Tool Set	1 Set
28.	Bearing and Coupler puller	1 No. Of Each
29.	Portable Air blower for cleaning & De rusting of Panel	1 No.
30.	Heavy Duty Grease gun	1 No.
31.	Garden Scissors	1 No.



32	Dial Gauge with Magnetic stand for alignment checking	1 Set
33.	Precision Spirit Level	1 No.
34.	Filler Gauge with Magnetic stand for alignment checking	1 set
35.	Storage Bins & rack/cupboard for above tools	1 No.
36.	Portable Welding Set	1 No.
37.	Portable DG Set	1 No.
38.	Portable Dewatering Pump Set.	1 No.

**Note:**

Above list is only for guidance purpose. Requirement of any other tools or tackles for ensuring smooth & uninterrupted operation, maintenance & repairs of all the equipment in all the pumping stations shall have to be arranged by the Contractor as per instructions of the EIC.

## SECTION–D

### Periodical Statements

**The contractor shall have to submit the periodical statements (1 to 11) as per annexure attached herewith.**

Operational Check list – 1	Daily pumping check points
Operational Check list – 2	Daily Electrical Parameters check list
Operational Check list – 3	Daily Transformer parameter check list
Operational Check list – 4	Daily check points of all Equipment's Installation
Check list for PM	Electro-Mechanical Machinery Preventive Maintenance Checklist
STATEMENT 1	Weekly report of attendance of Pipeline for O&M Work.
STATEMENT 2	Monthly report of material consumed for O &M.
STATEMENT 3	Quarterly Report of inventory of materials for O&M work.
STATEMENT 4	Quarterly Report for calibration of instruments installed in equipment
STATEMENT 5	Monthly report for staff deployed in O& M work.
STATEMENT 6	Monthly report for maintenance.
STATEMENT 7	Monthly report for pumping.
STATEMENT 8	Daily Pumping Report
STATEMENT 9	Daily Treated Water Quality Report ( Not Applicable)
STATEMENT 10	Monthly Treated Water Quality Report ( Not Applicable)
STATEMENT 11	Monthly water supply report
STATEMENT 12	SCADA REPORT – DAILY DATA
STATEMENT 13	SCADA REPORT – MONTHLY DATA
STATEMENT 14	SCADA REPORT – YEARLY DATA
STATEMENT 15	Pumping Logbook
STATEMENT 16	Monthly report of Vehicles deployed for O &M work
STATEMENT 17	Leakage Register
STATEMENT 18	Daily Water Supply Quantity Report
STATEMENT 19	Log Book of Lineman Pipeline for O & M work (Daily

# Operational Checklist

## Electromechanical works

### Operational Check list – 1 (Daily pumping check points)

Project /

HW:

Date:-

Pump: HSCF (Q:.....Cum/hr & H  
..... m-..... Nos.

Model:\_\_\_\_\_

Electric Motor  
Details\_\_\_\_\_

Make: M &amp; P

Bearing Rated

Make / Model:

Temp.\_\_\_\_\_

Installation Yr.: .....

Rated Head\_\_\_\_\_

Efficiency as/company \_\_\_\_\_

Motor Rated Current: \_\_\_\_\_

Rated Voltage: \_\_\_\_\_

Sr. No.	Date / Time	Pump Operatoin					6.6/3.3 KV Electric Motor Current & Voltage				Outflow Flow meter Reading			Outfl ow Qty.	Header Pressure	Sign
		Pump No.	Start	Stop	Hr	Total Hours	R	Y	B	Voltage	Start	Stop	Diff.			
							Amp.	Amp.	Amp	KV				ML	Kg/Cm <sup>2</sup>	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Signature of In-Charge  
Company Seal

# Operational Checklist

Electromechanical works

## Operational Check list – 2 (Daily Electrical Parameters check List)

Pump: HSCF (Q:.....Cum/hr, &

Capacitor rated Current \_\_\_\_\_ KVAR

H ..... m-..... Nos.

Installation Yr.:.....

Sr. No.	Time	UGVCL Meter Reading (11KV Power Supply)					11 KV Incomer Supply		Incomer-1		Incomer-2		Incomer-2		Capacitor	Sign
		KWH	KVAH	KVA	Avg. PF	Freq.	Voltage	Current R/Y/B	Voltage	Current R/Y/B	Voltage	Current R/Y/B	Voltage	Current R/Y/B	Current R/Y/B	
						Hz	KV	Amp.	KV	Amp.	KV	Amp.	KV	Amp.	Amp	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Signature of Incharge  
(Company Seal)

# Operational Checklist

Electromechanical works

## Operational Check list –3 (Daily Transformer Parameters check List)

Project / HW:

Date:-

Pump: HSCF  
(Q:.....Cum/hr & H  
..... m-..... Nos.

Make :.....

Consumer No:

.....KVA (2)

Contract Demand: (KVA)

Make: M & P

.....KVA (1)

Installation Yr.:.....

Motor Brg. Temp. Limit\_\_\_\_\_

Oil Temp. Limit\_\_\_\_\_

Pump Brg. Temp. Limit\_\_\_\_\_

Winding Temp. Limit: \_\_\_\_\_

Date /Time	Main &Auxiliary Transformer Check			Visual Inspection Transformer & Sub Station / Switch Yard			Motor Bearing Temp.	Pump Bearing Temp.	Sign of Operator
	Oil Temp. In °C	Winding Temp. In °C	Oil level in surge tank & OLTC	Silica gel Breather	Oil leakage	Rusting of Comp.			
1	2	3	4	5	6	7	8	9	10

Signature of In-Charge  
(Company Seal)

## Operational Check list – 4

(Daily check points of all Equipments Installation)

Project/HW:

Date:-

Capacity :

SN	Description	Status:	Fault	Maint. Work Req.	Sign
1	Pump set ( P-1 to 6)				
2	Valves (BFV/SV/DPCV)				
3	Transformers : T-1/T-2/T-3				
4	HT Switch Gear Panel & LT S/G Panel				
5	APFCR Panel				
6	Flowmeter				
7	FCMA Panel				
8	HT Incomer Panel (income + outgoing)				
9	Indoor & Outdoor lightings				
10	De-watering sets				
11	Air conditioning units				
12	House keeping work				
13	Tools & Tackles				
14	Spares availability (Inventory)				

Signature of In-Charge  
(Company Seal)

Preventive Maintenance Checklist

Electromechanical works

- Electro-Mechanical Machinery Preventive Maintenance Checklist.

List of Check Point	Daily	Weekly	Forth Month	Three Months	Six Months	Yearly
<b>Pump</b>						
Cleaning of Pump	√					
Check stuffing box, gland	√					
Check mechanical seal for wear.			√			
Installation check-up& alignment of Pump set.					√	
Bearing Temp.	√					
Cooling and lubricating system.	√					
Vibration	√					
Bearing oiling and greasing			√			
Clean & flush bearing for wear & scratches.						√
Check coupling bushes/rubber/spider /bolts			√			
Checking of wear and tear of line shift sleeve.					√	
<b>Motor</b>						
Cleaning of Motor external surface.	√					
Alignment check				√		
Earthing					√	
Terminal box with cable			√			
Vibrations	√					
Bearing Temp.	√					
Bearing lubrication / greasing			√			
Clean & Flush bearing for wear & scratches.						√
Cooling system				√		
Anti-Condensation Heater				√		
I.R. Valve					√	
find the efficiency of the pump motor set						√
<b>L.T. PANEL</b>						
ACB operating mechanism	√					
Are chutes					√	
Check the Contactor		√				
Check all indicating, instruments, Lamps, Fuses. And all connection of the cable with lugs			√			
<b>33/66/11 KV VCB</b>						
Main conductor & Insulators.		√				
Operating mechanism					√	



Lever, Counter reading				√		
Opening and closing trips				√		
Auxiliary switches			√			
Interrupter contact wear					√	
Megger test & overall inception			√			
Current transformer					√	
<b>MAIN TRANSFORMER &amp; Aux Transformer</b>						
General inspection	√					
Oil leakage & level indicator	√					
Oil level in conservative.	√					
Oil level in transformer.	√					
Clamping nuts & bolts on tap changer			√			
Explosion vent Diaphragm.			√			
Dia Electric strength of oil				√		
Silica – Gel breather					√	
Buchhola Relay, Alarm & their circuits					√	
Oil cooler fins			√			
Sludge and acidity in oil.			√			
Plosion vent			√			
Amp. Indicator	√					
Dehydration of oil		√				
Gasket joint			√			
Bushing		√				
Insulation Resistance				√		
External connection		√				
Earthing				√		
Roller					√	
Winding & oil Temp.			√			
Over all inspection					√	
<b>CRANE</b>						
Ensure the operation of crane		√				
Walkway greasing, oil, leak, loosening of bolts)		√				
Lubrication Oil / Grease			√			
Hoist wire rope					√	
Coupling,shaft,plumber blocks.				√		
Bridge and Trolley wheels.					√	
Rope sheaves.					√	

<b>SLUICE VALVES</b>						
Full travel of gate	√					
Stuffing box packing		√				
Tightening of bolts				√		
<b>Check Valves &amp; NON RETURN VALVE</b>						
Tightening of bolts	√					
By Pass valve Operation		√				
Vibration / Noise	√					
Hydraulic control			√			
Valve cam Betting				√		
<b>DEWATERING/ SILTING PUMP</b>						
Noise			√			
Starter, Float Switches			√			
Cable		√				
<b>LEVEL CONTROLLER</b>						
Main supply connection	√					
Cable and ducts.		√				
Inter connection of controller of probe.				√		
Nut & Bolts of probe.			√			
Calibration					√	

**Preventive Maintenance Checklist**

## Pipeline and Civil Structure

- Checklist for Components of pipeline and Civil structure:

List of Check Point	<u>Schedule for Checks</u>			
	Daily	weekly	Monthly	Yearly
Measure and record water production to monitor water demands and calculate leakage.	√			
Conduct Bulk pipeline maintenance and keep records of all repairs and changes.		√		
Exercise Bulk pipeline valves – record inspections and repairs in logbook.				√
Do a water audit and calculate unaccounted-for-water by comparing water production and usage –goal of < 10%.				√
Prepare system for seasonal start up and shut down.				√
Conduct a preventive maintenance program on service meters –calibration, replacement, etc.				√
Evaluate safety programs and equipment –traffic safety, trench safety, confined space, ladder safety, etc.				√
Evaluate Emergency Response Plan –loss of water pressure, contamination, cross connections, overfeeds, etc.				√
Determine daily and monthly peak water-demand periods.				√

**Statement- 1**

**Name of Project: Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work.**  
**Dist.: Bharuch**

**Period: Week**

**Weekly report of attendance of Raw Water Pipeline for O &M work**

<b>Sr. No.</b>	<b>Date of Visit</b>	<b>Air Valve no.</b>	<b>Status of air valve</b>	<b>Action taken for repairing</b>	<b>Vehicle used with No.</b>	<b>Remarks</b>
1	2	3	4	5	6	7
1						
2						
3						
4						
5						
6						
7						

**Signature of Contractor**

**Statement- 2**

**Name of Project:** Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch

**Period:** Month

**Monthly report of material consumed for O &M**

Sr. No.	Materials Used	Qty.	Average Cost	Issued/ Purchase by	Remarks
1	2	3	4	5	6
1					
2					
3					
4					
5					
6					
7					

**Signature of Contractor**

**Statement- 3**

**Name of Project:** Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work.  
Dist.: Bharuch

**Period:** Quarter

**Quarterly report of material consumed for O & M**

Sr. No.	Material	Part No(if any)	Qty.	Average Cost	Remarks
1	2	3	4	5	6
1					
2					
3					
4					
5					
6					
7					

**Signature of Contractor**

**Statement- 4**

**Name of Project:** Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch

**Period:** Quarter

**Quarterly report of material for calibration of Instruments installed**

<b>Sr. No.</b>	<b>Name of Instrument</b> (Flow meter, Relay, Voltmeter, Ammeter etc.)	<b>Instrument No.</b> (if any)	<b>Qty.</b>	<b>Date of calibration</b>	<b>Remarks</b>
1	2	3	4	5	6
1					
2					
3					
4					
5					
6					
7					

**Signature of Contractor**

**Note:** Calibration report shall be submitted along with calibration certificate.

**Statement- 5**

**Name of Project:** Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch

**Period:** Month

**Monthly report of Staff deployed for O &M work**

Sr. No.	Name of Person	Designation	Age	Qualification	Experience.	Remarks
1	2	3	4	5	6	7
1						
2						
3						
4						
5						
6						
7						

**Signature of Contractor**



**Statement- 6**

**Name of Project:** Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch

**Period:** Month

**Monthly report of maintenance work**

<b>Sr. No.</b>	<b>Date</b>	<b>Nature of work attended</b>	<b>Remarks</b>
1	2	3	4
1			
2			
3			
4			
5			
6			
7			

**Signature of Contractor**

**Statement- 7**

**Name of Project:** Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch

**Period:** Month

**Monthly report for Pumping**

Sr. No.	Date	Pumping Set									Total in Hrs.	Incoming Flow MLD.	Outgoing Flow MLD.	Remarks
		P-1 Hrs.	P-2 Hrs.	P-3 Hrs.	P-4 Hrs.	P-5 Hrs.	P-6 Hrs.	P-7 Hrs.	P-8 Hrs.	P-6 Hrs.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

**Signature of Contractor**

**Statement- 8**

**Name of Project: Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch**

**Period: Day**

**Daily Pumping Report**

Sr. No.	Pump No.	Pump Starting Time	Pump Stopping Time	Pumping Hours	Supply Reservoir Level(M)		Flow meter Reading(m <sup>3</sup> )		Total Water Pumped
					Initial	Final	Initial	Final	
1									
2									
3									
4									
5									
6									
7									

**Signature of Contractor**

**Statement- 9****Name of Project:** .....**Period:** Day**Daily Treated Water Quality Report**

Hour	Water Flow (MLD)	Water Quality			Treated Water Flow (MLD)	Treated Water Quality		
		pH	Alkalinity	Turbidity		pH	Alkalinity	Turbidity
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

**Signature of Contractor**

**Statement- 10****Name of Project:** .....**Treatment Plant:****Month:** Month**Monthly Treated Water Quality Report**

<b>Date</b>	<b>Instances of Guaranteed Quality</b>	<b>variation Treated</b>	<b>from Water</b>	<b>Date</b>	<b>Instances of variation from Guaranteed Treated Water Quality</b>
1				16	
2				17	
3				18	
4				19	
5				20	
6				21	
7				22	
8				23	
9				24	
10				25	
11				26	
12				27	
13				28	
14				29	
15				30	
				31	

**Signature of Contractor**

**Statement- 11**

Name of Project: .....

Month :

**Monthly Water Supply Report**

Avg of month	Water Received from Starting Point	Water Supplied at End Point	Difference in MLD	Difference in percentage

Signature of Contractor

Signature of Work Charge Karkun

Signature of Assistant Manager

Signature of Manager

Statement- 12

SCADA REPORT - DAILY PUMP DATA  
(PS Name) Daily Report - Pump Data

Project														
Client		: Gujarat Water Infrastructure Limited												
Contractor														
PMC														
Reading Date		:dd.mm.yyyy												
Report Generation Date		:dd.mm.yyyy												
Hours		Pump-1				Pump-2				Pump-3....				
From	To	Avg Hourly Speed (RPM)	Running Time (HH:MM)	Power Consumpted (KWH)	Head (Mtr)	Avg Hourly Speed (RPM)	Running Time (HH:MM)	Power Consumpted (KWH)	Head (Mtr)	Avg Hourly Speed (RPM)	Running Time (HH:MM)	Power Consumpted (KWH)	Head (Mtr)	
0:00	1:00													
1:00	2:00													
2:00	3:00													
3:00	4:00													
4:00	5:00													
5:00	6:00													
6:00	7:00													
7:00	8:00													
8:00	9:00													
9:00	10:00													
10:00	11:00													
11:00	12:00													
12:00	13:00													
13:00	14:00													
14:00	15:00													
15:00	16:00													
16:00	17:00													
17:00	18:00													
18:00	19:00													
19:00	20:00													
20:00	21:00													
21:00	22:00													
22:00	23:00													
23:00	0:00													
Total / Average														
Running time from dd.mm.yyyy (Comissioning Date) to till date														

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

## Statement- 12

### SCADA REPORT - DAILY PUMP DATA

#### PS(Name) Daily Report - Pump Data

Project	: Vallabhipur (NC-3) SITC Work With 10 Year O&M												
Client	: Gujarat Water Infrastructure Limited												
Contractor	: M/s H.M. Electro-Mech Limited												
PMC	: M/s Wapcos Limited, Gandhinagar												
Reading Date	: 21.07.2022												
Report Generation Date	: 26.07.2022												
Hours		Pump-4				Pump-5				Pump-6			
From	To	Avg Hourly Speed (RPM)	Running Time (HH:MM)	Power Consumpted (KWH)	Head (Mtr)	Avg Hourly Speed (RPM)	Running Time (HH:MM)	Power Consumpted (KWH)	Head (Mtr)	Avg Hourly Speed (RPM)	Running Time (HH:MM)	Power Consumpted (KWH)	Head (Mtr)
0:00	1:00												
1:00	2:00												
2:00	3:00												
3:00	4:00												
4:00	5:00												
5:00	6:00												
6:00	7:00												
7:00	8:00												
8:00	9:00												
9:00	10:00												
10:00	11:00												
11:00	12:00												
12:00	13:00												
13:00	14:00												
14:00	15:00												
15:00	16:00												
16:00	17:00												
17:00	18:00												
18:00	19:00												
19:00	20:00												
20:00	21:00												
21:00	22:00												
22:00	23:00												
23:00	0:00												
Total / Average													
Running time from 10.08.22 to till date													

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.



## Statement- 13

## SCADA REPORT - DAILY ELECTRICAL DATA

(PS Name) Daily Report - Pump Data- Electrical													
Project													
Client		: Gujarat Water Infrastructure Limited											
Contractor													
PMC													
Reading Date		: dd.mm.yyyy											
Report Generation Date		: dd.mm.yyyy											
Hours		Pump-1				Pump-2				Pump-3			
From	To	Voltage (KV)	Current (I)	Power Factor	Active Power KW	Voltage (KV)	Current (I)	Power Factor	Active Power KW	Voltage (KV)	Current (I)	Power Factor	Active Power KW
0:00	1:00												
1:00	2:00												
2:00	3:00												
3:00	4:00												
4:00	5:00												
5:00	6:00												
6:00	7:00												
7:00	8:00												
8:00	9:00												
9:00	10:00												
10:00	11:00												
11:00	12:00												
12:00	13:00												
13:00	14:00												
14:00	15:00												
15:00	16:00												
16:00	17:00												
17:00	18:00												
18:00	19:00												
19:00	20:00												
20:00	21:00												
21:00	22:00												
22:00	23:00												
23:00	0:00												
Total / Average													
Running time from dd.mm.yyyy (Comissioning Date) to till date													

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost

**Statement- 13**  
**SCADA REPORT - DAILY ELECTRICAL DATA**

(PS Name) Daily Report - Pump Data- Electrical													
Project													
Client		: Gujarat Water Infrastructure Limited											
Contractor													
PMC													
Reading Date		: dd.mm.yyyy											
Report Generation Date		: dd.mm.yyyy											
Hours		Pump-4				Pump-5				Pump-6			
From	To	Voltage (KV)	Current (I)	Power Factor	Active Power KW	Voltage (KV)	Current (I)	Power Factor	Active Power KW	Voltage (KV)	Current (I)	Power Factor	Active Power KW
0:00	1:00												
1:00	2:00												
2:00	3:00												
3:00	4:00												
4:00	5:00												
5:00	6:00												
6:00	7:00												
7:00	8:00												
8:00	9:00												
9:00	10:00												
10:00	11:00												
11:00	12:00												
12:00	13:00												
13:00	14:00												
14:00	15:00												
15:00	16:00												
16:00	17:00												
17:00	18:00												
18:00	19:00												
19:00	20:00												
20:00	21:00												
21:00	22:00												
22:00	23:00												
23:00	0:00												
Total / Average													
Running time from dd.mm.yyyy (Commissioning Date) to till date													

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

**Statement- 14**  
**SCADA REPORT -DAILY 66KV LINE INCOMER**

NC-3 Daily Report - Electrical Data ( 66KV Line Incomer Electrical Parameters)											
Project											
Client											
Contractor											
PMC											
Reading Date											
Report Generation Date											
Hours		66KV									
		Incomer-1									
From	To	Voltage	Current	Active Power	Reactive Power	Apprent Power	Power Factor	Frequency	KWH	KVAH	KVARH
0:00	1:00										
1:00	2:00										
2:00	3:00										
3:00	4:00										
4:00	5:00										
5:00	6:00										
6:00	7:00										
7:00	8:00										
8:00	9:00										
9:00	10:00										
10:00	11:00										
11:00	12:00										
12:00	13:00										
13:00	14:00										
14:00	15:00										
15:00	16:00										
16:00	17:00										
17:00	18:00										
18:00	19:00										
19:00	20:00										
20:00	21:00										
21:00	22:00										
22:00	23:00										
23:00	0:00										
Total / Average											

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

**Statement- 15**  
**SCADA REPORT -DAILY PUMP DATA COMMON**

[PS Name] Daily Report -Common							
Project							
Client		: Gujarat Water Infrastructure Limited					
Contractor							
PMC							
Reading Date		: dd.mm.yyyy					
Report Generation Date		: dd.mm.yyyy					
Hours							
From	To	Total Discharge (ML)	Header Pressure (Mtr)	Total KWH	SEC (KWH/ML)	Sump-1 Level (Mtr)	Sump-2 Level (Mtr)
0:00	1:00						
1:00	2:00						
2:00	3:00						
3:00	4:00						
4:00	5:00						
5:00	6:00						
6:00	7:00						
7:00	8:00						
8:00	9:00						
9:00	10:00						
10:00	11:00						
11:00	12:00						
12:00	13:00						
13:00	14:00						
14:00	15:00						
15:00	16:00						
16:00	17:00						
17:00	18:00						
18:00	19:00						
19:00	20:00						
20:00	21:00						
21:00	22:00						
22:00	23:00						
23:00	0:00						
Total / Average							
Running time from dd.mm.yyyy (Comissioning Date) to till date							

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

## Statement- 16

## SCADA REPORT -DAILY REPORT ELECTRICAL DATA TRANSFORMER FEEDER

NC-3 Daily Report - Electrical Data (Transformer Feeder 66KV Electrical Parameters)													
Project		: Vallabhipur (NC-3) SITC Work With 10 Year O&M											
Client		: Gujarat Water Infrastructure Limited											
Contractor		: M/s H.M. Electro-Mech Limited											
PMC		: M/s Wapcos Limited, Gandhinagar											
Reading Date		: 21.07.2022											
Report Generation Date		: 26.07.2022											
Hours		Transformer-1						Transformer-2					
From	To	Voltage	Current	Power	Power Factor	Oil Temp. (°C)	Winding Temp. (°C)	Voltage	Current	Power	Power Factor	Oil Temp. (°C)	Winding Temp. (°C)
0:00	1:00												
1:00	2:00												
2:00	3:00												
3:00	4:00												
4:00	5:00												
5:00	6:00												
6:00	7:00												
7:00	8:00												
8:00	9:00												
9:00	10:00												
10:00	11:00												
11:00	12:00												
12:00	13:00												
13:00	14:00												
14:00	15:00												
15:00	16:00												
16:00	17:00												
17:00	18:00												
18:00	19:00												
19:00	20:00												
20:00	21:00												
21:00	22:00												
22:00	23:00												
23:00	0:00												
Total / Average													

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

## Statement- 17

## SCADA REPORT - Electrical Data (6.6KV Incomer Electrical Parameters)

NC-3 Daily Report - Electrical Data (6.6KV Incomer Electrical Parameters)											
Project											
Client											
Contractor											
PMC											
Reading Date											
Report Generation Date											
Hours		6.6KV									
		Incomer-1					Incomer-1				
From	To	Voltage	Current	Active Power	Power Factor	KWH	Voltage	Current	Active Power	Power Factor	KWH
0:00	1:00										
1:00	2:00										
2:00	3:00										
3:00	4:00										
4:00	5:00										
5:00	6:00										
6:00	7:00										
7:00	8:00										
8:00	9:00										
9:00	10:00										
10:00	11:00										
11:00	12:00										
12:00	13:00										
13:00	14:00										
14:00	15:00										
15:00	16:00										
16:00	17:00										
17:00	18:00										
18:00	19:00										
19:00	20:00										
20:00	21:00										
21:00	22:00										
22:00	23:00										
23:00	0:00										
Total / Average											

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

Statement- 18

SCADA REPORT – PS NAME Monthly Report - Pump Data

Monthly Report - Pump Data														
Project:							PMC:							
Client:							Reading Month:							
Contractor:							Report Generation Date:							
Date	Running Time (Hrs:Min)						Total Running Time (Hrs:Min)	Total Power Consumpted (kWH)	Total Discharge (ML)	SEC (kWH/ML )	Average Common Header Pressure (mtr)	Average Voltage (kV)	Average Current (Amp.)	Average (P.F.)
	Pump-1	Pump-2	Pump-3	Pump-4	Pump-5	Pump-6								
01-07-2022														
02-07-2022														
03-07-2022														
04-07-2022														
05-07-2022														
06-07-2022														
07-07-2022														
08-07-2022														
09-07-2022														
10-07-2022														
11-07-2022														
12-07-2022														
13-07-2022														
14-07-2022														
15-07-2022														
16-07-2022														
17-07-2022														
18-07-2022														
19-07-2022														
20-07-2022														
21-07-2022														
22-07-2022														
23-07-2022														
24-07-2022														
25-07-2022														
26-07-2022														
27-07-2022														
28-07-2022														
29-07-2022														
30-07-2022														
31-07-2022														
Total /	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Avg			

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

**Statement- 19**  
**SCADA REPORT – PS NAME TRIP REPORT**

[illegible]

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.



**Statement- 20**  
**SCADA REPORT – TREND**

Sr No	Name of Trend
	<b>Process</b>
1	Time Vs L1 & L2
2	Time Vs Pressure
3	Time Vs Discharge (Flow Rate)
	Pump-Wise
4	a) Time Vs Temp.
	b) Time Vs Voltage
	c) Time Vs Current
	d) Time Vs P.F.
	e) Time Vs Speed
	f) Time Vs Pressure (In case pressure transmitter available in individual pump delivery)
	<b>Electrical</b>
	11kV VCB
1	Time Vs Voltage
2	Time Vs Current
3	Time Vs P.F.
	6.6kV VCB
1	Time Vs Voltage
2	Time Vs Current
3	Time Vs P.F.
	415V VCB
1	Time Vs Voltage
2	Time Vs Current
3	Time Vs P.F.

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

**Statement- 21**  
**SCADA REPORT – [PS Name] Yearly Report - Pump Data**

<b>[PS Name] Yearly Report - Pump Data</b>										
<b>Project:</b>							<b>PMC:</b>			
<b>Client:</b>	Gujarat Water Infrastructure Limited						<b>Reading Month:</b>	mm.yyyy		
<b>Contractor:</b>							<b>Report Generation Date:</b>	dd.mm.yyyy		
Date	Running Time (Hrs:Min)						Total Running Time (Hrs:Min)	Total Power Consumed (kWH)	Total Discharge (ML)	kWH/ML
	Pump-1	Pump-2	Pump-3	Pump-4	Pump-5	Pump-6				
January'23										
February'23										
March'23										
April'23										
May'23										
June'23										
July'23										
August'23										
September'23										
October'23										
November'23										
December'23										
<b>Total / Average</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Running time from dd.mm.yyyy (Comissioning Date) to till date</b>										

Note: The scada format above may update by GWSSB during O&M period. The same shall be updated by contractor without any extra cost.

**Statement - 22**

Client: GWSSB

O &amp; M Agency:

Project:

**Pumping Logbook**

Date:

Sr. No.	Time	UGVCL Meter Reading (11 KV Power Supply)					/11 KV Incomer Supply		Incomer-1		Incomer-2		Capacitor	Sign
		KWH	KVAH	KVA	Avg . PF	Freq .	Voltage	Current R / Y / B	Voltage	Current R / Y / B	Voltage	Current R / Y / B	Current R / Y / B	
						Hz	KV	Amp.	KV	Amp.	KV	Amp.	Amp	
1	2	3	4	5	6	7	8	9	10	11	12	13	16	17

Time	Pump set - 1				Pump set - 2				Pump set - 3				Pump set - 4				Pump set - 5				Pump set - 6			
	BT-P	BT-M	Amp	Pr.	BT-P	BT-M	Amp	Pr.	BT-P	BT-M	Amp	Pr.	BT-P	BT-M	Amp	Pr.	BT-P	BT-M	Amp	Pr.	BT-P	BT-M	Amp	Pr.
	°C	°C	Amp	Kg/Cm <sup>2</sup>	°C	°C	Amp	Kg/Cm <sup>2</sup>	°C	°C	Amp	Kg/Cm <sup>2</sup>	°C	°C	Amp	Kg/Cm <sup>2</sup>	°C	°C	Amp	Kg/Cm <sup>2</sup>	°C	°C	Amp	Kg/Cm <sup>2</sup>
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.

\*\*\* BT-P : Bearing Temp. of pump in °C , BT-M : Bearing Temp. of Electric Motor in °C

Sump Level		Hdr Pr.	O/F Flow Meter		Sign
L-1	L-2		Inst. Flow	Totalizer	
Mtr	Mtr	Kg/Cm <sup>2</sup>	Cum/hr		
26	27	28	29	30	31

**Summary:-**

P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	Total Pumping Hrs.	Total Inlet Qty.	Total Outflow Qty.	Total C
HRS.	HRS.	HRS.	HRS.	HRS.	HRS.	HRS.	HRS.	HRS.	ML	ML	H

SN	Description	Status:	Fault	Maint. Work Req.	Sign of Oprr.

1	Any Pending Maintenance work / Break down				
2	Power Supply Interruption: From/To/Duration				
3	Transformers : T-1/T-2/T-3.				
4	HT Switch Gear Panel & LT S/G Panel				
5					

**Note: -** If the meters are not installed then such reading shall be exempted/removed in the statement.  
But the pump bearing's temperatures to be taken by the Temperature Gun & the record to be maintained

**Statement- 23**

Name of Project: .....

Period: Month

**Monthly report of Vehicles deployed for O &M work**

Sr. No.	Type of Vehicle	Model &Year of manufacture.	Registration no.	Working condition	Remarks
1	2	3	4	5	7
1					
2					
3					
4					
5					
6					
7					

Signature of  
ContractorSignature of  
Assistance ManagerSignature of  
Manager

## Statement- 24

### Leakage Register

Date.	Name of Section	Details of Existing Pipeline			Chainage/Location of Leakage	Details of Material Consumed	Repairing Status Date & Time		Remarks
		Type	Diathk				Repaired	Un- Repaired	
1	2	3	4	5	6	7	8		9

Signature of  
Contractor

Signature of  
Assistance Manager

Signature of  
Manager

Statement- 25

Name of Project: .....

Month:

Daily Water Supply Quantity Report

Sr. No.	Date	Water Quantity Received	Water Quantity Supply	Difference	Remarks	Sign
Total						

Signature of  
Contractor

Signature of  
Assistance Manager

Signature of  
Manager

Statement- 26

Log Book of Lineman Pipeline for O & M work (Daily)

Date	Water Received from Starting Point	Water Supplied at End Point	Difference in MLD	Difference in percentage

Signature of Contractor

Signature of Assistance Manager

Signature of Manager



**ANNEXURE-IV : ASSET LIST & STATUS**

Electromechanical						
Sr No	Equipment	Headwork / Pumping Station	Location/ section	Make/ Brand	Specifications/ Capacity	Equipment status ((O) Operational, (R) Minor repairs, (D) Defunct
1	List of pump sets					
2	List of panels, circuit breakers, starters					
3	Transformer					
4	DG set					
5	Dewatering sets					
6	Any other					
7						
8						
9						
10						

Electromechanical items will include all electrical and mechanical equipment such as, motors, pumps, panels, starters, breakers, dosing device, lifting devices, Clariflocculator bridge, transformer, valves, gates etc.

Civil						
Sr No	Component	Headwork / Pumping Station	Location	Make/ Material	Dimensions (length, area)	Remarks (condition)
1	e.g. Sump, Intake					
2						
3						
4						
5						
6						
7						
8						
9						
10						

Civil structures will include

- Intake/ offtake/ tube well etc. source structures
- Rising main
- H/W and PS structures
- Sumps and other storage structures
- Mention section details
- The baseline assessment as part of asset and inventory survey conducted has been placed below for reference.

O&M Package Name	
Project Name	
S.M. Office	
Manager Office	

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## Annexure-V Safety Considerations

### Safety aspects for electrical components

Following safety precautions should be observed while working in a pump house.

- i. No electric live part shall be kept exposed. Particular care should be taken not to keep the motor terminals, starter door, panel door etc. in open condition.
- ii. Guard for pump – motor coupling and for extended shaft shall be provided.
- iii. Top cover of the VHS (vertical hollow shaft) motor shall not be unnecessarily kept in dismantled condition.
- iv. Helmet, gumboots, hand gloves, torch and emergency lamp etc. shall be provided to the workers.
- v. Shock proof rubber matting shall be kept in front of panel and starters.
- vi. Discharging devices shall also be provided to work safely on HT side of transformer.
- vii. Firefighting equipment suitable for electrical fire shall be provided. The fire extinguisher shall be thoroughly checked and recharged once in a year.
- viii. Damaged wooden flooring, damaged grating etc. shall be repaired on priority.
- ix. Safety railing shall be provided above all openings, unwallled edges of flooring and all such places vulnerable for falling or slipping of staff.
- x. First aid box shall be kept at visible and accessible place. The first aid box shall be checked once in a month and all used items shall be replenished.
- xi. Staff shall be trained in the following aspects to enhance safety awareness and skills to handle safety aspects.
  - Fire fighting
  - Safety procedures and practices in electrical work
  - First aid (general)
  - First aid for electric shock.

Following Indian Standards (IS) detail comprehensive guidelines for safety in electrical installation.

IS 5216 (Part I) – General

IS 5216 (Part II) – Life Saving Technique

IS 5216 (Part III) – Safety Posters

IS 5216 (Part IV) – Special guidance for safety in electrical work in hazardous areas.

### Working at height

- Guard every floor hole into which a worker can accidentally walk (using a railing and toe-board or a floor hole cover).
- Provide a guard rail and toe-board around every elevated open sided platform, floor.
- Regardless of height, if a worker can fall into or onto dangerous machines or equipment (such as well, tanks etc.) employers must provide guardrails and toe-boards to prevent workers from falling and getting injured.
- Other means of fall protection that may be required on certain jobs include safety harness and line, safety nets, stair railings and handrails.

### Safety consideration during painting

The following considerations must be kept in mind:

- When working with toxic paints i.e. containing lead, zinc or organics, be sure to clean your hands before eating or handling food.
- Avoid exposing your skin to solvent and thinners and try not to use compounds such as carbon tetrachloride.
- When spray painting, use a respirator to avoid inhaling fumes.
- No smoking or open flames of any kind should be allowed around the area being painted.
- When painting or cleaning the spraying equipment avoid closed containers where heat is involved. At a certain temperature called the flash point, spray or vapours could ignite and burn the operator or start fires. Always clean the spray equipment in an area with sufficient ventilation.
- Be very careful when using scaffolding or ladders. They must be strong and in good repair.

- Rags containing paint or oil should be placed in a closed container to avoid fires.

## Annexure-VII Uniforms for Operator's staff

The uniform must have O&M agency's logo and company name. Uniform specifications for different categories of staff are as follows:

### i. Full body coveralls and PPEs for all operators and field staff

#### **Applicable to: Operators (pump house), Electrician, Fitters, Helpers, Sweepers**

- Full body protective clothing: Durable coveralls or jumpsuits or shirt and trouser made from a water-resistant or water-repellent material to protect the operators and staff from potential splashes or spills of water or chemicals. It should be suitable for welding and other mechanical works. Full sleeves with brass zippers and at least 200 GSM. Colour shall be sky blue or navy blue.

Other accessories (PPE):

- Safety shoes: Sturdy, slip-resistant safety shoes conforming IS 15298 (2011).
- Chemical Resistant Gloves: made from appropriate materials such as nitrile or neoprene to protect hands during tasks involving the handling of chemicals.
- Cut Resistant Gloves: for activities involving grinders, cutters, material lifting and handling
- Safety goggles: Encourage the use of safety goggles to protect the eyes from potential splashes, chemical, or other hazards.

### ii. Office formals

#### **Applicable to: Manager, Engineer, SCADA Operator, Lab in-charge and Data entry operator**

- Formal full sleeves shirt: Light blue (sky blue) coloured (Male)
- Formal Trousers: Navy blue coloured (Male)
- Sky blue/ Navy blue formal attire for female (Saree or shirt & trousers or skirt)
- When on field or site visit, the personnel must wear appropriate personal protective equipment as per the requirements such as safety shoes, safety helmet etc.

### iii. Laboratory personnel

#### **Applicable to: Chemist and Lab helper**

- In addition to the formal uniform, the Lab in-charge and laboratory helper must have a laboratory apron (white coloured, 200+ GSM) when working in the laboratory.

### iv. Business casuals

#### **Applicable to: Outdoor campus maintainer, valve man**

- Collared T-shirt or Shirt (Male or Female) or Saree (for females): Light blue (sky blue coloured)
- Trouser: (Navy blue coloured)

Annexure-VIII Identity card for Agency’s staff

Company logo

Company Name

Company’s Address

Project Name:

Photograph of personnel

Name	<staff name>
Designation	
Date of Birth	
Blood Group	

Signature and Name of Authorized representative of contractor

**Annexure-IX Training Program for Agency's Staff**

Agency shall undertake training program for its staff on the topics mentioned below. Training records, attendance sheet shall be maintained as evidence. The below topics are not exhaustive, agency may add more topics as deemed necessary.

Training Topic	Target Audience	Frequency	Indicative Contents of Training Module
Basic Technical Training	New operators	Initial training, periodic refresher training as needed	<ul style="list-style-type: none"> <li>▶ Understanding the water cycle and water sources</li> <li>▶ Distribution system components and layout</li> <li>▶ Water storage management</li> <li>▶ Water quality standards and regulations</li> </ul>
Health and Safety Training	All operators	Annual, or as needed to keep up to date	<ul style="list-style-type: none"> <li>▶ Hazardous materials handling and storage</li> <li>▶ Personal protective equipment (PPE) selection and usage</li> <li>▶ Electrical safety protocols</li> <li>▶ Emergency response planning and protocols</li> </ul>
System Maintenance and Repair	All operators	Annual, or as needed to keep up to date	<ul style="list-style-type: none"> <li>▶ Maintenance and inspection schedules and procedures</li> <li>▶ Pump and valve maintenance and repair</li> <li>▶ Chlorination and disinfection equipment maintenance</li> <li>▶ Leak detection and repair</li> <li>▶ Hydraulic principles and calculations</li> </ul>
Beneficiary & Community orientation	All operators	Annual, or as needed to keep up to date	<ul style="list-style-type: none"> <li>▶ Complaint handling and resolution strategies</li> <li>▶ Billing and payment processes and procedures</li> <li>▶ Community engagement, awareness and outreach</li> </ul>
Emergency Response Training	All operators	Annual, or as needed to keep up to date	<ul style="list-style-type: none"> <li>▶ Emergency response planning and protocols</li> <li>▶ Disaster preparedness and response</li> <li>▶ Water supply disruption response</li> <li>▶ Coordination with local authorities and emergency services</li> <li>▶ Incident reporting and documentation</li> </ul>
Health, Safety and Environment	All staff	Annual, or as needed to keep up to date	<ul style="list-style-type: none"> <li>▶ Hazard identification and risk assessment</li> <li>▶ Personal protective equipment (PPE) usage and maintenance</li> <li>▶ Emergency response and evacuation procedures</li> <li>▶ Occupational health and hygiene practices</li> <li>▶ Environmental impact awareness and mitigation measures</li> </ul>
Continuing Education	All operators	Periodic, based on availability of new information and resources	<ul style="list-style-type: none"> <li>▶ Water supply system upgrades and innovations</li> <li>▶ Regulatory updates and compliance</li> <li>▶ Water conservation and sustainability practices</li> <li>▶ Energy efficiency and cost-saving measures</li> <li>▶ Emerging technologies and water treatment</li> </ul>

Training Topic	Target Audience	Frequency	Indicative Contents of Training Module
			processes



**Annexure-X Communication Or Reporting Matrix**

Sl. No.	Designation	Office Address	Contact details
1	Chief General Manager, Gandhinagar		
2	General Manager, Gandhinagar		
3	Senior Manager		
4	Manager		
5	Assistant Manager		

list of all GWSSB officers involved

**Statement- 10 (NOT APPLICABLE)**

**Statement- 11**

**Name of Project: Working Survey, Design & Construction of Intake Well with Approach Bridge, Providing, Supplying, Lowering, Laying and Jointing various dia. of DI-K9/MS Rising Main Pipelines, RCC Sump, Pump House, Staff Quarter, Compound Wall, Supplying and erecting Pumping Machinery Including all Electro-Mechanical-Instrumentation and SCADA Works at Various HWs to SHWs under Water Supply Scheme Based on Bhadbhut Barrage (RHS) for Industries (GIDC) and Rural Areas of Bharuch and Vadodara Districts with 10 Years of Comprehensive O&M of entire scope of work. Dist.: Bharuch**

**Month:**

**Monthly Water Supply Report**

Date	Sign	Date	Sign
1		16	
2		17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	
		31	
Total No's of days water supply:			

**Signature of Contractor**

**Signature of Work Charge Karkun**

**Signature of Assistant Manager**

**Signature of Manager**

