GUJARAT WATER SUPPLY & SEWERAGE BOARD

GANDHINAGAR

(A WHOLLY OWNED GOVERNMENT OF GUJARAT UNDERTAKING)

Bid documents for Additional And Extra Works of "Design, Build, Trial Run Contract for Pump House & Providing, Supplying, Lowering, Laying & Jointing Rising Main & Gravity main Pipeline & Supplying, Testing & Commissioning of Pumps With Associated Mechanical and Electrical Equipment's, Instruments & Accessories with Operation & Maintenance of All type Civil & Mechanical Structures, Machineries & Pipeline Network for 5 Yrs. under Augmentation of Variav Regional Water Supply Scheme phase - 1 of Olpad and Choryasi Taluka of Surat District (34 Villages) "Tal: Olpad, Choryasi, Dist: Surat.

Estimated Cost: Rs. 15,26,96,956.00

VOLUME –IV

Conditions of contract for Comprehensive O & M of 5 Year for

Existing and New Proposed Scheme

Chief Engineer

Gujarat Water Supply & Sewerage Board

Zone-6, Surat

THIS PAGE IS LEFT INTENTIONALLY BLANK

Section I: Scope of Services

THIS PAGE IS LEFT INTENTIONALLY BLANK

1. SCOPE OF WORK

INTRODUCTION

Operations and maintenance of the water supply scheme involves two steps;

Operations:

The contractor shall carry out the operation of water supply system i.e. timely and daily operation of the components of a water supply system such as headwork's, treatment plant, machinery and equipment, transmission mains, service reservoirs and distribution system etc. efficiently and economically to attain the objective of supplying safe and potable water equitably to the consumers.

Maintenance:

The contractor shall maintain the water supply system by keeping the structures, plants, machinery and equipment and other facilities in an optimum working order and proper functioning without any interruption. Maintenance shall include both Preventive Maintenance and Corrective Maintenance. He shall undertake preventive maintenance which shall constitute routine works and precautions to be taken periodically and ensure that the different components of the water supply system perform correctly over their service life (their expected lifetime). This in turn shall avoid the occurrence of a major fault or breakdown in the water supply system that calls for corrective maintenance that is many times more expensive.

Contractor shall undertake corrective maintenance which shall involve carrying out works related to break down, which has actually occurred by replacements, correction of defects etc.

1.1. PENALTIES

Penalties are categorized into 4 types as below:

1) **Operational**: To ensure service delivery and compliance to the service level agreement (SLA). This includes coverage of water supply, quantity of water supply, manpower deployment, water quality, conduct of operator's staff, safety and reporting.
2) **Preventive Maintenance**: This will ensure timely completion scheduled maintenance activities such as daily, monthly, quarterly and annual maintenance. Additionally, this will also include calibration, servicing, overhaul, weather specific activities.
3) **Repairs and Emergency Response:** The objective of this penalty is to ensure that any breakdown is addressed in a timely manner.
4) **Other miscellaneous**: This is aimed to ensure compliance of statutory requirements. Additionally, it was observed that some agencies do not submit monthly bill on timely basis (sometimes delayed by 6 months or a year), hence a penalty to discourage late bill submission has been introduced.

1.1.1. Operational Penalties

The Board has considered a 2- day block period for evaluation of non-compliance cases against Service Level Agreement. This means, that the agency should compensate for any shortfall quantity on the following day to avoid penalties.

SCOPE OF CONTRACTOR

After completion of capital works (works mentioned under Schedule B of price bid), the contractor shall carry out the operation and maintenance of existing infrastructure as well as newly created infrastructure under the contract for duration of 05 Years for Variav Phase - 1 Regional Water Supply RWSS Proposed Work for covering **34** villages including its adjoining hamlets of Taluka - Olpad And Choryasi, Dist - Surat Based on Tapi River.

About the schemes in this package:

Sl. No.	Scheme Name	Number of Villages	Number of villages to be supplied with water as on start of O&M
1	**Varivav RWSS**	**34** villages including its adjoining hamlets	**34 V**

Habitation means all villages, towns, and census hamlets directly connected with the RWSS. In cases where the RWSS delivers water directly to the census hamlets, such hamlets shall be treated as habitation for monitoring and evaluation of SLAs.

List of habitations and their operational status is provided in Annexure I.

Brief scope of work:

Under this contract, it is expected that the contractor will supply safe and potable water on daily basis to all habitations connected to the water supply scheme:

Sl. No.	Category	Description	No. of habitations as on date
1	Operational	Habitations where water supply is operational currently	34 V
2	Technical issue	Water is currently not being supplied to the village/ ULB/ hamlet due to technical reasons	-
2a		*Carry out activities detailed in Part C of Schedule B of Volume II Price Bid to restore water supply*	-
2b		*Where contractor may take up restoration work to successfully operationalize such habitations. The contractor will be eligible to receive incentive as per the provisions of this contract*	-
3	Voluntary forgoing	Some habitations use their local sources during wet period. During summers or shortfall period, they seek water from RWSS. Supply of water when demanded by the GP as well as every 15 days to maintain the systems.	-

Note: After completion of project capital work O&M to start so above details are to be as per final completion of capital work.

The contractor shall maintain all assets in as-is (as handed over) condition during the contract period so that the scheme/s remains functional throughout its design life. The contractor also has to ensure smooth handing over to new contractor/GWSSB during transition phase/ after contract completion.

Detailed scope of work

The scope of work for the O&M will include the following;

1) The works shall include Comprehensive Operation & Maintenance of Civil & Electromechanical assets such as Mentioned In BOQ.

etc. located at different headworks and sub headworks including supply of potable water to all villages/hamlets/towns.

2) Operation and Maintenance of the water supply schemes involve the following scope of work;

a. Operation to ensure prescribed quantity of water supply to the beneficiaries. The scope of operations involves;

i. Regular supplying variable quantity as requirement of treated water to **Variav Phase - 1 Regional Water Supply Scheme covering 34 villages including its adjoining hamlets of Taluka- Olpad, And Choryasi Dist - Surat Based on Tapi River** on a daily basis as per Annex- I.

ii. Quality compliance, testing and reporting on daily basis for the frequency and parameters as per Annexure II. Agency shall ensure safe and potable water supply up to the delivery point with adequate residual chlorine (last ESR/ sump etc.)

iii. Provide trained, competent manpower for efficient operation of the water supply scheme in accordance with Annexure III. All the manpower should attend the site in uniform and carry identification cards.

iv. Conduct planning and review meetings on daily, weekly, monthly and quarterly basis and document as per the guidelines in Annexure IV.

v. Daily, monthly or periodic reporting in the ERP/reporting system/ mobile application of the employer/authority/GWSSB as specified by authority's in charge or engineer and as per formats in Annexure V.

vi. Water supply infrastructure is critical from safety & security point of view. Therefore, the authority desires to have a biometric attendance system at all its HW locations. Wherever it is installed, the contractor must ensure recording of attendance by its deployed personnel so that the authority is aware of the identity of individuals working at asset locations.

vii. Redressal of grievances attributable and assigned to the O&M contractor within stipulated time as per Annexure VI.

viii. Conduct training sessions for its staff as per Annexure XVI.

ix. Procure and maintain adequate stock of consumables at all times. Usage of consumables shall be based on desired output quality parameters. Raise chemical consumables demand to the authority 3-months prior to requirement.

x. The contractor during the contract period shall ensure that the power factor does not fall below 0.90.

b. Preventive & Curative maintenance of the assets to ensure efficient operations

The bidder shall be responsible for maintenance of equipment and assets under this RFP;

i. Preventive Maintenance:

- The bidder will carry out such maintenance activities as per schedule given in **Annexure VII.** The bidder shall carry out all monitored/non-monitored maintenance activities periodically as per the schedule and submit completion reports as per formats in annexure.
- In addition to activities mentioned in Annexure VII, the bidder shall carry out activities such as painting, cleaning of reservoirs/ tanks/sumps. Activities shall include but not limited to housekeeping, oiling of machineries etc.
- The bidder will carry out minor repairs and replacements within one month of scheme handover for components which were found to require such works during

joint inspection and handover survey. The bidder shall ensure that the assets are restored to optimum working condition by such minor repairs and replacements.

ii. Curative Maintenance:

Curative maintenance activities are the activities for troubleshooting and are to be carried out as and when fault, breakdown, breakage etc. are reported. It is bidder's responsibility to attend and resolve such issues within the time frame stipulated in **Annexure VI**. In case of failure to comply with these timelines, the authority shall impose penalties as per the said annexure. Troubleshooting procedures may be referred from Annexure XV or CPHEEO O&M Manual.

c. General Maintenance and activities

The bidder has to carry out the following activities during the contract tenure of operation and maintenance period;

i. trimming of grass, trees and bushes at least once in a month. This shall also include landscaping and gardening for beautification of the premise

ii. Sweeping of the premises on daily basis for the built-up area mentioned in **Annexure IX.** Sweeping shall be carried out twice a day (at beginning of the day and evening).

iii. Record keeping of all the important data on daily basis as prescribed in **Annexure VIII** viz;

a. Filter plant operation records

b. Pumping station operation records

c. Chemical stock and dosing

d. Stores

e. Grievances

f. Visitors

g. Preventive and curative maintenance activities (in the formats and printed booklets provided by GWSSB)

h. Water supply to villages/cities/ hamlets

i. Leakage records

3) Electricity Bill should be submitted to GWSSB office for payment as soon as received from concerned Electricity authority. If charges for delay in payment, levied on account of late submission of bills to GWSSB office by the contractor, then the same will have to be borne by contractor.

4) Maintain IT hardware necessary for reporting in software and printing reports at main headworks. The data operator deployed for the scheme shall have computer/ laptop with internet connection to facilitate reporting. This computer and internet modem/data card will be owned by the contractor.

5) Authority's equipment and assets other than water supply assets: Contractor shall preserve authority's equipment such as biometric attendance device, CCTV etc and if lost or damaged, it should be replaced and repaired by the contractor.

6) The contractor shall immediately notify the authority of any illegal connections found in the distribution system. The contractor shall take needful action for removal of such illegal connections.

7) The contractor will be responsible for all statutory & regulatory requirements related to handling of hazardous chemicals, health, safety & environment (HSE) compliances and due care shall be taken to abide the law. Any implication due to non-compliance or violation shall be borne by the contractor.

8) O&M of pumping machinery must be scheduled as per CE (M & P), GWSSB circular No-Circular/ PM/125/Dt. 12/05/2022 and Annexure VII.

9) All deployed staff shall be in uniform issued by the contractor as per the specifications provided in Annexure XIII. The uniform must have 'O&M Agency's name' and its logo so that during interaction with officials and beneficiaries they can be identified as personnel associated with water supply system.

10) Provide utility vehicle (inspection vehicle) for pipeline inspection and repair activities. Quantity as per Annexure III. This utility vehicle shall be a 4-seater pickup truck (utility vehicle) (mandatory). The provided vehicle shall not be used for any purpose other than inspection/ repair of pipeline infrastructure. The vehicle must feature a "On Duty for Water Supply System" & a logo of GWSSB (blue color), complying to the logo usage guidelines. The agency shall arrange sufficient two wheeler and four wheel utility vehicle to ensure proper inspection activities. The number mentioned in this document is minimum and the agency must arrange additional vehicles as required.

11) All manpower working on GWSSB's asset locations shall at all times, carry valid ID cards issued by the contractor. The contractor must have a fool-proof mechanism for issuance of ID cards which will ensure that no fraud happens. Agency will be responsible in case of any fraudulent activity. Format provided on Annexure XIV.

SCOPE OF EMPLOYER

1) Handing over of water supply infrastructure (existing infrastructure excluding new works mentioned in the price bid) as specified in this contract document for operation and maintenance by the contractor.
2) Carry out Inspection & asset survey 2 months prior to start of Operation and Maintenance under this contract as defined in Exit Management.
3) Employer shall conduct and facilitate a joint inspection for "Handing over and taking over" with both relieving agencies and new agency only for existing infrastructure.
4) Carry out an inspection on completion of one month from handover date to ensure minor repairs and replacement has been completed by the new agency
5) Deciding target quantity of water and target villages/ town/ hamlets.
6) Transfer of grievance to the contractor through grievance management system/software
7) Payment of Electricity bills for operations
8) Take up major repair or replacement in the assets, which have been damaged due to floods, earthquake, cyclone or any natural calamities.
9) Payment of raw water charges to Water Resources Department/ SSNNL/ GWIL
10) Supply chemical consumables such as chlorine, PAC and bleaching powder as per Schedule A of Vol-II. Agency shall raise demand for the requirement of such consumables at least three (3) months prior.

EXIT MANAGEMENT

1) The authority will conduct inventory and asset survey at least 2 months prior to the end date of contract. Authority expects O&M as per the contract conditions such that all assets remain in good condition to deliver the intended objective throughout its design life. However, during the asset survey specified above, if it is found that any asset (electromechanical or civil) has not been maintained properly and degradation is due to poor maintenance & up keep beyond expected due to ageing, then it will be contractor's

responsibility to restore the asset in healthy and usable condition for efficient operation. Defects found attributable to lack of maintenance & upkeep, shall have to be mandatorily rectified before handing over of assets upon completion of contract.

2) The contractor will have to carry out repairs and replacements as per the remarks of Deputy Executive Engineer in the DEE's asset survey report attributed to the contractor for corrective actions.
3) The handing over and taking over will be done in presence of a) Both contractors' representatives (relieving & taking over agency) and b) Deputy Executive Engineer or Executive Engineer. The report shall be countersigned by Executive Engineer.

2. ANNEXURES

ANNEXURE-I SCHEME DETAILS & BENEFICIARY LIST

Scheme Salient Features & Operational Data

Sl. No.	Particulars	Description
1	Scheme Name	1) Aug. of Variav Phase - 1 Regional WS Scheme
2	Commissioning Year	As per actual completion of capital work
3	Actual cost of scheme	As per actual completion of capital work
4	Augmentation history (year and cost)	As per actual completion of capital work
5	Existing Components with capacity	Refer the sub points below (a to f)
a	*Water source*	*Tapi River*
b	*Filter Plants (nos., location, capacity)*	-
c	*Pumping Machinery*	
	A **Proposed Machinery As PER BOQ for O&M and Existing as per list attached *as per Sheet 2***	
d	***Storage sumps/ tanks***	***As per BOQ***
e	***Pipe network (length, make, class and dia)***	***As per BOQ***

6	Total Beneficiary Demand	**Augmentation of Variav Phase - 1 Regional Water Supply Scheme:**			
		Taluka	Nos of Villages/ towns/ hamlets	Population (2056)	Demand (MLD)
		Choryasi	15	302893	48.4
		Olpad	19	109110	12.96
		Total	**34 Villages**	**412003**	**61.36**

7	Operational Hours	*Location*	*Summer (Hours)*	*Winter/Monsoon (Hours)*	*Minimum (Hours)*
		Intake & HW	*22*	22	22
		Remaining SHW & BS	*8-20*	8-20	8-20

List of habitations

- **Supply to Villages, ULBs& Hamlets**

No	Name of Village	District	Taluka	Urban / Rural	Population As per TSC 160				Water Requirement in LPD		
					Census	Present	Inter	Ultimate	Present	Inter	Ultimate
					2011	2026	2041	2056	2026	2041	2056
1	Bhatha	Surat	Chorasi	Urban	5122	7632	11371	16954	1373760	2046780	3051720
2	Ichchhapor	Surat	Chorasi	Urban	12097	18025	26855	40041	3244500	4833900	7207380
3	Bhatpor	Surat	Chorasi	Urban	3449	5139	7657	11416	925020	1378260	2054880
4	Kawas	Surat	Chorasi	Urban	6500	9685	14430	21515	1355900	2020200	3012100
5	Limla	Surat	Chorasi	Urban	3683	5488	8176	12191	768320	1144640	1706740
6	Damka	Surat	Chorasi	Urban	5604	8350	12441	18549	1169000	1741740	2596860
7	Vansva	Surat	Chorasi	Urban	2498	3722	5546	8268	521080	776440	1157520
8	Bhatlai	Surat	Chorasi	Urban	4066	6058	9027	13458	848120	1263780	1884120
9	Rajgiri	Surat	Chorasi	Urban	1300	1937	2886	4303	271180	404040	602420
10	Mora	Surat	Chorasi	Urban	13924	20747	30911	46088	2904580	4327540	6452320
11	Sunwali	Surat	Chorasi	Urban	2083	3104	4624	6895	434560	647360	965300
12	Junagam	Surat	Chorasi	Rural	2082	3102	4622	6891	310200	462200	689100
13	Hajira	Surat	Chorasi	Urban	16724	24919	37127	55356	3488660	5197780	7749840
14	Talangpor	Surat	Chorasi	Urban	11417	17011	25346	37790	3061980	4562280	6802200
15	Malgama	Surat	Chorasi	Rural	960	1430	2131	3178	143000	213100	317800
16	Barbodhan	Surat	Olpad	Urban	3358	5003	7455	11115	700420	1043700	1556100
17	Sithana	Surat	Olpad	Rural	191	285	424	632	28500	42400	63200
18	SegvaChhama	Surat	Olpad	Urban	1346	2006	2988	4455	280840	418320	623700
19	Kukni	Surat	Olpad	Urban	856	1275	1900	2833	178500	266000	396620
20	Ariyana	Surat	Olpad	Urban	1419	2114	3150	4697	295960	441000	657580
21	Ambheta	Surat	Olpad	Urban	1713	2552	3803	5670	357280	532420	793800
22	Dandi	Surat	Olpad	Rural	3310	4932	7348	10956	493200	734800	1095600
23	Admor	Surat	Olpad	Rural	1462	2178	3246	4839	217800	324600	483900
24	Lavachha	Surat	Olpad	Rural	2636	3928	5852	8725	392800	585200	872500
25	Bhandut	Surat	Olpad	Rural	1242	1851	2757	4111	185100	275700	411100
26	Selut	Surat	Olpad	Rural	1077	1605	2391	3565	160500	239100	356500
27	Veluk	Surat	Olpad	Rural	1371	2043	3044	4538	204300	304400	453800
28	Kashlakhurd	Surat	Olpad	Rural	476	709	1057	1576	70900	105700	157600
29	Kashlabujrang	Surat	Olpad	Rural	443	660	983	1466	66000	98300	146600
30	Sarol	Surat	Olpad	Urban	416	620	924	1377	86800	129360	192780
31	Narthan	Surat	Olpad	Urban	1237	1843	2746	4094	258020	384440	573160
32	Dihen	Surat	Olpad	Urban	2636	3928	5852	8725	549920	819280	1221500
33	Pinjrat	Surat	Olpad	Rural	5799	8641	12874	19195	864100	1287400	1919500
34	Tena	Surat	Olpad	Urban	1976	2944	4387	6541	412160	614180	915740
	TOTAL										

- **Supply to industries**

Sr No	Industry Name & location	Sanctioned water quantity	Average Water Supply of past 12 months (MLD)	Peak Water drawn (MLD)	Status of Water Supply ((O) Operational, (T)Technical Error, (V) Voluntary not taking)
1	Scope of service shall be as per the prevailing conditions changed during the O&M period				

- **Supply to institutions**

Sr No	Institute Name	Sanctioned water quantity	Average Water Supply of past 12 months (MLD)	Peak Water drawn (MLD)	Status of Water Supply ((O) Operational, (T)Technical Error, (V) Voluntary not taking)
1	Scope of service shall be as per the prevailing conditions changed during the O&M period				

ANNEXURE-II QUALITY TESTING & FREQUENCY

Quality standards:

Parameter	Unit	Permissible
Turbidity	NTU	≤1
pH		6.5 to 8.5
Total Dissolved Solids (TDS)	mg/L	≤500
Residual (Free) Chlorine	mg/L	≥2.00 at H/W ≥0.20 at service point (but not more than 1.00)
Coli form Organisms	MPN	<2.00

Testing frequency and location of sampling:

Sl. No.	Parameter	Location for sampling	Frequency
1	Raw water turbidity	At inlet/ aerator	Per Shift
2	Raw water pH	At inlet/ aerator	Per Shift
Output parameters (to be monitored)			
3	Treated water turbidity	Clear water Sump	Per Shift
4	Treated water pH	Clear water Sump	Per Shift
5	Residual chlorine	At Inlet/sump of next headworks by agency &at village level sumps, and other delivery points by GP/ VWSC in presence of agency	Per Shift
6	Total Dissolved Solids (TDS)	Outlet of filter plant	Per shift
7	Coli form organisms	Outlet of filter plant	Per shift

ANNEXURE-III SCHEDULE FOR ESTABLISHMENT

The contractor shall employ the competent staff for O&M of the Water Supply Scheme as under with qualification and experience stated below, Contractor may deploy additional staff over and above those prescribed as per his requirement in order to run the system efficiently.

S. N.	Designation	Minimum Education	Role and office	Minimum Experience	Man for O&M of Proposed& Existing Project
~~1~~	~~O&M Manager~~	~~MBA or PGDM in Business Management~~ **~~and~~** ~~- Bachelor's degree in Civil/ Mechanical/ Electrical/ Environmental/ Public Health engineering~~	**~~Role~~**~~: O&M coordinator / District coordinator~~ **~~Location~~**~~: Agency's office within 10 km radius from GWSSB's division~~	**~~Minimum 7 years of experience~~**	~~0 (Civil+Mech)~~
~~2~~	~~Maintenance Engineer (Supervisor)~~	~~- Bachelor's degree in Civil/ Mechanical/ Electrical/ Environmental/ Public Health engineering~~	**~~Role~~**~~: O&M Overseer (supervisor)~~ **~~Location~~**~~: At Main Headwork~~	**~~Minimum 5 years of experience~~**	~~0 (Civil+Mech)~~
~~3~~	~~Asst. Maintenance Engineer~~	~~- Bachelor's degree in Civil/ Mechanical/ Electrical/ Environmental/ Public Health engineering~~	**~~Role~~**~~: Assistance to Engineer~~ **~~Location~~**~~: Agency's office within 10 km radius from each of GWSSB's sub division~~	**~~Minimum 1 years of experience~~**	~~0 (Civil+Mech)~~
4	Operators	ITI (mech/ electrical/ instrumentation/ water supply operator) **or** Diploma (Mechanical/ Electrical/ Instrumentation) **or** B. Sc. Environmental Science	**Role**: For operating Filter plant/ pumping machinery/ chlorination plant **Location**: Respective plant/ pumping station	**Minimum 1 year of experience**	0 (For WTP Civil) 04 (For Pumping Mech)
~~5~~	~~SCADA Operator~~	~~Diploma in Instrumentation/ Electrical/ Electronics~~	**~~Role~~**~~: Supervise operations via SCADA, generate MIS reports periodically~~ **~~Location~~**~~: SCADA location~~	**~~Minimum 1 year of experience~~**	~~0~~

6	Electrician	Diploma (Electrical)	**Role**: Maintenance and troubleshooting of electrical components **Location**: Pumping station	**Minimum 3 years of experience**	1 (Civil+Mech)
~~7~~	~~Lab in charge/ Chemist~~	~~B.Sc. Chemistry or Environmental Science / Diploma in environmental engineering~~	~~**Role**: Carry out quality sampling and analysis **Location**: Laboratory at headwork~~	~~**Minimum 1 year of experience**~~	~~0 (For WTP Civil)~~
8	Pipe Fitter / Valve man	ITI (Fitter / Plumber)	**Role**: Inspection and repair of network **Location**: Section offices/ sub headworks	**6 months of experience** in maintenance and repairing work of pipeline network	02 (For Pipeline Civil)
~~9~~	~~Data Entry Operator with internet & PC/Laptop~~	~~Any Graduate.~~	~~**Role**: Data entry in the MIS/ ERP software **Location**: With the Maintenance Engineer~~	~~Understanding of MS office and MIS reporting is must~~	~~0 (Civil+Mech)~~
10	Helpers for fitter/ operator/ laboratory		**Role**: Assistance to fitter, electrician, operators, water quality sampling etc. **Location**: With respective group		2 (Civil) 2 (Mech)
~~11~~	~~Sweeper~~		~~**Role**: Maintain cleanliness and housekeeping **Location**: at different premises~~		~~0 (Civil+Mech)~~
~~12~~	~~Outdoor Premise Maintainer~~		~~**Role:** Landscape maintenance, gardening **Location:** At all premises having area 2500 sqm or more~~		~~0 (Civil+Mech)~~
				Total>>>>	**11**
Utility Vehicle: (4 wheeler) with driver to be maintained for inspection and repair of pipe network by the agency.					0

Note:

a) Any personnel deployed in the scheme must be on contractor's payroll and should be above 18 years of age and below 60 years of age with reference to the date of submission of the tender.

b) Agency must arrange and maintain adequate two-wheel and four-wheel utility vehicles for line inspection, repairs, and distribution of water. The provision of Two-wheel vehicles to ensure that work is not hindered when all utility vehicles are engaged or the location is in-accessible by four-wheel vehicle.

c) All office staff, engineer & manager shall be available on call 24x7 i.e. all days. They shall be present at appropriate/ defined location for at least 8 hours per day for 6 days a week except Sunday.

d) Field staff, operators, helpers etc. shall be present on site 24x7 on shift-based rotation system.

ANNEXURE-IV GUIDELINES AND STRUCTURE FOR SITE MEETINGS

1. **Daily Planning Meeting (DPM):** This shall be conducted on daily basis on each asset location prior to start of day's work. These meetings shall include discussion on operational and maintenance parameters including target for the day, activities for the day, inventories, safety, critical issues faced by field staff.

Attendees	☐ Operator's Maintenance Engineer ☐ Operator's skilled and unskilled staff
Conducted by	Operator's Maintenance Engineer
Time & Venue	Daily morning prior to start at all asset locations
Topic/ Agenda	☐ Target supply quantity, quality ☐ Target supply hours ☐ Potential issues in achieving the targets ☐ Routine maintenance activities ☐ Fast moving spares- Inventory levels ☐ Leaks repaired and machinery requirement ☐ Safety while working with chlorine, while working on heights, fire safety etc. ☐ Major maintenance and overhaul activities (such as replacement of spares)
Documentary record	Attendance sheet & discussion points

2. **Weekly Planning Meeting (WPM):** This shall be conducted on weekly basis on each asset location at the start of the working week. These meetings shall include discussion on operational and maintenance parameters including target for the week, activities for the week, inventories, safety, critical issues faced by field staff.

Attendees	☐ GWSSB AAE & JE ☐ Operator's Maintenance Engineer ☐ Operator's skilled and unskilled staff
Conducted by	GWSSB AE/ AAE/ JE
Time & Venue	Monday morning
Topic/ Agenda	☐ Target supply quantity, quality ☐ Target supply hours ☐ Potential issues in achieving the targets ☐ Routine maintenance activities ☐ Fast moving spares- Inventory levels ☐ Safety while working with chlorine, while working on heights, fire safety etc. ☐ Major maintenance and overhaul activities (such as replacement of spares)
Documentary record	☐ Attendance sheet & discussion points ☐ Observation sheet: assets not working properly to be recorded by AAE/ JE

3. **Monthly Review Meeting (MRM):** This shall be conducted on a monthly basis preferably on the last day of the month or the first day of the following month.

Attendees	☐ GWSSB Deputy Executive Engineer ☐ GWSSB AAE & JE ☐ Operator's O&M Manager ☐ Operator's Maintenance Engineer
Conducted by	GWSSB DEE
Time & Venue	11:00 AM on 1st Wednesday of each month
Topic/ Agenda	☐ Detailed review of operational performance for the month ☐ Critical issues faced, downtime, cause analysis ☐ Review of overall inventory and preparedness for the following month

Documentary record	☐ Attendance sheet & discussion points ☐ Monthly inspection report to be prepared and submitted by DEE

4. **Quarterly Review Meeting (QRM):** This meeting will be chaired by the Executive Engineer. It shall be held every quarter to review the performance of the agency and schemes

Attendees	☐ GWSSB EE ☐ GWSSB Deputy Executive Engineer, AAE & JE ☐ GWSSB AAE & JE ☐ Operator's O&M Manager ☐ Operator's Maintenance Engineer
Conducted by	GWSSB EE
Time & Venue	Last Tuesdayof Jan, Apr, Jul and Oct of the year
Topic/ Agenda	☐ Detailed review of operational performance ☐ Critical issues faced, downtime, cause analysis ☐ Demand & supply dynamics ☐ Asset condition
Documentary record	☐ Attendance sheet & discussion points

ANNEXURE-V REPORTING FORMATS

Daily Reporting Format (MIS Portal/ ERP Operations O& M Module)

Coverage and quantity			
Supplied village & cities	_____	Out of total	_____villages & cities
Supplied quantity	____MLD	Out of total	_____MLD

Pumping							
Location: H/W 1							
Sr No.	Type	Design Supply Hours	Capacity (HP)	Condition	Hours supplied	Reason in case of failure (if any)	Breakdown since
1	Working			O Working O Breakdown			
2	Working			O Working O Breakdown			
3	Standby			O Working O Breakdown			
Location: H/W 2							
Sr No.	Type	Design Supply Hours	Capacity (HP)	Condition	Hours supplied	Reason in case of failure (if any)	Breakdown since
1	Working			O Working O Breakdown			
2	Working			O Working O Breakdown			
3	Standby			O Working O Breakdown			

Grievance Redressal (Scheme Related)			
Pending complaints carried forward from previous day	Total complaints received today	Total complaints redressed today	Total complaints yet to be redressed

Water quality		
Raw water turbidity		NTU
Treated water turbidity		NTU
Treated water pH		
PAC/Alum dose		mg/L
Residual chlorine	Headwork 1	PPM

	Sub headwork 1	PPM

	Headwork 2	PPM
	Sub headwork 2	PPM
	Add new rows if required	PPM
Reason for issue in water quality (if any)		

Other Issues			
Issue	Reported Date	Cause <text>	Resolution Remark
Water Leakage			
O&M System failure attended			
Repairs			
Add more rows as required			

Monthly Reporting Format (MIS Portal/ ERP Operations O & M Module)

Electricity consumed	Location (HW/SHW)	
Meter reading at start of the month		
Meter reading at end of the month		
Units consumed in the month		
Bill amount for the month (in INR)		

Power outage (if any)		
Sr No.	Date	Number of hours
1		
2		
Add more rows as required		

Power factor	Location-1	Location-2
Power Factor		

Grievance Redressal				
Pending complaints carried forward from previous month	Total complaints received in a month	Total complaints redressed in a month	Total complaints redressed within stipulated time limit	Total complaints yet to be redressed

Grievance Redressal Time	
Average of Monthly Grievance resolution time (Autofill by ERP)	

Preventive Maintenance activities (payable)		
Inside-Outside Painting	Yes/ No	Attach Photos
Cleaning of Storage reservoir and head works premises		Attach Photos
Replace Filter Media		Attach Photos
Add more rows as required		Attach Photos

Consumables	
Monthly usage of PAC/Alum	Kg
Monthly usage of Chlorine	Kg
Monthly usage of Bleaching Powder	Kg

Annual Reporting Format (MIS Portal/ ERP Operations O & M Module)

<table>
<tr><th>Sr. No.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1</td><td>Name of RWSS:
Name of Agency:
Address:
Telephone No.:
Email Id:</td><td></td></tr>
<tr><td rowspan="5">2</td><td>Details of Customers:</td><td></td></tr>
<tr><td>Population being serviced</td><td></td></tr>
<tr><td>Nos. of Villages</td><td></td></tr>
<tr><td>Nos. of Towns</td><td></td></tr>
<tr><td>Nos. of Connections of category</td><td>
<table>
<tr><td>Type</td><td>Metered</td><td>Unmetered</td><td>Total</td></tr>
<tr><td>Residential</td><td></td><td></td><td></td></tr>
<tr><td>Commercial</td><td></td><td></td><td></td></tr>
<tr><td>Industrial</td><td></td><td></td><td></td></tr>
<tr><td>Institutional</td><td></td><td></td><td></td></tr>
<tr><td>Others</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>3</td><td>Details of Water Sources</td><td>List of water sources
(Please indicate all water sources from which piped water supply is drawn)
<table>
<tr><td rowspan="2">Source Piped/ Ground Water</td><td colspan="6">Drawn water quantity during last one year</td></tr>
<tr><td>Max. drawn in a day (KL or ML)</td><td>Min drawn in a day (KL or ML)</td><td>Total in a month (ML)</td><td>Avg. in a month in MLD</td><td>Total in year (ML)</td><td>Avg. in a year (MLD)</td></tr>
<tr><td>Bulk/RWSS Pipeline</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Ground Water</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Local Surface sources</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total (For All sources)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>4</td><td>Cost of Water</td><td>Cost of water as charged by another authority providing water source_____
For the year = Applicable Rate X Total water drawn in a year</td></tr>
<tr><td>5</td><td>Distribution Charges recovered by the Authority in Rs. Lakhs*</td><td>
<table>
<tr><td>Consumer Type</td><td>Annual Billing</td><td>Annual Receipt</td><td>Outstanding Dues</td></tr>
<tr><td>Domestic</td><td></td><td></td><td></td></tr>
<tr><td>Institutional</td><td></td><td></td><td></td></tr>
<tr><td>Commercial</td><td></td><td></td><td></td></tr>
<tr><td>Industrial</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td></td><td>*To be obtained from Division/ Sub division offices</td></tr>
<tr><td>6</td><td>Service Level

A. Per capita distribution in your authority area
=Total Water supplied in the year in litres/ Population X 365
B. Frequency of water supply at Household level
Once/Twice in a day or once every _____days.
C. Period for which water supplied on the day of supply, measured at household level</td><td>
<table>
<tr><th>Zone</th><th>Per capita water supply per day (LPCD)</th><th>Frequency of Supply (Once/Twice in a day or once every _____days.)</th><th>Duration of Supply (Minutes)</th></tr>
<tr><td>Zone 1</td><td></td><td></td><td>➢</td></tr>
<tr><td>Zone 2</td><td></td><td></td><td>➢</td></tr>
<tr><td>Zone 3</td><td></td><td></td><td>➢</td></tr>
<tr><td>--------</td><td></td><td></td><td>➢</td></tr>
</table>
</td></tr>
<tr><td>7</td><td>Water Distribution Grievance Analysis (from 1916 helpline)</td><td>Nos. of applications received during the year
<table>
<tr><th rowspan="2">Sr. No</th><th rowspan="2">Customer type</th><th rowspan="2">Total Complaints</th><th colspan="2">Disposed</th><th colspan="4">Pending since</th></tr>
<tr><th>Positive</th><th>Negative</th><th>Within 1 Week</th><th>1-2 Week</th><th>2-4 Week</th><th>Above 4 weeks</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>8</td><td>Difference of Quantity of water pumped from sources and quantity of water billed (Annualized Distribution Loss of water)</td><td></td></tr>
<tr><td>9</td><td>Proposed course of action to prevent water loss, improve spatial distribution asymmetry, improve service level& address quality problem issues</td><td>I. _____
II. _____
III. _____
IV. _____</td></tr>
<tr><td>10</td><td>Regulatory action taken under Gujarat Domestic Water Supply (Protection) Act or the law for concerned authority</td><td>a) Unauthorized drawl (Please report nos. of cases)
I. Excess drawl
II. Unauthorized drawl
III. Change of use for water connection
b) Penalty/Assessment orders levied for unauthorized connection/drawl
I. Nos. of case in which assessment/penalty order made
II. Amount in assessment order made
III. Amount collected
IV. Amount yet to be collected
<table>
<tr><td colspan="4">Recovery pending from the consumer in reference to penalty mposed under the act</td></tr>
<tr><td>Current Year</td><td>Previous Year</td><td>Years prior to last year</td><td>Total</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>
➢</td></tr>
<tr><td>11</td><td>Remarks</td><td></td></tr>
</table>

ANNEXURE-VI PAYMENT, RESOLUTION TIME & PENALTIES

PAYMENT & INCENTIVES

1) The contractor shall raise monthly invoice to the authority within 5th to 10th date of any billing month as mentioned in Price Bid Volume -III, Breakup for interim payment, Operation and Maintenance.
2) The invoices submitted will be subject to penalties which the authority has laid down through this contract.

DEDUCTIONS &PENALTIES

Every habitation should receive adequate and safe water on a daily basis as per the target quantity decided by GWSSB. In case of any fault, the shortfall shall be provided on the next day along with that day's regular supply quantity. i.e. The shortfall in quantity shall be compensated on the following day. For the purpose of establishing service level agreement, a 2-day block period is considered.

A. Operational

Aspect	Activity	Description
Water supply coverage	Less habitations served (from baseline: Operational) or less quantity water is served to the habitations against the target	Penalties will be as per the three cases (a, b and c) as shown below. For non-compliance, applicable case will be identified, and such penalty will be levied.
a)	Within the 2-day block period, less quantity of water supply to any habitation (One instance= 1 non-compliant block of 2-days)	Total quantity of water supplied to a habitation within the 2-day block period: i. 0% or up to 50% of 2-day requirement: No payment ii. >50% to ≤90%: Payment at 70% per day rate per habitation iii. If total supplied water is ≥ 90%: 100% payable to contractor
b)	No supply for three consecutive 2-day blocks i.e. 6 days	No payment and a penalty of 50% per day per habitation. (For understanding, total deduction will be 6 days' payment + 3 days' of payment as penalty)
c)	Non supply of water for 20 days or more continuous in a month. Such habitation will be considered as habitation with technical issue.	No payment for the billing month and a penalty of 100% of monthly rate per habitation Note: • Three consecutive months of non-supply for 20 or more days/month will be a cause for termination.
	Special notes for a, b, and c.	• If penalty c is applied for a month, then a or b will not apply during that month. • If penalty b or c is applicable, then during the same period/ days, penalties under 'a' will not be applicable (concurrent period of 6 days or 20 days. • Separate instances ofa & b or any combinations thereof will be leviedduring a billing period (except for concurrent period) • In case of technical issuehabitations which are operationalized, penalties will be applicable after trial period i.e. after 3 months of resolution • For exceptional circumstances such as damage to the assets due to flood or other natural calamities, power supply issue from DISCOM, or that beyond the control of O&M agency, the

Aspect	Activity	Description
		EE shall issue a certificate to the agency for waiver of penalties.
Absence of manpower	O&M Manager	Rs 5000/day
	Maintenance Engineer	Rs 2500/day
	Other operating staff	Rs 1500/day
Quality non compliance	Treated Water Turbidity, pH or chlorine at H/W and Sub H/W not compliant	Rs 5000 per failed sample. 10 or more failed sample in a month will be a cause for termination of the contract.
Reporting	Reporting in ERP or/ other MIS software such as quantity, quality, grievances, operational KPIs etc	Rs 5000/day Late reporting will be considered non-compliant. Daily reports have to be submitted before 12 PM on the following day.
Conduct of employees	Staff not in uniform compliant to the contract condition or staff doesn't have ID card issued by agency	₹ 100/day per person
Safety Non-compliance	If the contractor's personnel are found to be working without required personal protective equipment (PPE) while handling chlorine gas, working with electrical components or during working at heights more than 1.5m or in violation of provisions of Annexure XII.	Rs 1000/- shall be deducted for every such instance. After three such deductions/ instances, issue a notice to the contractor. No improvement, i.e. the fourth instance will be a cause for termination.

For calculation of penalties, monthly rate per village/habitation for particular year shall be calculated as:

$$\frac{\text{= Total of part A for the year 12months}}{\text{Total no. of Villages (operational+voluntary+technical)}}$$

For calculation of penalties, daily rate per village/habitation for particular year shall be calculated as:

$$= \frac{\text{Total of part A for the year 12months)}}{\text{365days x Total no. of Villages (operational+voluntary+technical)}}$$

*Hamlets is defined as Census Hamlets. Only include those census Hamlets where hamlet is covered under Faliya Connectivity project and the RWSS delivers water directly to that hamlet.

Total of Part A for the 12 months=As per Below Table

S. No .	Year	Amount
1	1	49,31,340.70
2	2	52,27,221.20
3	3	55,40,854.40
4	4	58,73,30.70
5	5	62,25,704.00
	Total	2,77,98,426.00

B. Maintenance

Aspect	Activity	Description
Power Factor	For Power Factor below 0.9	Total deduction: Penalty levied by DISCOM+ INR 10,000 per incidence (as per electricity bill)
Preventive Maintenance (stipulated time is as per Annexure VII, master framework for preventive maintenance)	Daily maintenance activities not carried out as per daily checklist	Rs 2,000/day
	Monthly maintenance activities not carried out within stipulatedtime	Rs 50,000 in the billing month
	Quarterly maintenance activities not carried out within stipulatedtime	Rs 2,00,000 in the billing month
	Any of the Annual maintenance activities, Overhaul, Calibration & Servicing, Performance Testing, Payable Maintenance Activities (Part B)not carried out within stipulatedtime	Rs 10,00,000 in the billing month

C. Curative Maintenance & Repairs

Aspect	Activity	Description
Repair, Breakdown response	Carryout repairs within 24 hours to restore water supply. Penalty will be levied for delay after first 24 hours. For calculation of penalties: First day = From 24 hours to 48 hours	First day: ₹ 1,000/day Second day & onwards: ₹ 10,000/day (for all components incl WTP, pumping machinery, pipe network, intake structures, storage tanks, valves, transformer*, panels, starters, breakers, lifting devices, dosing devices etc.) Note: If due to such breakdown, water supply is affected, then operational penalties will also be applicable. *Except where DISCOM is responsible for repair of transformer under major breakdown

D. Other penalties:

- Any implication, due to chemical leak hazard shall be borne by the agency
- The agency has to submit the documentary proof of GPF/ESI registration.Further, as per the Employees Provident Fund and Miscellaneous Provisions Act, 1952, the contractor shall comply with all provisions of the said act if his/ her total establishment has 20 or more persons employed. Agency shall submit proof of PF contribution with every invoice. Entire bill payment will be put on hold if the same is not provided.
- The agency has to submit the license as per contract Labour Act within one month from the date of work order otherwise, a penalty of Rs.50,000/- per month will be imposed for two months, or otherwise contract will be terminated, and all the liabilities shall be borne by the contractor.
- **Billing:** Agencies (O&M contractor) shall submit monthly bill to GWSSB as agreed in the T&C on timely basis i.e. 5th to 10th date of the following month,beyond which penalties will be levied:

Invoice (Monthly bill) submission	Penalty
Late submission of monthly bill	5% of monthly billed amount for each month of delay. E.g. for two months' delay, 5%+5%= 10% penalty will be levied.
Note	Such penalties will be separately calculated for each delayed bill.

TERMINATION

Termination due to SLA non-compliance: In addition to the provisions of this tender document, and not in contrary to any clause of this contract, the agency may be terminated under the following circumstances;

a) If applicable penalties for each month exceed 25% of billing amount per month, for a block of 4 consecutive months, then contract shall be liable for termination.

b) Cumulative penalties levied against non-performance in any of the SLA (viz. operational, preventive or curative maintenance) exceeds 10% of the total contract value of O & M.

c) Non-performance from the contractor w.r.t. repetitive non-adherence to safety requirements or quality requirements of water as mentioned in this annexure's Deductions & Penalties.

In such cases of violation, a termination notice shall be served to the O&M contractor by the competent officer of GWSSB.Termination as per Clause 18 will be applicable.

ANNEXURE-VII PREVENTIVE MAINTENANCE SCHEDULE

Framework for carrying out maintenance activities

Periodicity of activities	Time frame to complete	Recording mechanism
Daily preventive maintenance activities	Daily morning in the first hour as part of the start-up activities	Daily checklists pasted near the asset
Monthly preventive maintenance activities	1st or 2nd of every month	Monthly maintenance checklist
Quarterly preventive maintenance activities	8th to 14th of January, April, July and October of every year	Quarterly maintenance checklist
Half yearly preventive maintenance activities	Between 8th to 14th of January and July of every year	Half-yearly maintenance checklist
Yearly preventive maintenance activities	Between 15th and 30th of January of every year	Annual maintenance checklist
Calibration & servicing	Along with the yearly preventive maintenance activities	Calibration and servicing log
Overhaul activities	15th to 30th of January every year *Clariflocculator: every year* *Civil and plant: every 2 years* *Pumping machinery: every 1 year (submersible) or 2 years (VT, centrifugal)* *Transformer: every 5 years*	Overhaul checklist
Painting works	Between 1st to 30th of October of the year (after monsoon)	Record log

Schedule for Weather specific preparation

Periodicity of activities	Time frame to complete	Recording mechanism
Pre-Summer: Yearly performance testing	Testing from 15th to 30th of January of every year Systems should be ready for summer by 28th February with all corrective actions	Performance testing log
Preparedness for Monsoon	15th June to 30th June of every year. Systems should be ready by 1st July with all corrective actions	Record log

i. Daily Operations Checklists

Daily Checklist: Pumps & Motors (Asset ID)

RWSS name : _____ Asset Make & Capacity:_____
Location (H/W): _____ Section :_____
Manufacture Year : _____Quantity & Head : _____

Date	Bearing temperature	Noise	Vibration	Temperature	Visible Leaks	Coupling bushed and rubber spider integrity (in MPR)	Check stuffing box, gland, etc	Lubrication	Signature of Pump Operator
1 /_____/20	*Ok/ Not Ok*								
2 /_____/20									
3 /_____/20									
4 /_____/20									
5 /_____/20									
6 /_____/20									
7 /_____/20									
8 /_____/20									
9 /_____/20									
10 /_____/20									
11 /_____/20									
12 /_____/20									
13 /_____/20									
14 /_____/20									
15 /_____/20									
16 /_____/20									
17 /_____/20									
18 /_____/20									
19 /_____/20									
20 /_____/20									
21 /_____/20									
22 /_____/20									
23 /_____/20									
24 /_____/20									
25 /_____/20									
26 /_____/20									
27 /_____/20									
28 /_____/20									
29 /_____/20									
30 /_____/20									
31 /_____/20									

Daily Checklist: <u>Panels, Circuit Breakers, Starters</u>

RWSS name : _____ Asset Make &Capacity :_____

Location (H/W) : _____ Section:_____

Manufacture Year : _____ Quantity & Head: _____

Date	Phase indicator	Voltage, Current, Frequency	Energy meter readings	Temperature	Clean external surface	Any loose connections / insulation	Signature of Electrician/ Operator
1 /_____/20	*Ok/ Not Ok*						
2 /_____/20							
3 /_____/20							
4 /_____/20							
5 /_____/20							
6 /_____/20							
7 /_____/20							
8 /_____/20							
9 /_____/20							
10 /_____/20							
11 /_____/20							
12 /_____/20							
13 /_____/20							
14 /_____/20							
15 /_____/20							
16 /_____/20							
17 /_____/20							
18 /_____/20							
19 /_____/20							
20 /_____/20							
21 /_____/20							
22 /_____/20							
23 /_____/20							
24 /_____/20							
25 /_____/20							
26 /_____/20							
27 /_____/20							
28 /_____/20							
29 /_____/20							
30 /_____/20							
31 /_____/20							

Daily Checklist: Transformer & Substation

RWSS name : _____ Asset Make & Capacity :_____
Location (H/W) : _____ Section :_____
Manufacture Year : _____ Quantity & Head: _____

Date	Winding temperature	Oil temperature	Leaks in CT/PT unit	Silica gel colour (if pink not ok)	Oil level in tank	Any loose connections / insulation	Signature of Electrician/ operator
1 /_____/20	*Ok/ Not Ok*						
2 /_____/20							
3 /_____/20							
4 /_____/20							
5 /_____/20							
6 /_____/20							
7 /_____/20							
8 /_____/20							
9 /_____/20							
10 /_____/20							
11 /_____/20							
12 /_____/20							
13 /_____/20							
14 /_____/20							
15 /_____/20							
16 /_____/20							
17 /_____/20							
18 /_____/20							
19 /_____/20							
20 /_____/20							
21 /_____/20							
22 /_____/20							
23 /_____/20							
24 /_____/20							
25 /_____/20							
26 /_____/20							
27 /_____/20							
28 /_____/20							
29 /_____/20							
30 /_____/20							
31 /_____/20							

Daily Checklist: Headworks (Filter Plant)

RWSS name : _____Asset Make & Capacity:_____
Location (H/W) : _____Section:_____
Manufacture Year _____Quantity & Head: _____

Date	Leakages in Raw water conveyance	Cleanliness in inlet channel	Sludge on surfaces (Clarifloculator)	Leaks in Cylinder/ toner in Chlorine room	Water loss in filter gallery	Functioning of key components	Signature of Operator
1 /_____/20	*Ok/ Not Ok*						
2 /_____/20							
3 /_____/20							
4 /_____/20							
5 /_____/20							
6 /_____/20							
7 /_____/20							
8 /_____/20							
9 /_____/20							
10 /_____/20							
11 /_____/20							
12 /_____/20							
13 /_____/20							
14 /_____/20							
15 /_____/20							
16 /_____/20							
17 /_____/20							
18 /_____/20							
19 /_____/20							
20 /_____/20							
21 /_____/20							
22 /_____/20							
23 /_____/20							
24 /_____/20							
25 /_____/20							
26 /_____/20							
27 /_____/20							
28 /_____/20							
29 /_____/20							
30 /_____/20							
31 /_____/20							

Daily Checklist: Valves & Gates

RWSS name : _____ Asset Make & Capacity :_____
Location (H/W) : _____ Section :_____
Manufacture Year : _____ Quantity & Head : _____

Date	Bolts & nuts	Packing (gland, gasket, etc)	Leaks	Condition of valve	Lubrication (for sluice, butterfly)	Vibration or noise	Signature of Operator
1 /_____/20	*Ok/ Not Ok*						
2 /_____/20							
3 /_____/20							
4 /_____/20							
5 /_____/20							
6 /_____/20							
7 /_____/20							
8 /_____/20							
9 /_____/20							
10 /_____/20							
11 /_____/20							
12 /_____/20							
13 /_____/20							
14 /_____/20							
15 /_____/20							
16 /_____/20							
17 /_____/20							
18 /_____/20							
19 /_____/20							
20 /_____/20							
21 /_____/20							
22 /_____/20							
23 /_____/20							
24 /_____/20							
25 /_____/20							
26 /_____/20							
27 /_____/20							
28 /_____/20							
29 /_____/20							
30 /_____/20							
31 /_____/20							

Calibration& Service Log for: _____(name of equipment& Asset ID)

RWSS name : _____ Asset Make & Capacity :_____

Location (H/W) : _____ Section :_____

Manufacture Year : _____ Quantity & Head : _____

Calibration & Service Log

SI No.	Date of Calibration	Validity (next calibration date)	Calibration Agency Name	Signature of calibration agency's personnel	Signature of Maintenance Engineer

Agency shall hang/ paste/ stick this log near the equipment. Applicable for:

- ☐ Pressure gauges
- ☐ Flow measuring devices
- ☐ Chemical dosing devices such as chlorinators
- ☐ Laboratory equipment
- ☐ Quality analysers
- ☐ Voltmeter
- ☐ Ammeter
- ☐ Frequency meter
- ☐ Protection relay
- ☐ DG set
- ☐ Others where applicable

ii. Periodic Maintenance activities

PUMP & MOTOR SET

Monthly

Activity	Check (Tick if complete)
Tighten the gland stuffing box and check gland packing	
Apply oil to the gland bolts	
Inspect mechanical seal for wear	
Tighten Foundation bolts	
Check condition of bearing	
Tighten electrical connections including earthing	

Quarterly

Activity	Check (Tick if complete)
Realignment of pump and drive (both shall be decoupled) (pump and motor shafts should be pushed to either side)	
Replenish clean oil or grease to lubricate bearings (Anti friction bearing should have one third to half of its housing as void space to avoid overheating)	
Replace oil or grease in the bearing housing	
Check condition of gland packing and replace	
Tighten cable gland, lugs and connecting bolts	
Tighten foundation bolts	
Inspect for leaks	
Greasing, Lubrication and Replenish Oil	
Clean flow indicators and other instruments/ appurtenances	

Note: Monthly activities shall be undertaken during quarterly maintenance also.

Annually

Activity	Check (Tick if complete)
Overhauling, if due	
Performance test before Summer	
Clean bearing and lubricate, replace	
Clean bearing housing examine for flaws, e.g. wear, grooving etc.	
Examine shaft sleeves for wear or scour and necessary rectification. If shaft sleeves are not used, shaft at gland packing's should be examined for wear.	
Calibration of all vital instruments i.e. pressure gauge, vacuum gauge, ammeter, voltmeter, Wattmeter, frequency meter, tachometer, flow meter, etc.	
Conduct performance test of the pump for discharge, head efficiency, pressures and power	
Examine earth connections and motor leads	
Restore running clearances through original specifications (adjust ring clearances or install new wear rings)	
Replace the impeller in case of corrosion or excessive wear	
Clean winding, bake and varnish	

Note: Quarterly activities shall be undertaken during annual maintenance also.

Overhauling of the pumpset

Activity	**Check (Tick if complete)**
Restoring clearances (incl. clearance between impeller-casing rings, impeller-plates)	
Replacing worn-out/ damaged parts such as impeller, wear rings/ plates, o-rings and packings, drive shaft.	
Cleaning and lubricating bearings	
Replacing corroded parts	
Removal of scaling and leaks	
Recalibration of gauges and instruments	
Testing of reassembled pumps	

PANELS, CIRCUIT BREAKERS, STARTERS

Monthly

Activity	Check (Tick if complete)
Blow the dust and clean internal components in the panel, breaker	
Tighten all connections of cable, wires, jumpers and busbars. All carbon deposits shall be cleaned.	
Adjust relay setting.	
Test spring charging mechanism and manual cranking arrangement.	
Clean all exposed insulators.	
Test functioning of trip circuit and alarm circuit.	
Conduct test for opening & closing timing of breaker.	
Check contact resistance between male & female contacts	

Quarterly

Activity	Check (Tick if complete)
Clean with smooth polish paper all the fixed and moving contacts	
Replace the oil in oil tank	
Check insulation resistances.	
Check conditions of insulators and replace if necessary	
Tighten all connections in marshalling boxes of breakers and transformer.	
Oil top up in MOCB/LOCB/HT OCB.	
Measure contact resistance and check male & female contacts for any pitting	
Check dielectric strength of oil and replace (HT)	

Note: Monthly activities shall be undertaken during quarterly maintenance also.

Annually

Activity	Check (Tick if complete)
Carry out servicing of all components, thoroughly clean and reassemble.	
Calibrate voltmeter, ammeter, frequency meter etc.	
Replace oil in breaker. (HT)	
Testing of protection relay with D.C. injection.	
Servicing of HT breaker and contactor	

Note: Quarterly activities shall be undertaken during annual maintenance also.

TRANSFORMER & SUBSTATION

Monthly

Activity	Check (Tick if complete)
Repair leakages through CT/PT unit, transformer tank and HT/LT bushings.	
Change the silica gel (if pink in colour)	
Top up oil level in transformer tank	
Tighten all connections (relay contacts, cable termination) in marshalling box etc.	
Test AB switch and DO fuse assembly.	
Clean radiators free from dust and scales.	
Pour 3-4 buckets (6 to 8 buckets in summer) of water in earth pit	
Inspect lightning arrestor and HT/LT bushing for cracks and dirt.	

Quarterly

Activity	Check (Tick if complete)
Change or filter transformer oil in case of dielectric strength is not as desired.	
Check insulation resistance of all equipment's in sub-station, continuity of earthlings and earth leads.	
Test tap changing switch.	
Change or filter oil in CT/PT if dielectric strength is not in desired.	
Tighten contact faces of AB switch and DO/HG fuse; apply petroleum jelly or grease to moving components of AB switch.	

Note: Monthly activities shall be undertaken during quarterly maintenance also.

Annually

Activity	Check (Tick if complete)
Replace Oil after monsoon	
Measure resistance of earth pit. Resistance shall not exceed 1 ohm.	
Tighten bus bar connections, clean contact faces, change rusted nut bolts.	
Calibrate the protection relay for functioning. Correct relay setting if necessary.	
Earth filling and metal spreading to remove water logging	
Test transformer oil for acidity test.	
Check drainage arrangement to prevent water logging	

Note: Quarterly activities shall be undertaken during annual maintenance also.

Long term

Activity	Frequency	Check (Tick if complete)
Painting transformer & steel structure	2 years	
Overhaul of Transformer: ☐ Replace gaskets and rubber items: between tap changer flange and transformer tank, Gaskets for valve flanges, Gaskets for radiator valve flanges, Gaskets for turret and bushings flanges, Gasket between PRD and transformer tank cover, etc. ☐ The core of transformer and winding replacement after 5 years for transformer up to 3000 kVA and after 7-10 years for transformers of higher capacity.	5 years	

FILTER PLANT & HEADWORK

Monthly

Activity	Component	Check (Tick if complete)
Calibrate optimum dosage of coagulant (based on laboratory analysis)	Inlet channel	
Lubricating & oiling all motors & gearbox	Alum dosing	
Clean all electric connections	All units	
Repairing leaks (pressure grouting in civil structures)	All units	
Greasing/ Lubrication/ Oil top up of all moving parts of bridge (trolley, gearbox)	Clariflocculator	
Repairing leaks in chemical feeder, dosing plumbing, air blower pipes	All units	

Quarterly

Activity	Component	Check (Tick if complete)
Lubrication and oiling of motors	All units	
Lubricate bearing and gear trains	Alum dosing	
Cleaning all electromechanical components	All units	
Valve/Gate Lubrication and servicing	All units	
Lubrication, oiling, greasing and servicing of backwash pump	Filter gallery	
Cleaning of alum, PAC, chlorine storage rooms	Chemical storage	
Calibrate all dosing equipment	All chemical dosing units	
Replace all corroded parts all water level indicators,bolts, nuts, washers, ladders, rungs, metal railings, insert plates	All units	
All signages (repairs, replacement if damaged)	All units	
Replenish safety kits	Chlorine room	
Mock drill	Filter plant	

Note: Monthly activities shall be undertaken during quarterly maintenance also.

Half yearly

Activity	Component	Check (Tick if complete)
Replace lost filter media (as per schedule B)	All units	
Servicing chlorine lifting device	Alum dosing	
Cleaning of reservoirs	All units	

Annually

Activity	Component	Check (Tick if complete)
Calibration of flow measuring devices, weighing machine, gauges	All units	
Servicing and checking of the valves/ gates	Alum dosing	
Cleaning, plastering and coating of mixing tanks	Flash mixer	
Repairing leaks in all pipes, channels, laterals	All units	
Painting all metallic components (valves, handrails, pipes, ladders etc)	All units	
Overhaul of clarriflocculator bridge	Clariflocculator	

i. Realign traction wheels ii. Replace rubber wheels iii. M.S Scrapper condition check and replace if necessary iv. Adjust clearances and alignments v. Motor servicing		

Note: Quarterly activities shall be undertaken during annual maintenance also.

Long term

Activity	**Frequency**	**Check (Tick if complete)**
Painting civil structures (external & internal), fixtures (window, doors etc)	2 years	

VALVES (sluice, butterfly, NRV, kinetic air, zero velocity)

Monthly

Activity	Check (Tick if complete)
Tighten bolts, nuts, packing	
Disc and seat ring lapping in sluice valves	
Lubrication of sluice and butterfly valve	
Plug leakages (gaskets, packing etc)	
Clean small orifice nipple in Kinetic air valves	

Quarterly

Activity	Check (Tick if complete)
Valve/Gate Lubrication and servicing	
Servicing of isolating valve (kinetic air valve)	
Replace damaged balls or seats of orifices(kinetic air valve)	
Check seal ring and tight shut-off (Butterfly valve)	

Note: Monthly activities shall be undertaken during quarterly maintenance also.

Annually

Activity	Check (Tick if complete)
Painting all valves with oil paint	
Oil/ grease change in gearing arrangement (Butterfly valve)	
Calibration and servicing of all valves and gates	

Note: Quarterly activities shall be undertaken during annual maintenance also.

Long term

Activity	Frequency	Check (Tick if complete)
Replacement of spindle or spindle nut (sluice valve)	2 years	

WATER METERS/ FLOW METERS

Monthly

Activity	Check (Tick if complete)
Cleaning chamber, casing, box	
Check and plug leakages	
Clean deposits	

Annually

Activity	Check (Tick if complete)
Calibrate & validate readings and range	
Disconnect and service (ultrasonic)	

Note: Monthly activities shall be undertaken during annual maintenance also.

OVERHAUL SCHEDULE

Activity – Included in quoted price	Frequency (months)	Tentative schedule
Replace Gland packings, mechanical seal	3	Jan, Apr, Jul, Oct
Replace balls & seats in Kinetic air valves	3	Jan, Apr, Jul, Oct
Oil topup in panels/ starters/ circuit breakers	3	Jan, Apr, Jul, Oct
Check conditions of insulators and replace (panels/ starters/ breakers)	3	Jan, Apr, Jul, Oct
Replace lost filter media – Effective size of filter sand 0.45 to 0.70 mm, uniformity coefficient not more than 1.7 nor less than 1.3, depth of filter 0.75 M, free board 50 cm, gravel 0.45 M in depth, sand and gravel conforming to IS: 8491 (i) – 77	6	Jan and Jul
Replace all corroded parts all water level indicators,bolts, nuts, washers, ladders, rungs, metal railings, insert plates (Note: Corrosion should not occur if preventive measures like painting, etc are done. As such, the replacement is supposed to be done immediately post identification)	12	Jan
Overhaul of clariflocculator bridge (realignment, servicing, rubber wheels, motor, gearbox)	12	Jan
Calibration & Servicing of gauges, flow meters, valves	12	Jan
Servicing (Starters, Breakers and Panels)	12	Jan
Leak repairs, plastering in all civil components - Pressure grouting to arrest leaks from structures and additional coating of cement mortar plastering to plug the leakage from structure of SR and through the pipes and valves	12	Jan
Pump Overhaul (activities as per checklist)- submersible set	12	Jan
Pump Overhaul (activities as per checklist)- VT/ centrifugal	24	Jan20XX and 20XX
Replacement of spindle or spindle nut (sluice valve)	24	Jan 20XXand 20XX
Transformer overhaul: Core and winding replacement, gaskets etc	60	Jan 20XX
Painting of metallic blades and shafts (Flash mixer)	12	Oct
Painting MS pipes within headwork premise	12	Oct

Painting Handrails	12	Oct
Painting and marking level indicators, instruments, charts	12	Oct
Painting ladders	12	Oct
Painting of Alum and lime solution tanks with anti-corrosive paint. (Chemical feed unit)	12	Oct
Painting air valve, sluice valve, riser pipe of air valve, zero velocity valve, butterfly valve (outdoor), bypass arrangement	12	Oct
Activity –	**Frequency (months)**	**Check (Tick if complete)**
Cleaning water storage structures (Both existing and new structures)	6	Jan and Jul
Painting civil structures (external & internal) Both existing and new structures.	24	Oct 20XX and 20XX
Painting transformer & steel structure	24	Oct20XX and 20XX
Food grade epoxy painting in the internal of all water retaining structures (sumps, ESRs etc) to avoid corrosion due to chlorine	24	Oct20XX and 20XX
Painting doors, windows, ventilation, shutter, pump, motor,equipment inside pump house, transformer yard, D.P. structure	24	Oct20XX and 20XX

iii. Specifications for painting:

- ☐ Exterior paint: shall be acrylic emulsion paint colour (like APEX): pump house, treatment plants, treated water pumping stations, GSRs, ESRs, sump, store
- ☐ Oil paint colour: All type of doors, windows, ventilation, shutter, pump, motor, all valves & equipment inside pump house, transformer yard, D.P. structure, transformer etc
- ☐ Black japan colour: air valve, sluice valve, riser pipe of air valve, zero velocity valve, butterfly valve (outdoor), bypass arrangement etc.

iv. Activities in general housekeeping and maintenance:

- ☐ Desilting of channels, wells, tanks
- ☐ Remove debris from the premises
- ☐ Remove aquatic weed from channels, storage structures and premises
- ☐ Removal of algae from surfaces
- ☐ Sorting, Stacking and Marking of inventory (Tools, pipes, fittings, Spares etc.)
- ☐ Sweeping the entire premises
- ☐ Maintaining signages
- ☐ Pre-summer site cleaning and Pre-monsoon cleaning of storm water drains
- ☐ Gardening and maintaining the landscapes in the premise
- ☐ Maintenance of safety kits, fire extinguishers

v. Signages

- ☐ Safety Signs: To warn workers and visitors of potential hazards, such as hazardous chemical, low ceilings, or hazardous materials.
- ☐ Directional Signs: To guide visitors and employees through the plant, indicating where various work areas and equipment are located.
- ☐ Identification Signs: Label equipment, rooms, or areas with specific names or numbers
- ☐ Informational Signs: Instructions for using equipment, procedures for handling hazardous materials, or emergency evacuation routes.
- ☐ Instructional Signs: Step-by-step instructions on how to perform specific tasks or use the machinery correctly and safely.
- ☐ Regulatory Signs: Mandated by OSHA and other regulatory entities to notify employees of laws and regulations that apply to the plant.
- ☐ Layout/ flow diagram of the RWSS:Shall be printed on A2 size paper and mounted on the wall of HW office for information of the visitors.

☐ Assets: All assets must have signages to indicate design capacity, OEM, type etc. (e.g. in case of pump set- the section catered by the pump, maker of the pump and designed flow of the pump)

vi. Weather specific activities

a) Pre-summer: Yearly performance testing

☐ **Performance test** shall be conducted for full capacity in the month of January or February, and all rectifications shall be completed before 28 February. All equipment and assets shall be ready for summer by the end of February.

Period/ Time	15th January to 30th January of each year
Parameters to be observed and recorded	☐ Head achieved ☐ Discharge achieved ☐ Power Input to motor & Speed of pump ☐ Water distribution to tail end ☐ Leaks
Test codes	BIS 9137, 10981 and 5120
Performance tests for	i. All pump- motor set (including working & standby) shall be tested one at a time. ii. All working pump-motor set to be tested (30-60 minutes) iii. All standby pump-motor set to be tested (30-60 minutes) iv. Filter plant to be operational for entire test duration (i, ii, iii)

☐ **Preparedness activities before summer**

- Stocking of critical spares and consumables
- Clear the site of all materials susceptible to fires such as oil papers, jute cloths, dry leaves
- All firefighting systems shall be in working condition
- All electrical connections shall be tightened and insulated properly
- Cleaning, testing and replacement of silica gel in breathers etc. of transformers
- Owing to power demand surges, voltage fluctuations occur more frequently, causing damage to critical equipment. It is crucial to monitor the input voltage or take precautions by installing components such as on-load tap changer (OLTC) for transformer

b) Preparedness for monsoon

☐ **Preparedness activities before monsoon:** In monsoon, raw water turbidity is high. Chlorine and PAC consumption is higher in monsoon. Contractor shall maintain adequate stock of these important consumables and spares necessary for ensuring functioning of the plant.

- Stock review of Consumables such as Chlorine and PAC
- Performance testing of dosing devices & calibration
- Leak and seepage rectification work to avoid ingress of water
- Insulation of electrical panels, water seals to be checked
- Cleaning, testing and replacement of silica gel in breathers etc. of transformers
- Clearing drainages choked with dust, leaves and other materials
- Dewatering pumps to be serviced and kept in working condition
- Cover all open excavations and drains.

ANNEXURE-VIII RECORDS

1) Filter Plant Register

Name of Project:

Zone	
District	
Scheme Name	
Filter Plant Capacity (MLD)	
Filter Plant Type	

Date	Condition of filter plant (working/breakdown)	Daily treated water quantity (MLD)	Raw water turbidity	Treated water turbidity	Pre chlorination (ppm)	Post chlorination (ppm)	Clear water pH	PAC usage for the day (kg)	Total units of electricity consumed

Signature of Contractor

1.1 Filter bed Head loss & Backwash register

Name of Project:

Filter No.	Time & Date		Hours Operated			Head Loss		Backwash		Notes on condition of filters & problem in operations
	Start	Stop	Today	Previous	Total	Start (m)	Stop (m)	Minutes	Quantity (m^3)	

Signature of Contractor

2) Pumping Station Report

Name of Project:

Daily Pumping Report

Sr. No.	Pump No.	Pump Starting Time	Pump Stopping Time	Pumping Hours	Units of Power Consumed (KWh)	Supply Reservoir		Flowmeter		Total Water Pumped (MLD)
						Level(M)		Reading(m^3)		
						Initial	Final	Initial	Final	
1										
2										
3										
4										
5										
6										
7										

Signature of Contractor

3) Chemical Stock & Dosing

Name of Project:

S. No.	Date	Income/ Opening balance			Usage			Balance			Remarks
		Alum (In Kg)	PAC (30%) in Kg	Chlorine tonner (In Kg)	Alum (In Kg)	PAC (30%) in Kg	Chlorine tonner (In Kg)	Alum (In Kg)	PAC (30%) in Kg	Chlorine tonner (In Kg)	
1											
2											
3											
4											
5											
6											
7											

Signature of Contractor

4) Stores

4.1 Material Entry Register

Name of Project:

Date	Name of material	Material Code	Received from	Invoice Number	Quantity Received	Receiver's Name & Signature

4.1 Material Issue Register

Name of Project:

Date	Name of material	Material Code	Issued from	Invoice Number	Quantity Issued	Issuer's Name & Signature	Receiver's Name & Signature

4.1 Material Stock Register

- Agency has to maintain ledger for all materials including opening balance, issued in the month, closing balance

Grievance Register
Name of Project:

Registration Number	Date of Complaint	Detail of Complainant (Name, Mobile number,)	Description of Complaint	Complaint location (Village/ town/ hamlet)	Action taken	Resolution Date

Signature of Contractor

5) Visitor's Register

Name of Project:

Date	Visitor's Name	Comments/ Suggestions during visit	Visitor's sign	Action taken	Agency representative's sign

6) Preventive & Curative Maintenance register

Name of Project:

Report of maintenance work – Preventive & Curative Maintenance (separate registers to be maintained)

Sr. No.	Date	Nature of work attended	Remarks
1			
2			
3			
4			
5			
6			
7			
8			
9			

Signature of Contractor

7.1 Calibration of Instruments register

Name of Project:

Report of calibration of Instruments installed

Sr. No.	Name of Instrument (Pressure Gauge, Flow meter, Relay, Voltmeter, Ammeter etc.)	Instrument No. (if any)	Qty.	Date of calibration	Remarks
1					
2					
3					
4					
5					
6					
7					
8					

Signature of Contractor

Note:

a) Calibration report shall be submitted along with calibration certificate.

b) This register is to be maintained at the site office and is separate from the calibration log to be pasted near the equipment

7) Daily Habitation wise Water Supply Report

Name of Project:

Date	Village/ Town / hamlet Name	Water received from Reg. WSS				Details of Residual Chlorine in Water	Signature of Contractor's Engineer etc.	Remarks
		In Qty	In Hrs.					
			From	To	Total Hrs.			

Signature of Contractor

8) Leak Repair Register

Name of Project:

Date	Name of Section	Details of Existing Pipeline			Chainage / Location of Leakage	Details of Material Consumed	Repairing Status Date & Time		Remarks
		Type	Class	Dia			Repaired	Un-Repaired	

Signature of Contractor

ANNEXURE-IX ASSET LIST & STATUS

Details of RCC ESR & U/G Sump proposed at various Head work, Sub head work and Village level storage.–As per BOQ

ANNEXURE-XI INSURANCE

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 affect 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 these packages and whereas the insurance of other components 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 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.

Sr. No.	Name of Component	Cost of Component	Sum to be insured
** < As per Handover list to be prepared at the O&M Starting >			

ANNEXURE-XII SAFETY CONSIDERATIONS

SAFETY ABSTRACT FROM CPHEEO

Storage and Handling of Chlorine cylinders

Chlorine is stored in special grade steel containers. As per IS:4379-1967, the colour of Chlorine container should be 'golden yellow'. Further, during O&M the agency shall ensure following safety precautions. This is not an exhaustive list and the agency's scope shall not be limited to the activities mentioned below.

Maintenance of chlorine storage area

1. Obtain storage licence from controller of explosives under Gas Cylinder Rules 1981 if the quantity of Cl2 containers to be stored is more than 5 Nos.
2. Storage area should be cool, dry, well ventilated, and clean of trash and protected from external heat sources. Please refer to Manual on "Water Supply and Treatment", (1999 Edition), for further details.
3. Ventilation must be sufficient to prevent accumulation of vapour pockets. The exhaust should be located either near the floor or duct be provided extending to the floor. All fan switches should be outside the storage area.
4. Do not store container directly under the sun.
5. Weather cock should be installed near the storage to determine wind direction.
6. Ensure adequate egress (exit) paths (at least two)
7. Neutralization system should be provided.
8. Continuous monitoring of chlorine leak detection equipment with alarm should be installed in the storage area.
9. The area should be free and remote from elevators, gangways or ventilating system to avoid dangerous concentration of Chlorine during leak.
10. Two portable foam type fire extinguishers should be provided in the premises.
11. Corrosive substances shall not be stored nearby which react violently with each other.
12. Unauthorized person should not be allowed to enter into the storage area.
13. Ensure that all containers are properly fitted with safety caps or hooks.

Loading/Unloading of Containers

1. The handling of containers should be done under the supervision of trained and competent person.
2. It should be done carefully with a crane, hoist or slanted ramp. Do not use magnet or sharp object for lifting the containers.
3. Small cylinders should not be lifted by means of valve caps as these are not designed to carry the weight.
4. The containers should not be allowed to strike against each other or against any hard object.
5. Vehicles should be braked and isolated against any movement.
6. After loading, the containers should be secured properly with the help of wooden wedges, rope or sling wire so that they do not roll away.
7. The containers should never be dropped directly to the ground or on the tyre from the vehicle.
8. There should be no sharp projection in the vehicle.
9. Containers must have valve caps and plugs fitted properly.
10. Check containers for leakage before loading/unloading.

Transportation of Containers

1. The name of the chemical along with diamond pictorial sign denoting the dangerous goods should be marked on the vehicle.

2. The name of the transporter, his address and telephone number should be clearly written on the vehicle.
3. The vehicle should not be used to transport any material other than what is written on it.
4. Only trained drivers and cleaners should transport hazardous chemical.
5. The driver should not transport any leaking cylinder.
6. The cylinder should not project outside the vehicle.
7. The transporter must ensure that every vehicle driver must carry “Trem Card” (Transport Emergency Card) and ‘Instructions in writing booklet’ and follow them.
8. Every driver must carry safety appliances with him, viz; Emergency kit, breathing apparatus etc.
9. The vehicles must be driven carefully, especially in crowded localities and on bumpy roads. Do not apply sudden brakes.
10. Check for the leakage from time to time.
11. In the case of uncontrollable leakage, the vehicle should be taken to an open area where there is less population.

Personal Protective Equipment

1. Breathing Apparatus
   Various types of respirators and their suitability are as follows:

   i. Self-contained breathing apparatus
   This apparatus is equipped with a cylinder containing compressed oxygen or air which can be strapped on to the body of the user or with a canister which produces oxygen chemically when the reaction is triggered. This type of equipment is suitable for high concentration of chlorine in an oxygen deficient atmosphere.

   ii. Air-line respirator: Air-line length 90 m. (max.)
   It is suitable for high concentrations of chlorine provided conditions permit safe escape if air supply fails. This device is suitable in any atmosphere, regardless of the degree of contamination or oxygen deficiency, provided that clean, breathable air can be reached.

   iii. Industrial Canister Type Mask: Duration: 30 min. for 1% Cl2
   It is suitable for moderate concentration of chlorine provided sufficient oxygen is present. The mask should be used for a relatively short exposure period only. If the actual chlorine concentration exceeds 1% by volume or oxygen is less than 16% by volume, it is not useful. The wearer in such cases must leave the place on detection of chlorine or experiencing dizziness or breathing difficulty.

Protective Clothing

Rubber, or PVC clothing is useful in massive exposure which otherwise creates mild skin burns due to formation of acid on the body.

Maintenance of Protective Equipment

1. Clean with alkali after every use.
2. Keep in polythene bag at easily accessible place.
3. Check them periodically about their suitability. Many times, the seal ring of face mask gets hardened.

Employees Training

It is essential to impart training to the employees who have to face emergency.

This training should include following:

a) Instructions in the action to be taken in an emergency.
b) Use of emergency kit.

c) Handling of containers.
d) First aid.
e) Use of protective equipment.
f) Knowledge of Chlorine hazards.
g) Firefighting.
h) Use of safety showers and eye fountains.
i) Crash shut down procedure for valves and switches.
j) Communication system.
k) Study of plant layout with diagram.
l) Mock drills.

List of safety systems at chlorination plant

1. Breathing apparatus.
2. Emergency kit.
3. Leak detectors.
4. Neutralisation tank.
5. Scrubber system.
6. Siren system.
7. Display of boards in local language for public cautioning, first aid and list of different authorities with phone numbers.
8. Communication system.
9. Tagging system for equipment.
10. First aid including tablets and cough mixtures.
11. Exhaust fans.
12. Testing of pressure vessels, chlorine lines etc. every year as per factory act.
13. Training & mock drill.
14. Safety showers.
15. Eye fountain.
16. Personal protective equipment.
17. Protecting hoods for ton-containers.
18. Fire extinguishers.
19. Wind cock.

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, unwalled 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-XIII 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 (Filter plant/ pump/ chlorination plant), 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 shoesconforming 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 orshirt & 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-XIV 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-XV OPERATING PROCEDURES

TROUBLESHOOTING

Short circuiting in flocculator

Under such circumstances very inferior settled water is produced. Short circuiting in flocculation basins is characterized by currents which move rapidly through and continue into the settling tanks. The floc removal problem is compounded with incomplete flocculation and currents introduced into the settling process inhibit removal. Properly operated entrance, curtain baffles and exit weirs and launders can significantly improve settling.

Coagulation-flocculation process, trouble shooting.

Problems	Operator Actions	Possible process changes
Source water Quality changes		
Turbidity	1. Perform necessary analyses to determine extent of change 2. Evaluate overall process performance 3. Perform jar tests. 4. Make appropriate process changes (see right hand column possible process changes) 5. Increase frequency of process monitoring	1. Adjust coagulant dosage. 2. Adjust flash mixer/flocculator mixing intensity. 3. Add coagulant aid or filter aid. 4. Adjust alkalinity or pH. 5. Change coagulant(s)
Coagulation process Effluent quality changes		
Turbidity Alkalinity pH	1. Evaluate source water quality 2. Perform jar tests. 3. Verify process performance: a. Coagulant feed rate(s) b. Flash mixer operation. 4. Make appropriate process changes	1. Adjust coagulant dosage. 2. Adjust flash mixer intensity (if possible) 3. Adjust alkalinity or pH 4. Change coagulant(s)
Flocculation Basic Floc Quality Changes		
Floc Formation	1. Observe floc condition in basin: a. Dispersion. b. Size and c. Floc strength (break up) 2. Evaluate overall process performance. 3. Perform jar tests. a. Evaluate floc size setting rate and strength. b. Evaluate quality of supernatant: Clarity (turbidity) ph. And colour 4. Make appropriate process changes.	1. Adjust coagulant dosage 2. Adjust flash mixer/flocculator mixing intensity. 3. Add coagulant aid. 4. Adjust alkalinity or ph. 5. Change Coagulant(s)

Sedimentation process, trouble shooting.

Problems	Operator Actions	Possible process changes
Source water Quality changes		
Turbidity temperature Alkalinity pH Colour	1. Perform necessary analysis to determine extent of change. 2. Evaluate overall process performance. 3. Perform jar tests.	1. Adjust coagulant dosage. 2. Adjust flash mixer/flocculator mixing intensity. 3. Change frequency of sludge removal (increase or decrease)

Problems	Operator Actions	Possible process changes
	4. Make appropriate process changes (next column) 5. Increase frequency of process monitoring	4. Increase alkalinity by adding line, caustic soda or soda ash. 5. Change coagulant.
Flocculation process Effluent quality changes		
Turbidity Alkalinity pH	1. Evaluate overall process performance. 2. Perform jar tests. 3. Verify performance o coagulation flocculation process. 4. Make appropriate process changes (next column)	1. Adjust coagulant dosage 2. Adjust flash mixer/flocculator mixing intensity. 3. Adjust improperly working chemical leader. 4. Change coagulant.
Sedimentation Basic Changes		
Floc settling Rising or floating sludge	1. Observe floc settling characteristics: a. Dispersion b. Size c. Settling rate 2. Evaluate overall process performance. 3. Perform jar tests. a. Assess floc size and setting rate. b. Assess quality of settled water (clarity and colour) 4. Make appropriate process changes (next column)	1. Adjust coagulant dosage. 2. Adjust flash mixer/flocculator mixing intensity. 3. Change frequency of sludge removal (increase or decrease) 4. Remove sludge from basic. 5. Repair broken sludge rakes. 6. Change coagulant.
Sedimentation Process Effluent Quality Changes		
Turbidity Colour	1. Evaluate overall process performance. 2. Perform jar test. 3. Verify process performance. Coagulation-flocculation process. 4. Make appropriate process changes (next column)	1. Change coagulant. 2. Adjust coagulant dosage 3. Adjust flash mixer/flocculator mixing intensity. 4. Change frequency of sludge removal (increase or decrease)
Up low clarifier process Effluent Quality changes.		
Turbidity Turbidity caused by sludge Blanket coming to Top due to Rainfall on Watershed.	1. Sec.4 above. 2. Open main drain valve of clarifier.	1. See 4 above (sedimentation process) 2. Drop entire water level of clarifier to bring the sludge blanket down.

Filtration process, trouble shooting.

Problems	Operator Actions	Possible process changes
Source water Quality changes		
Turbidity Temperature Alkalinity	1. Perform necessary analysis to determine extent of change. 2. Assess overall process	1. Adjust coagulant dosage. 2. Adjust flash mixer/ flocculator mixing intensity.

Problems	Operator Actions	Possible process changes
pH Colour Chlorine Demand	performance 3. Perform a jar test. 4. Make appropriate process changes. 5. Increase frequency of process monitoring. 6. Verify response to process changes (be sure to allow enough time for change to take effect) 7. Add lime or caustic soda if alkalinity is low.	3. Change frequency of sludge removal (increase or decrease) 4. Adjust backwash cycle (rate, duration) 5. Change filtration rate (add or delete Filters) 6. Start filter aid feed. 7. Change coagulant.
Sedimentation process Effluent quality changes		
Turbidity or floc carry over	1. Assess overall process performance. 2. Perform jar tests. 3. Make appropriate process changes.	Same as source water quality changes.
Filtration process change/ problems.		
• Head loss increase • Short filter runs • media surface sealing • Mud balls • Filter media cracks, shrinkage • Filter not clean • Medical bolts • Media loss • Excessive head loss.	1. Assess overall process performance. 2. Perform jar tests. 3. Make appropriate process changes.	1. Adjust coagulant dosage. 2. Adjust flash mixer/ flocculator mixing intensity. 3. Change frequency of sludge removal (increase or decrease) 4. Adjust backwash cycle (rate, duration) 5. Manually remove mud balls. 6. Decrease filtration rate (add more filters) 7. Decrease or terminate filter aid. 8. Replenish lost media 9. Clear under drain openings of media, corrosion or chemical deposits, check head loss. 10. Change coagulant.
Filter Effluent Quality changes		
Turbidity Breakthrough Colour pH Chlorine	1. Assess overall process performance. 2. Perform Jar tests. 3. Verify process performance: a. Coagulation and Flocculation b. Sedimentation process. c. Filtration process. 4. Make appropriate process changed.	1. Adjust coagulant dosage. 2. Adjust flash mixer/ flocculator mixing intensity. 3. Change frequency of sludge removal 4. Start filter aid feed. 5. Decrease filtration rate (add more filters) 6. Change chlorine dosage 7. Change coagulant.

Transmission

Procedure to follow in case of leakage found in pipeline

1. First, agency has to report to the competent authority immediately by phone.
2. Visit the site of leakage and ascertain manpower and machineries required;

3. Stop the butterfly valves on the both side of the leakage;
4. Drain the pipe in between two butterfly valves with the help of scour valves available;
5. On receipt of excavator, start the excavation on the leakage site and detect the leakage;
6. If required, start dewatering the pipeline and trench by deploying dewatering set. If required, necessary trench shall be excavated up to nearby nalas or low-lying area or if nalas are not available nearby then, dewatering shall be done through line (LDPE) up to the safe area of disposal;
7. If work is to be prolonged in night, necessary lightening arrangement shall also be done;
8. Based on the leakage in pipeline i.e. DI/MS/PVC/HDPE, the required materials for repairing of the leakages shall be arranged immediately;
9. If leakage has occurred in MS pipeline then, mobilize DG set, welding equipment, pipe piece and specials of required dia. & size, grinding equipment, welding electrodes etc. shall be arranged immediately;
10. If leakages in found in PVC/HDPE pipeline, then mobilize pipe cutting equipment, piece of pipes, solvent, suitable clamps, specials nut bolts etc. shall be arranged immediately;
11. If leakage is found in DI pipes, then, mobilize piece of pipe, cutting equipment, necessary suitable MJ Collar joint, specials, rubber rings, nut bolts etc. shall be arranged immediately.
12. Leakage repairing in MS/PVC/DI/HDPE shall be done with the best practices and the directives of the Engineer in charge.
13. After completion of the leakages, excavated trench shall be refilled to the level of the surrounding ground;
14. After completion of the leakage water supply shall be started with super-chlorination
15. Water supply shall be started with controlled flow and if leakage is found rectify satisfactorily then water supply shall be increased gradually to the normal level by increasing the number of pumps as per requirement.
16. If major leakages are found, it requires more than 24 hours, then alternate arrangement of water supply shall be done by deploying tankers to the affected habitations.
17. On successful completion the leakage and normal supply is achieved in affected habitations, then water tanker shall be taken off immediately;
18. Record of deployment of tanker shall be kept & reported to the competent authority;

START-UP AND SHUTDOWN PROCEDURES

These procedures generally happen when the plant is shut down for maintenance. However, on some rare instances, shut down may be required due to a major equipment failure.

Coagulation-flocculation

Start-up procedures

Step	Procedures
1.	Check the condition of all mechanical equipment i.e. gear box, flash mixing equipment's, motors & rotating assembly, for proper lubrication and operational status.
2.	Make sure all chemical feeders are ready. There should be plenty of chemicals available in the tanks and ready to be fed to the raw water.
3.	Collect a sample of raw water and immediately run a jar test using fresh chemicals from the supply of chemicals to the feeders.
4.	Determine the settings for the chemical feeders and set the feed rates on the equipment.

Step	Procedures
5.	Open the inlet gate or valve to start the raw water flowing.
6.	Immediately start the selected chemical feed systems.
7.	Open valves to start feeding coagulant chemicals and dilution make-up water.
8.	Check flow measurement at inlet.
9.	Start chemical feeders.
10.	Adjust chemical feeders as necessary.
11.	Turn on the flash mixer at the appropriate time. You may have to wait until the Tank or channel is full before turning on the flash mixer. Follow the manufacturer's instructions.
12.	Start the sample pumps as soon as there is water at each sampling location. Allow sufficient flushing time before collecting any samples.
13.	Start the flocculators as soon as the first basin is full of water.
14.	Inspect mixing chamber and flocculation basin. Observe formation of floc and make necessary changes.
15.	Remove any debris floating on the water surface.
16.	Perform water quality analysis and make process adjustments as necessary.
17.	Calibrate chemical feeders.
18.	Note: Do not allow any untreated water to flow through the plant.

Shut down procedures

Step	Procedures
1.	Close raw water gate to flash-mix chamber or channel.
2.	Shut down the chemical feed systems.
3.	Turn off chemical feeders. Shut off appropriate valves.
4.	Flush or clean chemical feed lines if necessary.
5.	Shut down flash mixer and flocculates as water leaves each process.
6.	Shut down sample pumps before water leaves sampling location
7.	Waste any water that has not been properly treated.
8.	Lock out and tag appropriate electrical switches.
9.	Dewater basins, if necessary. Waste any water that has not been properly treated. (Note: Do not dewater below-ground basins without checking groundwater levels. Be careful that the basin may float or collapse depending on ground water, soil or other conditions.)
10.	Close basin isolation gates or install stop-logs.
11.	Open basin drains valves

Sedimentation

Start-up Procedure

1) Check operational status and mode of operation of equipment and physical facilities.
    a. Check that basin valves are closed.
    b. Check that basin isolation gates are closed.
    c. Check that launder weir plates are set at equal elevations.
    d. Check to ensure that all trash, debris and tools have been removed from basin.
2) Test sludge removal equipment.
    a. Check that mechanical equipment is properly lubricated and ready for operation.
    b. Observe operation of sludge removal equipment.
3) Fill sedimentation basin with water.
    a. Observe proper depth of water in basin.
    b. Remove floating debris from basin water surface.
4) Start sample pumps.
5) Perform water quality analyses.
6) Operate sludge removal equipment. Be sure that all valves are in the proper position.

Shut Down Procedures

1) Stop flow to sedimentation basin. Install basin isolation gates.
2) Turn off sample pump.
3) Turn off sludge removal equipment.
    a. Shut off mechanical equipment and disconnect where appropriate.
    b. Check that valves are in proper position.
4) Lock out electrical switches and equipment.
5) Dewater basin if necessary.
    a. Be sure that the water table is not high enough to float the empty basin.
    b. Open basin drains valves.
6) Grease and lubricate all gears, sprockets and mechanical moving parts which have been submerged immediately following dewatering to avoid seize up.

Filtration

Start-up Procedures

- Start filter
- Slowly open influent valve.
- When proper elevation of water is reached on top of filter, filter effluent valve should be gradually opened. This effluent control valve should be adjusted itself to maintain a constant level of water over the filter media.
- Waste some of the initial filtered water if such a provision exists.
- Perform turbidity analysis of filtered water and make process adjustments as necessary.

Shutdown Procedures

- Remove filter from service by closing influent valve and closing effluent valve
- Backwash filter.
- If filter is to be out of service for a prolonged period, drain water from filter to avoid algal growth.
- Note status of filter in operations log.

Pumping

Start up

a) Centrifugal Pump (of low and medium specific speed)

i. To start a centrifugal pump, the suction pipes and the pump should be fully primed irrespective of the fact whether the pump is with positive (flooded) suction or suction lift. The centrifugal pump with positive suction can be primed by opening valve on suction side and letting out air from the casing by opening air vent. Centrifugal pump on suction lift necessitates close attention to prime the pump fully. To achieve this, the suction pipe and the pump casing must be filled with water and entire air in suction piping and the pump must be removed. If vacuum pump is provided, the pump can be primed by operating vacuum pump till steady stream of water is let out from delivery of vacuum pump. In absence of vacuum pump, priming can be done by pouring water in casing and evacuating air through air vent or by admitting water from pumping main by opening bypass of reflux valve and delivery valve. Check all joints in the suction pipe and fittings.

ii. Close the delivery valve and then loosen slightly.

iii. Switch on the motor, check that direction of rotation is correct. If the pump does not rotate, it should be switched off immediately.

iv. Check vacuum gauge if the pump operates on suction lift. If the pointer on gauge gradually rises and becomes steady the priming is proper.

v. Pressure gauge should be observed after starting the pump. If the pump is working correctly the delivery pressure gauge should rise steadily to shut off head.

vi. When the motor attains steady speed and pressure gauge becomes steady, the delivery valve should be gradually opened in steps to ensure that the head does not drop below recommended limit. (in the absence of recommendations, the limit shall be about 85% of duty head for centrifugal pump).

vii. Check that ammeter reading is less than rated motor current.

viii. Check for undue vibration and noise.

ix. When in operation for about 10-15 minutes, check the bearing temperature, stuffing box packing, and leakage through mechanical seal and observe vibrations, if any.

x. Voltage should be checked every half an hour and should be within limit.

b) Vertical Turbine Pump

i. Close delivery valve, and then loosen slightly.

ii. If pump is oil-lubricated, check the oil in the oil tank and open the cock to ensure that oil is flowing at the rate of 2-4 drops per minute. If the pump is self water-lubricated and length of column assembly is long (15 m or above), external water shall be admitted to wet and lubricate the line shaft bearings before starting the pump. If the pump is external clear water lubricated, the clear water lubricating pump should be started before starting main pump.

iii. Open the air vent in discharge/delivery pipe.

iv. Switch on the motor and check correctness of direction of rotation. If the pump does not rotate, it should be switched off immediately.

v. Check that oil is flowing into the pump through the sight glass tube. The number of drops/min. should be as per manufacturer's recommendations (normally 2-4 drops/minute). For clear water lubricated pump, check that lubricating clear water is passing into the column assembly.

vi. Check pressure gauge reading to ensure that pump has built up the required shut off head.

vii. When the motor attains steady speed and pressure gauge becomes steady, the delivery valve should be gradually opened in steps to ensure that the head does not drop below recommended limit. (In absence of recommendation, the limit shall about 75% of duty head for VT & submersible pump).

viii. If steady water stream is let out through air vent, close the air vent.

ix. Check that ammeter reading is less than rated motor current.

x. Check for undue vibration and noise.

xi. When in operation for about 10-15 minutes, check bearing temperature, stuffing box packing and observe vibration if any.

xii. Voltage should be checked every half an hour and should be within limit.

c) Submersible Pumps

Starting of a submersible pump is similar to vertical turbine pump except that steps ii, v, and xi are not applicable and since motor is not visible, correctness of direction of rotation is judged from pressure gauge reading which should indicate correct shut off head.

d) Jet Pump

The procedure for starting jet pumps is similar to centrifugal pump except that priming by vacuum pump is not possible. Priming needs to be done by filling the pump casing and suction line from external source or by pouring water.

e) Vacuum Pump

The procedure for starting vacuum pump is similar to centrifugal pump except that priming is not necessary and valves on both suction & delivery side of vacuum pump should be fully open.

f) Reciprocating Pump

The steps stipulated for centrifugal pump are equally applicable for reciprocating pump. However, exceptions as follows are applicable.

- The pump should be started against partially open delivery valve.
- The pump should never be started or operated against closed delivery valve.

Shutdown

a) Stopping the pump under normal conditions

Steps to be followed for stopping a pump of low and medium specific speed are as follows:

i. Close the delivery valve gradually (sudden or fast closing should not be resorted to, which can give rise to water hammer pressures).

ii. Switch off the motor.

iii. Open the air vent in case of V.T. and submersible pump.

iv. Stop lubricating oil or clear water supply in case of oil lubricated or clear water lubricated VT pump as applicable.

b) Stopping the pump after power failure/ Tripping

If power supply to the pumping station fails or trips, actions stated below should be immediately taken to ensure that the pumps do not restart automatically on resumption of power supply. Though no-volt release or under volt relay is provided in starter and breaker, possibility of its malfunctioning and failure to open the circuit cannot be ruled out. In such eventuality, if the pumps start automatically on resumption of power supply, there will be sudden increase in flow velocity in the pumping main causing sudden rise in pressure due to water hammer which may prove disastrous to the pumping main. Secondly, due to sudden acceleration of flow in the pumping main from no-flow situation, acceleration head will be very high, and the pumps shall operate near shut off region during acceleration period which may last for few minutes for long pumping main and cause overheating of the pump. Restarting of all pumps simultaneously shall also cause overloading of electrical system.

Hence, precautions are necessary to prevent auto-restarting on resumption on power. Following procedure should be followed.

i. Close all delivery valves on delivery piping of pumps if necessary, manually as actuators cannot be operated due to non-availability of power.

ii. Check and ensure that all breakers and starters are in open condition i.e. off-position.

iii. All switches and breakers shall be operated to open i.e. off-position

iv. Open air vent in case of V.T. or submersible pump and close lubricating oil or clear water supply in case of oil lubricated or clear water lubricated V.T. pump.

v. Information about power failure should be given to all concerned, particularly to upstream pumping station to stop pumping so as to prevent overflow.

ANNEXURE-XVI 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	☐ Understanding the water cycle and water sources ☐ Water treatment processes and methods ☐ Distribution system components and layout ☐ Water storage management ☐ Water quality standards and regulations
Health and Safety Training	All operators	Annual, or as needed to keep up to date	☐ Hazardous materials handling and storage ☐ Personal protective equipment (PPE) selection and usage ☐ Chemical spill response procedures ☐ Electrical safety protocols ☐ Emergency response planning and protocols
Water Quality Monitoring	All operators, Lab technicians	Annual, or as needed to keep up to date	☐ Sampling techniques and protocols ☐ Water quality parameters and measurement methods ☐ Analytical laboratory methods and interpretation of results Reporting requirements and data management ☐ Troubleshooting common water quality issues
System Maintenance and Repair	All operators	Annual, or as needed to keep up to date	☐ Maintenance and inspection schedules and procedures ☐ Pump and valve maintenance and repair ☐ Chlorination and disinfection equipment maintenance ☐ Leak detection and repair ☐ Hydraulic principles and calculations
Beneficiary & Community orientation	All operators	Annual, or as needed to keep up to date	☐ Complaint handling and resolution strategies ☐ Billing and payment processes and procedures ☐ Community engagement, awareness and outreach
Emergency Response	All operators	Annual, or as needed to keep up	☐ Emergency response planning and

Training Topic	Target Audience	Frequency	Indicative Contents of Training Module
Training		to date	protocols ☐ Disaster preparedness and response ☐ Water supply disruption response ☐ Coordination with local authorities and emergency services ☐ Incident reporting and documentation
Health, Safety and Environment	All staff	Annual, or as needed to keep up to date	☐ Hazard identification and risk assessment ☐ Personal protective equipment (PPE) usage and maintenance ☐ Emergency response and evacuation procedures ☐ Occupational health and hygiene practices ☐ Environmental impact awareness and mitigation measures
Continuing Education	All operators	Periodic, based on availability of new information and resources	☐ Water supply system upgrades and innovations ☐ Regulatory updates and compliance ☐ Water conservation and sustainability practices ☐ Energy efficiency and cost-saving measures ☐ Emerging technologies and water treatment processes

ANNEXURE-XVII COMMUNICATION OR REPORTING MATRIX

Sl. No.	Designation	Office Address	Contact details
1	Chief Engineer Zone-6, Surat	Office of the chief Engineer,3rd floor jal bhavan Adajan,Surat-	cezonesurat@gmail.com
2	Superintendent Engineer P. H. Circle, Surat	Office of the Superintendent Engineer,1st floor jal bhavan Adajan,Surat-	sephcsurat5@gmail.com
3	Executive Engineer P.H. Works Division, Surat	Office of the Superintendent Engineer,1st floor jal bhavan Adajan,Surat-	eephsurat1@gmail.com
4	Deputy Executive Engineer P. H. S. Sub division, Surat	Office of the Deputy Executive Engineer, 1st floor jal bhavan Adajan,Surat-	deephssdsurat@gmail.com
5	Deputy Executive Engineer P. H. Mech.Sub division, Surat	Office of the Deputy Executive Engineer ,2nd floor jal bhavan Adajan,Surat	msdnsrt01@gmail.com
6	Assistant Engineer	Office of the Deputy Executive Engineer, 1st floor jal bhavan Adajan,Surat-	deephssdsurat@gmail.com
7	Additional Assistant Engineer	Office of the Deputy Executive Engineer, 1st floor jal bhavan Adajan,Surat-	deephssdsurat@gmail.com

ANNEXURE-XVIII TOOLS & TACKLES

Provide and maintain location wise tools and tackles in the given quantity

Location: _____

Sl. No.	Item	Quantity	Unit
1	For spanner set size 6mm to 22mm	2	Set
2	Fix spanner set size 6mm to 52mm	2	Set
3	Ring spanner set size 6mm to 22mm	2	Set
4	Ring spanner set size 7mm to 52mm	2	Set
5	Box spanner set size 6mm to 38mm	2	Set
6	Pipe wrench size 36”	2	Set
7	Pipe wrench size 24”	2	Nos
8	Screw driver size 6”, 9”, 12” (2 no of each size)	2	Set
9	Insulated plier size 12”	2	Nos
10	Long-nose plier set 8”	2	Nos
11	Adjustable screw spanner size 12”	2	Nos
12	Hammer 1 LB x 2 LB	2	Nos
13	Electric Tester	2	Nos
14	Chisel 12” x 6” (2Nos. of each size)	2	Set
15	Hack saw frame	2	Pairs
16	Hack saw blade	2	Packets
17	Hand gloves suitable for 33 KV	2	Nos
18	Spade (Phawada)	2	Nos
19	Ghamela	2	Nos
20	Pickaxe (Tikam)	2	Nos
21	Lawn mower (For gardening)	2	Nos
22	File (12”& 18”)	2	Nos
23	Plastic bucket 10 liters	2	Nos
24	Rope ½”	2	nos
25	Torch & Batteries	2	Nos
26	Safety PPEs (personal protective equipment)	2	Set
27	Dewatering pump and hose	2	Set
	<add any other as required>		

Section II: Conditions of Contract

3. GENERAL CONDITIONS OF CONTRACT

1. SECURITY DEPOSIT

(AS PER VOLUME IB GENERAL CONDITIONS OF CONTRACT CLAUSE:1)

2. MEASURES FOR PREVENTION OF FIRE:

The Contractor shall not set fire to any standing jungle, tree, bush wood or grass without a written permit from the Engineer-in-Charge, When such permit is given, and also in all cases when destroying cut or dug up trees, bush wood, grass etc. by fire, the contractor shall take necessary measures to prevent such fire spreading to or other-wise damages surrounding property.

3. LIABILITY OF CONTRACTORS FOR ANY DAMAGES DONE IN OR OUTSIDE WORK AREA:

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

4. SUBLETTING WORK

Work **not be sublet: No works of this contract is allowed to be Sublet.**

5. CHANGES IN THE CONSTITUTION OF FIRM

Changes in the constitution of firm to be notified: In the case of a tender by partners, any changes in the constitution of a firm shall be forth with notified by the Contractor to Engineer-in-Charge for his information.

6. DISPUTES

1) The disputes relating to this contract, so far as they relate to any of the following matters, whether such disputes arise during the progress of the work or after the completion or abandonment thereof, shall be as per the provisions ofThe Arbitration and Conciliation Act, 1996, along with its rules, as amended from time to time.
2) Subject to the jurisdiction of the court at Ahmedabad, Gujarat
3) The provision of Arbitration Act., Shall in so for as they are in consistent with the provision of this act. cease of to apply to any dispute arising from a works contract and all arbitration proceeding in relation to such dispute before an arbitrator, court of authority shall stand transferred to the tribunal.
4) The awards declared by the arbitrator should be speaking award, giving reasons and calculations for every item of claims. The decision will have to be implemented by all the departments of the State Government and Public sector Enterprises of Gujarat. (Resolution F.D. No. PB/1088/735/KT/Sachivalaya Gandhinagar dated 5th October 1988)

5) In case of dispute leading to the contractor or Government of Gujarat approaching on Court of Law. It shall be within those jurisdictions the site of work is situated.

7. ARBITRATION

The reference to arbitration proceeding under this clause shall not:

i. affect the right of the Engineer-in-charge under clause 5 to take possession of all or any tools, plant, materials and stores in or upon the works of site thereof belonging to the contractor of procured by him and intended to be used for the execution of the work or any part thereof.

ii. Preclude the Engineer-in-charge from utilising the materials purchased by the contractor in any work or from removing such materials to other places, during the period the work is stopped or suspended in pursuance of notice given to the contractor under clause 15.

iii. Entitle the contractor to stop the progress of the work or the carrying out the additional or altered work in accordance with the provisions of clause 14 or as the case may be, of clause 33.

8. WORKER'S COMPENSATION

Compensation under the Workmen's Compensation Act: The Contractor shall be responsible for and shall pay any compensation to his workman payable under the Workmen's Compensation Act, 1923 (VIII of 1923) here in after called the said Act for injuries caused to the workmen. If such compensation is paid by Government as principal under subsection (i) of section 12 of the said Act. On behalf of the contractor, it shall be recoverable by the Government from the Contractor under sub-section (2) of the said section. Such compensation shall be recovered in the manner laid down in clause 1 above.

9. EXPENSES OF PROVIDING MEDICAL AID

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

10. SAFETY

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

(a) The workers shall be required to use the equipment so provided by the Contractor and the Contractor shall take adequate steps to ensure proper use of the equipment by those concerned

(b) When work is carried out in proximity to any place where there is a risk of drawing, all necessary steps shall be taken for the prompt rescue of any person in danger.

(c) Adequate provision shall be made for prompt first-aid treatment of all injuries likely to be sustained during the course of the work.

10.1. 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.

10.2. 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.

10.3. NOTIFICATION:

10.3.1. In the event of an emergency the Contractor shall forthwith notify the Employer of the emergency, the expenditures made, and the operating actions taken.

10.3.2. 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 Contractor shall be reimbursed all costs and 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.

11. MINIMUM AGE

Minimum age of person employed: No Contractor shall employ any person who is under the age of **18** years.

12. FAIR WAGES TO LABOURER

If a Contractor fails to pay within "7" (seven) days to the labourer (s)worker(s) the minimum wages prescribed by the Government under the Minimum Wages Act. 1948 as in force from time to time, the Engineer-in-charge shall be at liberty to deduct the amount payable to the labourer(s) worker(s) from his (Contractor's) bills or deposit(s)payable by the Contractor after makingdue inquiries and establishing the claims) of the labourer(s)worker(s). The Contractor shall not be entitled to any payment or compensation on account of any loss that the Contractor may have to incur on account of the action as aforesaid. Before the action as aforesaid, is enforced, a notice in writing to the Contractor shall be issued by the Engineer-in-charge to pay the wages as per Minimum Wages Act in force at the relevant time. If Contractor does not act as aforesaid within seven days, then the action contemplated as above shall be taken against him.

The Contractor shall not show any discrimination between Harijan and other class of labourers/workers employed to carry out the Government work.

13. LIABILITY OF CONTRACTOR IN CASE OF ACCIDENTS, PERSONNEL INJURY OR FATALITY

The contractor shall be responsible for and shall pay compensation to his workman payable under the Workmen's Compensation Act. 1923(VIII of 1923) here in after called the said Act) for injuries caused to the workmen. If such compensation is paid by Government as principal under sub-section 12(1) of the said Act on behalf of the Contractor, it shall be recoverable by Government from the contractor under sub-section12(2) of the said section.

The contractor shall be responsible for and shall pay the expenses of providing medical aid to any workmen who may suffer a bodily injury as a result of an accident. If such expenses are incurred by Government, the same shall be recoverable from the contractor for with and be deducted, without prejudice to any other remedy of Government from amount due or that may become due to the contractor.

Responsibilities and liabilities of the contractor under Workmen's Compensation Act in addition to the above, shall also include the following:

a) On the occurrence of an accident, which results, in death of workmen employed by the Contractor or which is as serious as is likely to result in death of any such workmen, the Contractor, shall within 24 hours of happening of such accident(s) intimate, in writing, to the Engineer-in-charge the fact of such accident(s). The Contractor shall indemnity Government against all loss or damage sustained by the Government's failure to give notice under the Workmen's Compensation Act or otherwise to conform to the provisions of the said Act in regard to such accident(s).

b) In the case of an accident, in respect of which compensation may become payable under Workmen's Compensation Act, Whether by the Contractor or by the Government as principal Employer, it shall be lawful for the Engineer-in-charge to retain out of money due and payable to the contractor, such sum or sum of money as may, in the opinion of the Engineer-in-charge be sufficient to meet such a liability. The opinion of the Engineer-in-charge shall be final in regard to all matters arsing under this clause.

14. INSURANCE:

The contractor shall be responsible to arrange for insurance of all labourers, skilled and unskilled, workers supervisors etc., employed by him as per labour regulations of the State.

14.1. GENERAL CONDITIONS:

14.1.1. 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 Annexure VIII throughout the O&M Period. Any deductibles on the insurance shall be to the account of the Contractor.

14.1.2. 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, wilful 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 wilful misconduct, negligence on the part of the Contractor.

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

14.1.4. The Contractor within the 14 days from work order shall submit to the Employer evidence that the insurances required under Annexure VII of these Conditions has been obtained as approved by the Employer.

14.1.5. 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.

14.1.6. 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

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.

14.1.7. 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.

14.1.8. The natural calamity & fire etc. (standard perils) insurance shall be limited to Electrical & Mechanical equipment / 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 (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.

15. CONTRACT LABOUR LICENCE

Before starting the work the contractor will have to obtain the licence from the District Assistant Commissioner under the Contract Labour (Regulation and Abolition) Gujarat Rules 1972 after paying necessary fees and deposit on the basis of the number of labourers to be employed on the work and will have to supply two true copies of the said licence to the Deputy Engineer before the work is state.

15.1. COMMENCEMENT AND DURATION OF O & M CONTRACT:

15.1.1. The O & M Period shall commence from the date of issue of work order and shall continue for a period of 05 years there from.

15.2. APPLICABLE LAW:

15.2.1. 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.

15.2.2. The Contractor shall require his employees to obey all Applicable Laws, including those concerning safety at work.

15.2.3. 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.

16. PAYMENT:

16.1. BILLS TO BE SUBMITTED MONTHLY

A bill shall be submitted by the contractor each month on or before the date fixed by the Engineer-in-chargefor all Operation and Maintenance works executed in the previous month and Engineer-in-charge shall take cause to be talent the requisite measurement for the purpose of having the same verified and the claim, so far as it is admissible, shall be adjusted, if possible, within tendays from the presentation of the bill,. If the contractor does not submit the bill within the time fixed as aforesaid, the Engineer-in-charge may depute a subordinate to measure up the said work in the presence of the contractor or his duly authorized agent whose, countersignature to the measurement list shall be sufficient warrant and the Engineer-in-charge may prepare a bill from such list which shall be binding on the contractor all respects. Delayed submission of bills will attract penalty.

The contractor shall submit all the bills on the printed forms to be had on application at the office of the Engineer-in-charge. The charges to be made in the bills shall always be entered at the rates specified in the agreement or at the partly reduced rates subject to the approval by theEngineer-in-charge.In the case of Items not completed/executed as per agreements or in the case of any extra work ordered in pursuance of these conditions and not mentioned or provided for in the tender, at the rate here in after provided for such work.

17. RETENTION MONEY

(**AS PER VOLUME IB GENERAL CONDITIONS OF CONTRACT CLAUSE 1)**

18. RATES TO BE EXCLUSIVE OF GST BUT INCLUSIVE OF ALL OTHER TAXES

The rates to be quoted by the Contractor must be exclusive of GST but inclusive of all other taxes. GST should be paid extra on the admissible payment as per the approved tender rates and condition of price variation; GST should be paid as per prevailing rates at the time of payment.

19. INCOME TAX

Deduction will be made at source on the contractor's bill towards Income tax by the employers as per prevailing rules of the Income tax authority.

20. BUILDING AND OTHER CONSTRUCTION WORKS WELFARE CESS (LABOUR CESS)

As per Building and other construction works welfare cess act and the provision under Rule No.5 of the rules of 1998 of Gujarat State, the 1% cess shall be recovered from the running account bill of the contractor.

21. 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.

21.1. NOTICE OF FORCE MAJEURE

21.1.1. 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.

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

21.1.3. 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.

21.2. DUTY TO MINIMIZE DELAY:

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

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

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

22. TERMINATION

Termination shall mean the termination of the O&M Contract by the Employer or the Contractor in accordance with this clause 18.

22.1. TERMINATION BY EMPLOYER

The Employer may terminate the O & M Contract by a 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 30 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; or

v. The subsisting Force Majeure event as provided in Clause 17.2.3 above or

vi. If the Employer comes to the decision that the contractor's performance in providing O & M services is not up to the desired level and satisfactory & if the contractor does not materially improve the standard (s) of services offered & result in disruption in water supply of the system, the Employer may discontinue the contract after a performance review at the end of one year. The decision of the competent authority of the Employer shall be final & binding to the contractor (s);

vii. If the contractor is in breach of the termination conditions mentioned in the penalties section.

viii. Notwithstanding anything stated hereinabove, the Authority may terminate this Agreement for convenience. The termination shall take effect 30 (thirty) days from the date of notice provided to the Contractor.

22.2. Foreclosure by the authority

22.2.1. Without prejudice to any provision of this Agreement, the Authority may foreclose this Agreement in circumstances which does not constitute either party's default without any liability or consequential future liability for either party.

22.2.2. Should the authority intend to foreclose this Agreement, the authority shall issue a notice to the contractor, giving at least 30 days' time and informing the intention of authority to cause foreclosure.

22.2.3. Any attempt or endeavour for foreclosure shall not stop either of the Parties from discharging their contractual obligations under this Agreement till foreclosure date.

22.2.4. For the avoidance of doubt, it is clarified that such foreclosure will be without prejudice to the Contractor and shall not affect the Contractor in any way if it wishes to bid in future projects of the Authority

22.3. PAYMENTS UPON TERMINATION

22.3.1. In case, the entire contract is terminated, for default by the contractor, the amount of security deposit and performance bond if any together with the value of the work done but not paid for, shall stand forfeited to the Government.

22.3.2. For default by the contractor, registration of the contractor shall be kept in abeyance for three years from the date as fixed in all such cases.

22.3.3. Termination of the contract in whole shall be an adequate authority for the Engineer in charge to demand discharge of the obligations from the guarantors of the security for the performance

22.3.4. 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.

22.4. SUCCESSOR TO THE CONTRACTOR UPON TERMINATION

22.4.1. The Contractor shall use all endeavours 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;

22.4.2. 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;

22.4.3. 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 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.

22.4.4. 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 [18].

22.4.5. 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.

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

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

ii. Notwithstanding anything else herein contained the Employer shall be entitled to terminate the O & M Contract, at any time at the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 30 days after issuance of the notice of termination.

iii. 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 behanded 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.

22.4.7. Vacate and handover the Site within 30 (thirty) days of contract termination

22.5. SURVIVAL OF RIGHTS

Notwithstanding anything to the contrary contained in this Agreement, Termination owing to foreclosure by Authority, shall be without prejudice to the accrued rights of either Party including its right to claim and recover money damages, insurance proceeds, security deposits, and other rights and remedies, which it may have in law or Agreement. All rights and obligations of either Party under this Agreement, including Termination Payments, shall survive the Termination to the extent such survival is necessary for giving effect to such rights and obligations.

23. RISK & COST

The Engineer-in-charge or the Competent Authority defined under rules may, without prejudice to his rights against the Contractor, in respect of any delay or inferior workmanship or otherwise, or any claims for damages in respect of any breaches of the contract and without prejudice to any rights or remedies under any of the provisions of this Contract or otherwise, and whether the date for completion has or has not elapsed, by notice in writing, absolutely determine the Contract in any of the following cases:

23.1.1. If the Contractor having been given by the Engineer-in-charge, a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improper or un-workman like manner shall omit to comply with the requirements of such notice for a period of seven days, thereafter, or if the Contractor shall delay or suspend the execution of thework so that either in the judgment of the Engineer-in-charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion or he has already failed to complete the work by that date,

23.1.2. If the Contractor, being a company, shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager, on behalf of a creditor, shall be appointed or if circumstances shall arise, which entitle the court or creditor to appoint a receiver or a manager or which entitle the court to make a winding up order,

23.1.3. If the contractor commits breach of any of the terms and conditions of this Contract,

23.1.4. If the contractor commits any acts in violation of the contract conditions. When theContractor has made himself liable for action under any of the cases aforesaid, the Engineer-in charge on behalf of the Governor of Gujarat shall have powers: -

a. To determine or rescind the contract, as aforesaid (of which determination or rescission notice in writing to the Contractor under the hand of the Engineer-in- charge shall be conclusive evidence), upon such determination or rescission, the earnest money, full security deposit of the contract shall be liable to be forfeited and shall be absolutely at the disposal of Government.

b. To employ labour paid by the Department and to supply materials to carry out the work or any part of the work, debiting the Contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer-in-charge shall be final and conclusive against the contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates, as if it had been carried out by the Contractor under the terms of this Contract. The certificate of the Engineer-in-charge, as to the value of the work done, shall be final and conclusive evidence against the Contractor provided always that action under the sub-clause shall only be taken after giving notice in writing to the Contractor. Provided also that; if the expenses incurred by the Department are less than the amount payable to the Contractor at his agreement rates, the difference shall not be paid to the Contractor.

c. After giving notice to the contractor to measure up the work of the contractor and to take such part thereof, as shall be unexecuted out of his hands, and to give it to another contractor to complete, in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor, if the whole work had been executed by him (of the amount of which excess, the certificate in writing of the Engineer-in-charge shall be final and conclusive) shall be borne and paid by the original Contractor and may be deducted from any money due to him by Government under this contract or on any other account whatsoever, or from his Earnest Money, Security Deposit, Enlistment Security or the proceeds of sales thereof, or a sufficient part thereof, as the case may be. In the event of any one or more of the above courses being adopted by the Engineer-in-charge, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of contract. And, in case action is taken under any of provisions aforesaid, the Contractor shall not be entitled to recover or be paid, any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-charge has certified, in writing, the performance of such work and the value payable in respect thereof, and he shall only be entitled to be paid the value so certified. No interest shall be payable to the Contractor on any payment due or awarded by any authority.

24. RECOVERY FROM CONTRACTORS

Whenever any claim against the Contractor for the payment arises under the contract, the Department may be entitled to recover such sum by:

a. Appropriating, in part or whole of the Performance Guarantee and/or Security Deposit and / or any sums payable under the contract to the contractor.

b. If the amount recovered in accordance with (a) above is not sufficient, the balance sum may be recovered from any payment due to the contractor under any other contract of the department, including the securities which become due for release.

The department shall, further have an additional right to effect recoveries as arrears of land revenue under the Gujarat Land Revenue Code.

25. INSPECTION

25.1. GENERAL PROVISIONS

25.1.1. 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.

25.1.2. 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.

25.2. MEASUREMENT & ANALYSIS

25.2.1. 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.

25.2.2. 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.

25.2.3. 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 Employer and 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.

25.2.4. 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.

4. DEFINITIONS & INTREPRETATION

4.1. DEFINITION

In this document the following words and expressions have the meaning hereby assigned to them.

4.1.1. BIDDER / TENDERER / APPLICANT:

Means individual, proprietary firm, firm in partnership, Limited Company, Corporation applying to become eligible to tender.

4.1.2. ONLINE:

Any activity that is done on website is referred as 'online' activity for e.g., Submission of Bid online would mean that technical & price Bid must be submitted on website.

4.1.3. OFFLINE:

Any activity that is done in conventional route is referred as 'Offline' activity for e.g. “Submission of Tender fee, Earnest Money Deposit, Registration Certificate, Solvency Certificate, etc. in Offline mode” would mean that the tender fee, Earnest Money Deposit, Registration Certificate, Solvency Certificate etc. is to be Submitted to the Office of the concerned Executive Engineer physically.

4.1.4. E- TENDER:

Tender in which the bidder can participate online by means of logging in onto the respective website is called E- Tender.

4.1.5. DIGITAL SIGNATURE:

Any electronic documents, which contains encrypted message digest using hash algorithm and Tender public key is known as Digitally Signed Documents and the process of generating such document is called digitally signing it.

4.1.6. SCANNED COPY:

Electronic Copy of any document generated using a Scanner is called scanned copy.

4.1.7. SYSTEM:

Means the computer which hosts the website (www.gwssb.nprocure.com), using which Bidder participates in the tendering process.

4.1.8. UPLOAD:

The process of transferring electronic document from Bidder's computer using internet connection to the website (www.gwssb.nprocure.com) is called uploading.

4.1.9. IT ACT-2000:

Means Information Technology Act, 2000 of Government of India

4.1.10. APPROVED / APPROVAL:

Means approval in writing.

4.1.11. B.I.S:

Means Bureau of Indian Standards.

4.1.12. Deleted

4.1.13. CONSTRUCTION PLANT:

Means all equipment, appliances or things of whatsoever nature required for the execution, completion or maintenance of the primary work or temporary works but does not include materials or other things intended to form or forming part of permanent work.

4.1.14. CONTRACT:

Means the instruction and information to bidders, general and special conditions of contract, specifications, drawings, schedules of quantities & tender prices, other parts of the Bid Document, the formal agreement between the employer and contractor and all addenda and attachments related to the above.

4.1.15. CONTRACTOR:

Means the bidder with whom the contract has been made for executing the works.

4.1.16. CONTRACT PRICE / CONTRACT AMOUNT: (During O&M Period)

Means the agreed amount stated in the Contract Agreement for O&M of the works for the stipulated period and to remedy of any defects and includes adjustments (if any) in accordance with the Contract.

4.1.17. CONTRACTOR'S EQUIPMENT:

Means all equipment, tools, apparatus, machinery, vehicles and other things required for the execution and completion of the works and the remedying of any defects. However, Contractor's Equipment excludes Temporary works, Departmental equipment (if any) or plant, materials and any other things intended to form or forming part of the permanent works.

4.1.18. COMPLIANCE WITH LAWS:

The Contractor shall, in performing the Contract, comply with all applicable Laws related to all actions of his obligation as per the contract.

4.1.19. CONTRACTOR'S OBLIGATIONS:

Means the obligation to execute the Project in all its entirety and shall, without limitation, include Operation and Maintenance.

4.1.20. CONTRACTOR'S USE OF EMPLOYER'S DOCUMENTS:

As between the Parties, the Employer shall retain the copyright and other intellectual property rights in the Employer's requirements and other documents made by (or on behalf of) the employer. The contractor may, at his own cost, copy, use, and obtain communication of these documents for the purposes of the contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

4.1.21. COUNTRY:

Means the Country in which the site (or most of it) is located, where the Permanent Woks are to be executed.

4.1.22. DAY:

Means a day from midnight to midnight.

4.1.23. DRAWINGS:

Means the drawings referred to in the specifications, any modifications of such drawings approved in writing by the Executive Engineer, and such other drawings as may from time to time be furnished or approved in writing by the Engineer-in-charge.

4.1.24. EMPLOYER / OWNER / DEPARTMENT:

Gujarat Water Supply & Sewerage Board Gujarat, or the person named as Employer or Owner in the Contract Agreement and the legal successor in title to this person.

4.1.25. EMPLOYER'S EQUIPMENT:

Means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Works, as stated in the Employer's requirements but does not include plant which has not been taken over by the Employer.

4.1.26. EMPLOYER'S USE OF CONTRACTOR'S DOCUMENT:

As between the Parties, the Contractor shall retain the copyright and other intellectual property right of the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

The Contractor shall be deemed by signing the Contract to give the Employer a non-terminable, transferable, non-exclusive royalty-free license to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This license shall:

- Apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works.
- Entitle any person in proper possession of the relevant part of the works to copy, use and communicate the Contractor's documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the works, and

- In the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the site and other places as envisaged by the Contract, including replacements of an computers supplied by the Contractor. The Contractor's Documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Employer for purposes other than those permitted under this Sub-Clause.

4.1.27. ENGINEER-IN-CHARGE:

Means the Engineer-in-Charge of the works, or in-charge of specified parts of the works under the contract or such other assistants or sub-ordinates to whom the Engineer-in Charge may have delegated certain duties, acting separately within the scope of the particular duties entrusted to them.

The contractor will be given a copy of the GWSSB's authorization designating the Engineer-in-charge by name and delegating him his authority, at the time when contract is signed. It is however, to be distinctly understood that, no delegation of powers shall be made to such assistants or sub-ordinates, except in respect of supervision to ensure compliance of the contract conditions.

4.1.28. ~~Estimated Contract Value / Estimated Cost:~~

~~***Estimated cost or Put to Tender Cost at the time of publishing the tender online.***~~

4.1.29. EXECUTIVE ENGINEER:

Means the Executive Engineer in overall charge of the works i.e. Engineer In- Charge.

4.1.30. FACILITY:

Means the entire system to be designed and constructed in accordance with the provisions hereof, including the equipment's, buildings, structures, ramps, pits, pipes, pipeline appurtenances, 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, adjustments, replacements and repairs as may be made thereto from time to time.

4.1.31. GOVERNMENTAL AUTHORITY / GOVERNMENT:

Means any Indian entity, authority or body exercising executive, legislative, judicial, regulatory or administrative functions, including, without limitation, any Government authority, agency, department, board, commission or instrumentality of Indian or any political subdivision thereof, court, tribunal, arbitrator or self-regulatory organisation.

4.1.32. LAWS:

Means and includes all the provisions of all National (or state) legislation, Indian statutes, regulations, ordinances, codes, official or other standards, administrative or other rules, zoning and other plans and restrictions, building and other permits, judgements awards and decrees of, or agreements with any Governmental, semi-Governmental or quasi-Governmental Authority as currently in effect or as may be in effect from time to time and /or as may be amended or supplemented from time to time.

4.1.33. MAINTENANCE STANDARD:

Means the requirements for maintaining, repairing, and renewing the Facility:

- As set forth in the O&M Manual; bidder shall provide this at the time of commissioning of the project.
- Required pursuant to applicable Law;
- As may be necessary for keeping the facility in a satisfactory working condition such that the Facility will continuously comply with the Operation Standard; and
- As may be necessary to ensure that the Facility shall continuously be in an optimum working condition and state in relation with the lifetime of the Facility.

4.1.34. MATERIALS:

Means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply (only materials if any) to be supplied by the Contractor under the Contract.

4.1.35. MATERIAL SUPPLIER:

Means the person who supplies goods or services. A supplier may be distinguished from a contractor or subcontractor, who commonly adds specialized input to deliverables also called vendor.

4.1.36. MONTH:

Means from the beginning of a given date of calendar month to the end of preceding date of the next calendar month.

4.1.37. O & M MANUAL:

Means the final Manual for the Operation and Maintenance of the Facility to be prepared in accordance with the requirements of Bid Documents.

4.1.38. OPERATION AND MAINTENANCE OBLIGATIONS:

Mean the obligation of the Contractor pursuant to the agreement to operate and maintain the facility on and from the start date of O&M until the date of completion of this Agreement.

4.1.39. OPERATION STANDARD: Means

The Performance Guarantees;

All applicable Laws;

All of the requirements, policies and procedures set forth in the O & M Manual

All other operational requirements set forth in this Agreement.

4.1.40. PERFORMANCE GUARANTEES:

Means the List of Guarantees offered / provided by the Contractor in his Bid Submission pursuant of the Bid Documents.

4.1.41. RUPEE:

Means Indian National Rupees (INR)

4.1.42. SITE:

Means the specific areas / lands and other places on, under, in or through which, the works are to be executed or carried out and any other lands or places provided by the owner for the purposes of the contract together with such other places as may be specifically designated in the Contract or subsequently approved as forming part of the site.

4.1.43. TAKING OVER:

Means, the Owner shall take over the project after contractual completion of the O&M period and meeting all contractual obligations, Terms & Conditions as agreed by the contractor.

4.1.44. TEMPORARY WORKS:

Means all temporary works of every kind required for successful execution of the Contract.

4.1.45. TESTS ON COMPLETION:

Means the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out (Test on Completion) before the works or a section (as the case may be) are taken over by the Employer.

4.1.46. WEEK:

Means seven consecutive days.

4.1.47. WORKS:

Means the works / action to be executed in accordance with the contract.

4.1.48. COMPLETION:

Means the date of successfully completion of operations and maintenance of the scheme.

4.1.49. "Applicable Law" means all national (or State) legislation, statutes, ordinances and other Laws and regulations and by laws of any legally constituted public authority.

4.1.50. "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.

4.1.51. “Contractor’s Equipment” shall mean all equipment, instruments, tools, machinery and other appliances and things of the Contractor at the Site required for the fulfilment of the obligations of the Contractor under these Conditions.

4.1.52. “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 subcontractor & any other personnel assisting the contractor in the execution of the work.

4.1.53. “Dispute” shall have the meaning given to it in Clause 15 of these Conditions.

4.1.54. “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.

4.1.55. “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.

4.1.56. “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.

4.1.57. “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.

4.1.58. “Force Majeure” shall mean those events mentioned in Clause 12 of these Conditions.

4.1.59. “General Conditions” shall mean the conditions of tender issued by GWSSB for O&M works of projects.

4.1.60. “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.

4.1.61. “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.

4.1.62. “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.

4.1.63. “O & M Services” shall mean those services specified in Schedule [1] which the Contractor is obligated to perform under these Conditions.

4.1.64. “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.

4.1.65. “O & M Manual” shall have the meaning for manual of Operation and Maintenance.

4.1.66. “O & M Period” shall have the meaning set out in Clause.

4.1.67. “O & M Price” shall mean the amount stated in Price Schedule.

4.1.68. “Party” shall mean each of the Contractor and the Employer and Parties shall mean both of them together.

4.1.69. “Performance Guarantees shall mean the guarantee that the Facility shall be operated satisfying the minimum performance parameters set out in Schedule.

4.1.70. “Successor Contractor” shall have the meaning given to it in Clause.

4.1.71. “Site” shall mean 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.

4.1.72. “Taking over Date” shall mean the date of issue of the taking over certificate at the end of Operation and Maintenance period.

4.1.73. “Taking Over Certificate” means the certificate to be issued by employer to the contractor at the successful completion of the Operation and Maintenance period.

4.1.74. “Termination” shall have the meaning given to it in Clause [13] of these Conditions.

4.2. 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 electronicallymade, 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.

Dy. Executive Engineer
P.H.S.Sub Division
Surat

EXECUTIVE ENGINEER
P. H. WORKS DIVISION
Surat

Dy. Executive Engineer
P.H.Mechanical. Sub Division
Surat

EXECUTIVE ENGINEER
P. H. MECHANICAL DIVISION
Surat

Particular Condition of O&M Contract

Sr. No	Brief details of scope as per Specification	Extended / Broad Scope
1	Notifying Illegal Connections and damages to components of Water supply system	**1.1** The Contractor has to register complaint in the form of FIR to the concern police station immediately on Illegal connection, water theft or any other illegal activities is found in pipeline and any theft/Loss at Head works /Sub head works. Such event the copy of registered FIRshall have to be submitted to Engineer-in-Charge; If it is not submitted within 7 days then Rs. 50,000/- will be deducted from the contractor's bill. **1.2** If any components of the water supply system such as pipelines/structures are getting damaged by the agency of any Government body, semi-government body, private party or any other department during its development work, the O&M agency has to intervene immediately. It shall be the responsibility of the O&M agency to get it restored such damage completely within the prescribed time given by the officer-in-charge. For this all necessary steps have to be taken by the O&M agency itself. **1.3** If any of the components included in the tender such as pipelines and structures are damaged or destroyed in any way, such monitoring comes under the purview of the agency. For such incidents, the agency has to lodge an FIR against their responsible employee.
2	Material in General for O&M work to be procured by the O&M Agency	**2.1** All required material except shown in schedule – A for O&M activity shall have to be brought by the contractor at his own cost including loading, unloading and carting and the such material shall have to get prior approved from the Engineer-in-charge before using it. **2.2** The cost are including all type of taxes octroi, freight, loading, unloading, carting labour charges payment to labour including insurance, P.F. and all other liabilities for the staff engaged for the O&M work. **2.3** All replace material shall be return to department store by the contractor at his own cost
3	Record Keeping at O&M Agency level	**3.1** Regular entry related to operation and maintenance should be done in ERP also by agency according to board circular otherwise penalty will be imposed according to instructions from board over time. **3.2** Regular attendance of people engaged for operation and maintenance should be done in biometric machine otherwise necessary steps will be taken against agency as per instructions from GWSSB And recovery at double rate will be done. **3.3** Contractor/Agency shall have to give payment of their engaged labour by cheque only & have to submit P.F. details of all labour to GWSSB
4	Maintenance activity of component of water supply system as per scope of O&M agency to be done as scheduled and regularly.	In case of failing of scheduled maintenance activity penalty will be deducted as per provision of tender.
5	Probable Handing over of existing components of project for	As soon as the capital works under the contract are completed, the new and existing work shall be entrusted for O&M.

	comprehensive O&M activity	
6	Colour work during O&M Period	Exterior/Interior cement paint shall be of emulsion paint colour (like APEX)and done with changing shades at each cycle of painting likely as under: 1) Main shade of Apricot with Red brick shade for decorative grooves/Pattas. **2)** Main shade of Sky Blue with Dark Blue shade for decorative grooves/Pattas. **3)** Photographs of before and after painting work shall be submitted immediately on completion of painting work and date of painting is to be painted on wall of each structure.
7	Scheduled Cleaning of Storage	All Scheduled cleaning of storage shall be carried out with prior written approval of shutdown from concern DEE and EE must. Photographs of before and after cleaning work shall be submitted immediately on completion of cleaning work and date of cleaning is to be written on wall of each structure.
8	Maintenance Vehicles	All vehicles required and engaged in O&M activity shall be with valid Registration, Insurance and PUC, copy of all mandatory documents of vehicles shall be submitted to DEE/EE on immediate effect of starting of O&M work. Otherwise a penalty at prevailing SOR rate will be deducted.
9	Bio Metrics Attendance of Manpower	Daily attendance of regular manpower engaged on duty of O&M shall have to be kept in biometric mode. Necessary bio metric machine are already installed on site, else if where machine is not available agency shall have to install approved machine at his own cost.

Dy. Executive Engineer
P.H.S.Sub Division
Surat

EXECUTIVE ENGINEER
P. H. WORKS DIVISION
Surat

Dy. Executive Engineer
P.H.Mechanical. Sub Division
Surat

EXECUTIVE ENGINEER
P. H. MECHANICAL DIVISION
Surat

Pumping Machinery Schedule						
SR. NO.	LOCATION	Type of P.M.	H.P.	No. of Set With Stand by Unit		Average daily running Hrs
				Working	Stand by	
As per BOQ						

Sheet -3

Civil						
Sr No	**Component**	**Headwork**	**Location**	**Make/ Material**	**Dimensions (Cap. In lakh liter)**	**Remarks (condition)**
As per BOQ						

Sheet - 4

Statement showing the section wise details of pipeline network

As per BOQ