

NDOH: 20/4/2022

**BEFORE THE NATIONAL GREEN TRIBUNAL, CENTRAL ZONAL
BENCH, BHOPAL (M.P.)**

Execution Petition 2 of 2020

IN

Original Application No. 88/2015

IN THE MATTER OF:

Babu Lal Jajoo

...Applicant

Versus

State of Rajasthan & Anr.

... Respondents

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4. proof of service.

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Respondent No.2

Through

Silaya

Counsel for Respondent No.2

E- 337 East of Parliament
New Delhi - 110065
Mob. 9873341612

Place: New Delhi

Date 19.04.2022

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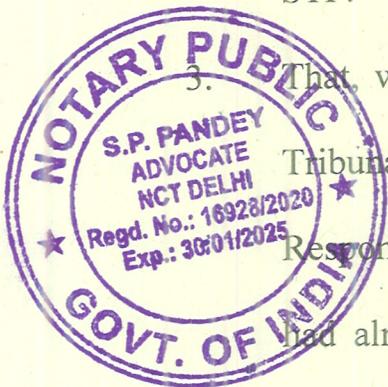
STATUS REPORT IN COMPLIANCE WITH THE ORDER DATED

24.02.2022

I, Ramesh Chandra, son of Late Shri Shiv Dutt Naudiyal, aged about 51 years, R/o B-619, Sector-17, Vasundhara, Ghaziabad – 201012 also duly authorized representative of Respondent no.2, having its office at 12, Jindal Centre, Bhikaji Kama Place, New Delhi - 110066 do hereby solemnly state and affirm as under:

1. That I am the authorized representative of the Respondent no.2 and I am well conversant with the facts and circumstances of the matter and as such competent to swear this affidavit on behalf of Respondent no.2.
2. That vide order dated 24.02.2022, the Ld. Tribunal had directed the project proponent to furnish the status report with regard to the construction of STP.

3. That, without prejudice and in furtherance of the directions of the Ld. Tribunal, on behalf of Respondent no.2 / project proponent it is stated that Respondent no.2 vide in its Application for directions on dated 22.02.2022 had already intimated this Ld. Tribunal that it has already started the preliminary work for constructing of the access road. Project proponent

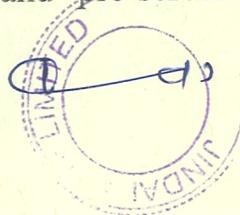
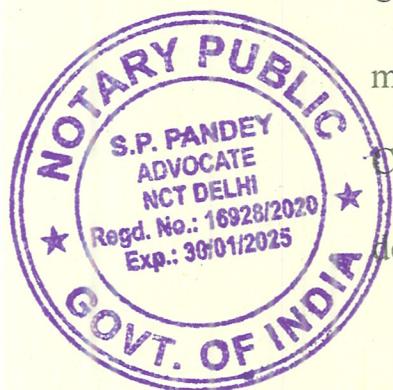


has started the survey of the project site. Levelling, marking and terracing work has started. Also, the Preliminary work for selection and appointment of Project Consultant for preparation of Detailed Project Report (DPR) consisting of Layout, Bill Of Quantity, Budget, List of Equipment, detailed drawings etc. has been undertaken. Once the above stated work will be done, the project proponent will apply for Consent to Establish from Rajasthan Pollution Control Board (RSPCB), Jaipur for setting up of STP. Parallely, award of contract (civil work, equipment supply, erection and commissioning) for 10 MLD STP project work will also be given. Thereafter, once Consent to Establish is received from Rajasthan State Pollution Control Board, JSAW will start the construction of 10 MLD STP. The photographs of the works undertaken has already been annexed thereto.

4. It is further stated that after 24.02.2022, the Survey, levelling, marking and development work of the site is under progress. The project proponent has submitted the CTE application online on 19th March 22' for pre-screening. Pre-screening approval of CTE Application has been received from RSPCB on 28.03.2022. Also the online CTE application fee has also been submitted on 11.04.2022. Further a Project Report for the 10 MLD Sewage Treatment Plant has been prepared and the same has been duly certified by the Chartered Accountant.

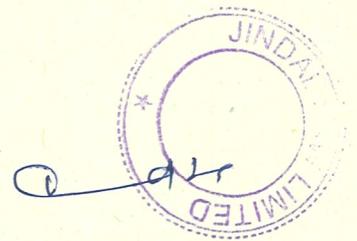
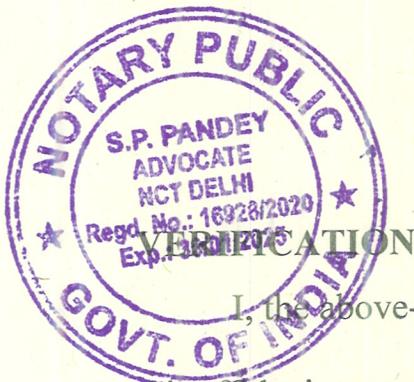
Copy of the duly certified Project Report has been annexed hereto and marked as **Annexure – A/1**.

Copy of the proof of online submission of CTE application, proof of deposit of online CTE fee and pre-screening approval of CTE



Application have been annexed hereto and marked as **Annexure – A/2**
(Colly).

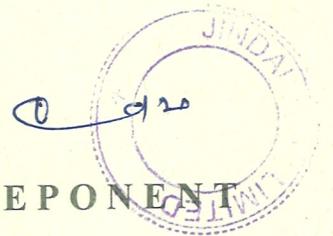
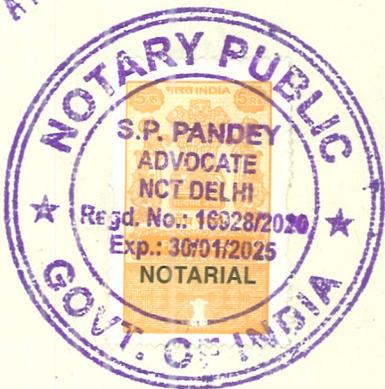
5. That the contents of present Affidavit are true and correct to my knowledge and belief and also as per the records maintained by Respondent no.2 in the ordinary course of business. That nothing material has been concealed from this Hon'ble Tribunal.



DEPONENT

I, the above-named deponent, do hereby take oath and verify that contents of this affidavit are true and correct to my personal knowledge and based on the records maintained in the ordinary course of business and nothing has been concealed therein and no part thereof is false.

17 9 APR 2022



DEPONENT

ATTESTED

**NOTARY PUBLIC
GOVT. OF INDIA**

19 APR 2022

PROJECT REPORT

10MLD SEWAGE RECYCLING SYSTEM

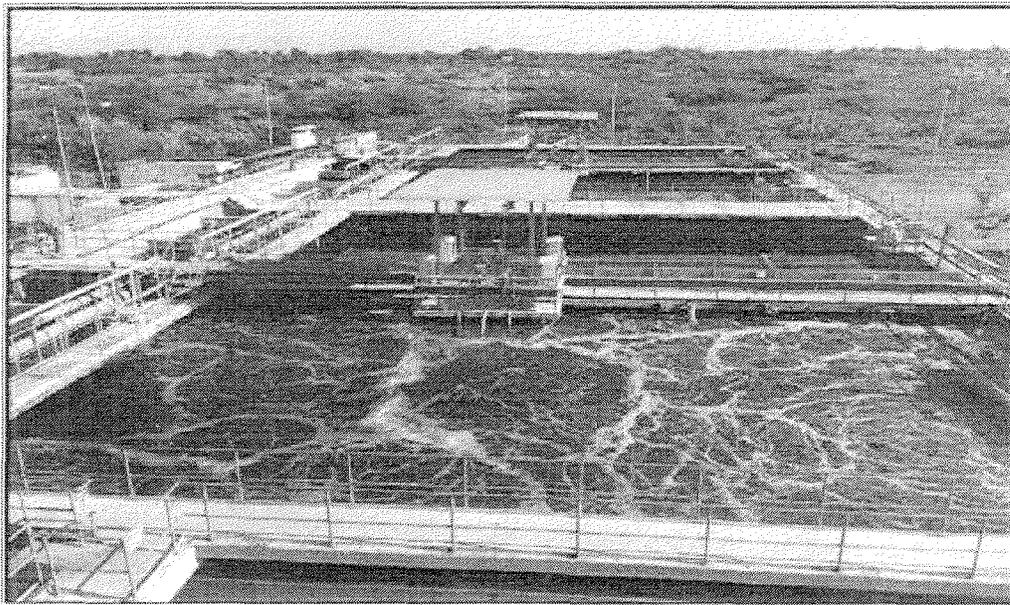
FOR



JINDAL SAW LIMITED

AT

BHILWARA, RAJASTHAN



: Location:

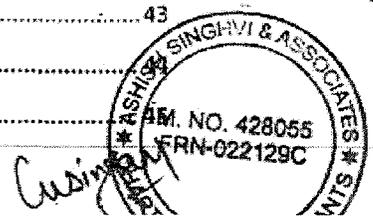
M/s Jindal Saw Ltd., Khasra No. 938
Near Village: Kewara, Tehsil & Distt. Bhilwara, Rajasthan

ASHISH SINGHVI & ASSOCIATES
CHARTERED ACCOUNTANTS
ASHISH KUMAR SINGHVI
PROPRIETOR
M. NO. 428055
ERN-022129C

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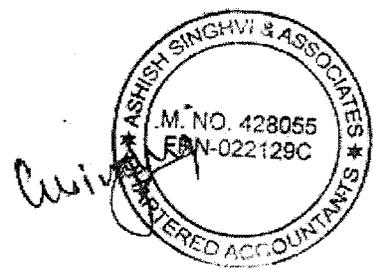
1.0 INTRODUCTION

1.1 ABOUT THE COMPANY

M/s. Jindal Saw Limited ("JSAW") is a leading global manufacturer and supplier of Iron & Steel pipe products, fittings and accessories with manufacturing facilities in India, USA, Europe and UAE (MENA). JSAW has a unique business model well diversified in terms of strategic locations, markets, products, industries and customers. It has Pan-India and Global presence.

JSAW Plant is situated near Village-Pur in Bhilwara District, near NH-79 and 12kms away from Bhilwara city. Since the Bhilwara city is facing water shortage, the water requirement can only be met by processing sewerage / drainage wastewater of Bhilwara. Hence, JSAW has already established a 10 MLD STP near village Kuwara, Bhilwara. Bhilwara city's sewage water is pumped from intake station to sewage treatment plant where it is treated as per the industrial standards. Treated filter water from STP plant is pumped through 23 kms pipeline to Main Water Reservoir (Capacity 2.5 Lac m3) located in the plant for use in Mining, Mineral Beneficiations, Pellet making, Cooling, Dust suppression, Horticulture/Plantation etc.

In addition to meet the water requirement for plant operation, Sewage Treatment Plant at Bhilwara city helps in reducing Sewerage water pollution, improving the hygienic conditions of Bhilwara periphery area and improvement in pollution level of Kothari River. JSAW, Bhilwara is continuously making efforts to conserve the natural resources as well as environment by adopting clean and green technology in the process. By doing so and adopting the zero-discharge system in the plant, JSAW is conserving the natural water resources.



 JINDAL SAW LTD. <small>TOTAL PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	3
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1.2 ABOUT THE PROJECT

M/s. Jindal Saw Limited ("JSAW") needs 10 MLD (10,000 cum/day) of water to be used as process water for its upcoming projects & steel plant.

JSAW is already drawing domestic sewage water generated from Bhilwara city & treating it in its existing 10 MLD STP and using the treated water in its existing plant. Accordingly, JSAW propose to draw additional 10 MLD domestic sewage water generated from Bhilwara city for proposed 10 MLD STP and will use this treated water for its upcoming projects & steel plant.

As JSAW has already constructed a pumping facility to collect and lift raw sewage at existing Pumping station at Sanganer Road for existing 10 MLD STP. Augmentation of existing pumping station for the proposed additional 10 MLD STP to be done and transmission pipeline has to be laid from the existing Pumping station (PS) to the proposed STP.

Also, JSAW to install the system to treat the total sewage flow of 10 MLD in the Aerobic Biological Treatment System based on high efficiency Sequential Batch Reactor (SBR) Technology and transmission pumping station and pipeline to convey treated water from Proposed STP to Proposed projects and Steel Plant.



 JINDAL SAW LTD. ELECTRICAL SOLUTIONS	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	4
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2.0 PLANT DESIGN BASIS

2.1 RAW SEWAGE CHARACTERISTICS

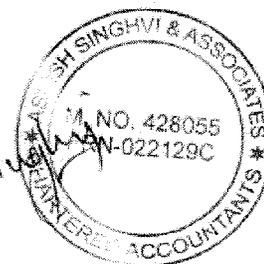
The installed system has been designed based on the following water analysis:

S. NO.	CONSTITUENTS	UNITS	VALUE
1.	Flow	cum/day	10000
2.	pH		6.4-7.2
3.	Total Suspended solids	mg/l	150 – 250
4.	BOD ₅ at 20°C	ppm	160 – 172 (250 considered for designing)
5.	COD	ppm	404-563

2.2 TREATMENT SCHEME

Treatment Process : Transportation Pipeline from existing Intake well to STP, Removal of Screenings / Grit, Biological Treatment through Sequential Batch reactor, Disinfection of the treated water and treated water conveyance system from STP to Reservoir at JSAW's plant.

Operating Hours : 24 Hrs

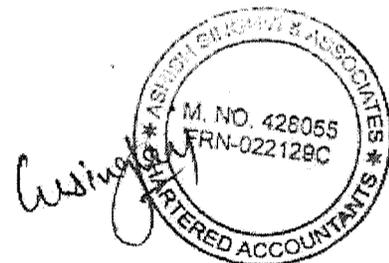


 JINDAL SAW LTD. <small>STEEL PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	5
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2.3 TREATED SEWAGE CHARACTERISTICS

The following are the treated Sewage characteristics envisaged from the installed system:

Sl. No.	PARAMETER	UNIT	VALUE
1.	pH		6.5-8.5
2.	BOD	mg/l	< 10
3.	COD (Bio degradable)	mg/l	< 50
4.	Total suspended solids	mg/l	< 20



JINDAL SAW LTD. SPECIALTY SOLUTIONS	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	6
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3.0 BASIC SYSTEM COMPONENT LIST

The raw sewage Transportation pipeline, Sewage Treatment Plant, Treated Water Transportation System from STP to reservoir at JSAW's Plant, shall include the following components:

RAW SEWAGE TRANSPORTATION SYSTEM

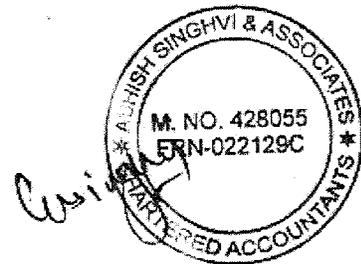
- Underground Piping from Existing Sewage Lifting Area to STP Area approx. 2 KM.

SEWAGE TREATMENT SYSTEM

- Stilling Chamber
- Fine Screen
- Grit Chambers
- SBR Tanks
- Chlorine Contact cum Treated Water Transfer Tank
- Liquid Chlorine shall be added Chlorine Contact cum Treated Water Transfer Tank for disinfection
- Biological Sludge from SBR shall be collected in Sludge Sump
- Sludge from Sludge Sump will be transferred to Centrifuge with the help of Centrifuge Feed Pumps
- Polyelectrolyte will be added for better dewatering results

TREATED SEWAGE TRANSPORTATION SYSTEM

- Treated Sewage transfer pumping system
- Underground Piping Network from STP Area to reservoir at JSAW's Plant (Pipe length considered as 23.5 km approximately)



 JINDAL SAW LTD. <small>TOTAL PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhihware, Rajasthan	PAGE NO.	7
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4.0 BASIC DESIGN DATA

SEWAGE TRANSPORTATION SYSTEM

Design Flow : 416.67 cum/hr
 Pipe Length : 2 KM
 MOC of Pipe : DI

SEWAGE TREATMENT SYSTEM

Stilling Chamber

No. of Tank : 1
 Construction : RCC

Fine Screen System

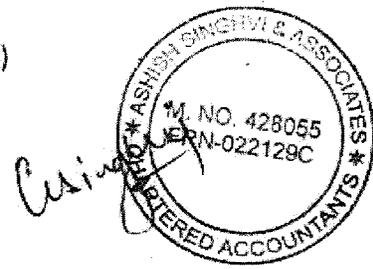
Design Flow : 416.67 cum/hr
 Nos. of Screen : 2 Nos.
 Construction : RCC

Grit Removal System

Design Flow : 416.67 cum/hr
 Quantity : 2 Nos
 Size of grit to be removed : Upto 0.3 mm (65%)
 Disposal arrangement for grit: Screw/ Rack Classifier
 Construction : RCC

SBR Tank

Volume of Tank : 4 X 1440 cum
 No. of Tank : 4 Nos
 Aeration Arrangement : Aeration Grid (Fine Bubble)
 Construction : RCC



 JINDAL SAW LTD. <small>TOTAL PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhiwara, Rajasthan	PAGE NO.	8
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Sludge Sump

No. of Tank : 1
 Volume : 45 cum
 Construction : RCC

Sludge Dewatering System

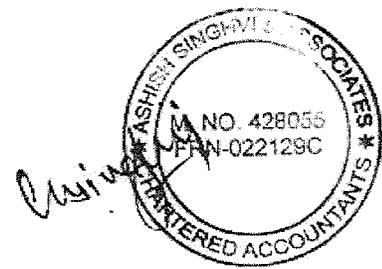
No. of Unit : 2 Nos.
 Type of Unit : Centrifuge

Chlorine Contact cum Treated Water Transfer Tank

No. of Tank : 1
 Volume : 625 cum
 Construction : RCC

TREATED SEWAGE TRANSPORTATION SYSTEM

Design Flow : 416.67 cum/hr
 Pipe Length : 23.5 km
 MOC of Pipe : DI + MS



 JINDAL SAW LTD. <small>PROVIDING TOTAL PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhiwara, Rajasthan	PAGE NO.	9
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5.0 PROCESS DESCRIPTION

RAW SEWAGE SUMP AND PUMPING

Screened sewage after coarse screening enters wet well of the Existing pumping station. Raw sewage lifting pumps has been provided in the sumps to cater the pumping requirements at average flow conditions. The pumped flow from the pumps shall be taken through transmission pipeline to the stilling chamber of the STP from where sewage will gravitate to fine screen channels.

FINE SCREENS

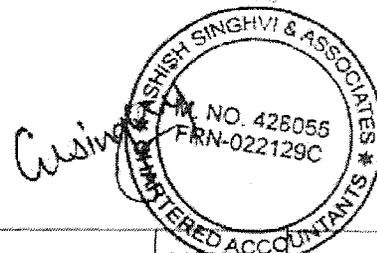
Fine screens Channels to be provided before Grit removal system to arrest the fine floating material. The fine screens should be capable to screen out most of the small floating material. The screenings shall be dropped on conveyor above the top of the screen channel. A conveyor system of suitable width shall be provided which shall be adjacent to the screens. The screening material as collected will drop automatically into a wheelbarrows for its disposal.

DE GRITTER

Screened Sewage will gravitate to Grit separator tank for removal of grit and small inorganic particulate matter of specific gravity above 2.65 and particle size above 0.3 mm. The Grit separator tank shall be of RCC construction complete with mechanical internals and square in size. The grit separated shall be properly collected and be transferred for disposal.

SEQUENCING BATCH REACTOR:

A sequencing batch reactor is a modified activated sludge type, wastewater treatment system in which all treatment operations are carried out in one tank. This differs from conventional wastewater treatment where the wastewater flows from one tank to another, each tank performing a specific treatment operation.



 JINDAL SAW LTD. <small>TOTAL PERFORMANCE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	10
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Different environments are created in the SBR by controlling process equipment such as aerators, mixers, pumps and decanters during a cycle. The process is controlled and coordinated by a programmable logic controller (PLC).

Treatment in SBR is accomplished in four distinct cycle events. The first event is FILL during which influent wastewater is distributed into the sludge blanket. The FILL event can take place under mixed or unmixed conditions and aerated or unaerated conditions, depending on the treatment objectives. REACT events include mixing and aeration. The SETTLE event occurs when all mixing and aeration is turned off and the mixed liquor solids settle, allowing a clear supernatant to form in the upper part of the SBR.

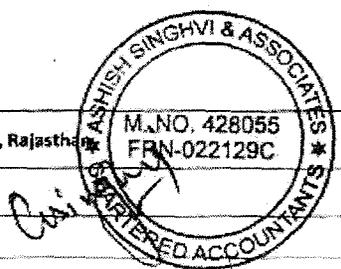
The DECANT event occurs once a substantial depth of supernatant is drawn off the upper portion of the SBR. Sludge wasting can occur during this time, since the settled sludge bed will have a maximum concentration of solids.

The timing and sequencing of events in an SBR cycle depend on the influent wastewater characteristics and the treatment objectives. Aerated conditions serve to oxidize organic component.

SBR technology offers several benefits and advantages over other activated sludge system suchas: -

- Lower capital and operating costs.
- Greater ability to meet effluent limitations since the SBR utilizes 'batch' kinetics - process reactions approach completion under high concentration gradients with no short-circuiting.
- Better resistance to sludge bulking, since the biomass undergoes cyclic feast-famine conditions, which have been proven to produce a better settling sludge than continuous flow conditions.
- No need for external Clarifiers and associated return sludge pumps and piping since solids separation and clarification occur in the same vessel as other treatment operations.

 JINDAL SAW LTD. <small>INDUSTRIAL SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	M. NO. 428055 FRN-022129C	PAGE NO.	11
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- Greater system flexibility and control since the cycle format can be easily modified at any time to offset changes in process conditions, influent characteristics or effluent objectives.

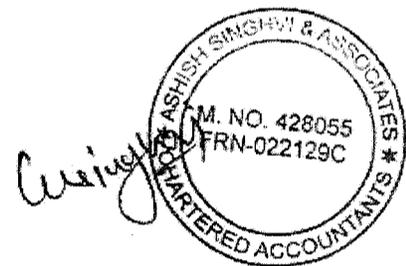
CHLORINATION

Chlorine contact tank is a baffled tank generally provided with required retention time for disinfection of sewage.

Chlorine by virtue of their oxidizing power can be consumed by variety of inorganic and organic materials present in sewage before any disinfection achieved. It is therefore essential to provide sufficient time and dosage of chlorine to satisfy various demands and leave some amount of unreacted chlorine as free chlorine. This free available chlorine can react with compounds such as ammonia, proteins, amino acids and phenol which may be present in the sewage, forming chloramines and chloro-derivatives which constitute the combined chlorine. The combined available chlorine has less disinfecting properties as compared to free available chlorine. When most of the reactions with chlorine are complete, the addition of more chlorine results in a permanent residual. The point at which the concentration returns to an upward slope is termed as breakpoint Chlorination. Break point chlorination shall be achieved in chlorine contact tank for efficient disinfection. Liquid chlorination system shall be provided for disinfection.

SLUDGE HANDLING SYSTEM

The sludge from the SBR basins is withdrawn through sludge withdrawal system and collected in the sludge sump. The sludge shall be then pumped to Solid Bowl Centrifuge for dewatering of sludge. Dewatering Polymer shall be dosed online prior to centrifuge feed. The dosing system shall include one set of solution dosing tank equipped with slow speed mixers and metering type positive displacement pumps. The sludge in form of wet cake from centrifuges will be collected and disposed.



 JINDAL SAW LTD. <small>TOTAL FIP SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhiwara, Rajasthan	PAGE NO.	12
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6.0 OPERATION & MAINTENANCE DETAILS

Plant Details	:	Sewage Treatment Plant
Location	:	Bhilwara, Rajasthan
Plant Capacity	:	10 MLD
Operating hrs.	:	24 Hrs.
No Of Days Operated Per Year	:	330 Days
No Of Shift Operation	:	3 Shift

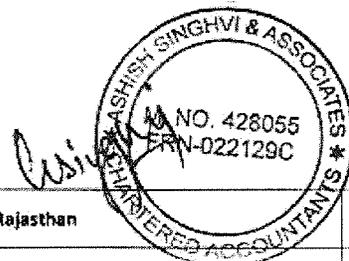
GENERAL MAINTENENCE

Operation and maintenance scope of work will include Sewage Treatment Plant and Raw Sewage Pumping Station under the Contract complete including the mechanical components instrumentation system, Electrical System of STP & SCADA systems, all utility and ancillary buildings and STP premises area.

Arrangement for plant operation personnel, lubricants, consumable spares, tools and tackles, routine maintenance, sampling and analysis, screenings and grit collection, transportation and collection of dewatered sludge at STP battery area, co-ordination with JSAW Bhilwara authorities and any other activity required for the operation and maintenance of the works / plants.

Weekly report will be prepared indicating the labor hours expended, Electrical Power Consumed, Chemicals and other Consumables consumed and also problems faced and rectified. The report shall also include full details and complete results of all sampling and analysis conducted. The sampling locations, parameters analyzed, and sampling/analysis frequencies.

During the Operation and Maintenance period, it will be ensured that the stipulated design sewage standards are met in accordance with the specifications. The scope of works also includes the safety during the course of Operation and Maintenance.



 JINDAL SAW LTD. <small>INDIA TOTAL PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	13
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During Operation and Maintenance period, a plant in-charge will be appointed and Laboratory Technician. In addition, we depute suitable number of operators, fitters, electricians, helpers, gardeners, & labor as required for the operation and maintenance of the plants for three shifts and adequate other staff / supporting personnel during general shift.

ELECTRICAL MAINTENANCE

All the electrical equipment shall be handled and operated by a trained and authorized person only. All the equipment shall be checked for its proper earthing and loose connections prior to start the equipment. Naked wire, loose connections and faulty connections will be repaired immediately prior to start for operation.

Electrical sockets and switch will not be touched by bare or wet hands. If there is any live wire found naked or on wet ground, main switch will be turned off first then the wire shall be repaired or moved. For any electrical works proper insulated tools will be used.

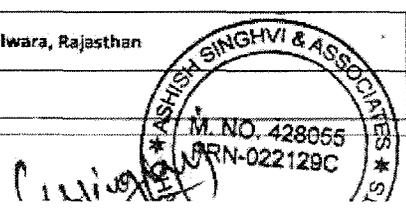
INSTRUMENTATION MAINTENANCE

A comprehensive maintenance program is critical to attaining long-term reliable performance of SCADA Systems. Periodic device calibration, preventive maintenance, and testing allow potential problems to be identified before they can cause mission failure. Prompt corrective maintenance assures reliability by minimizing downtime of redundant components.

The SCADA system will be part of the overall preventive maintenance (PM) program for the facility. Many components of SCADA systems, such as dead-bus relays, are not required to function under normal system operating modes. For this reason the system should be tested periodically under actual or simulated contingency conditions. These tests will approach as closely as possible the actual off-normal conditions in which the system must operate. Periodic system testing procedures can duplicate or be derived from the functional performance testing procedures.

The SCADA software maintenance will include timely updates of any new versions from the supplier and testing to verify proper installation on the SCADA computer. In addition, software antivirus updates should be maintained. This will be performed any time after the computer is connected to the Internet or the antivirus patch should be downloaded as and when the updates are available.

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Normal operation requires that the SCADA computer not be connected to the Internet. Faulty Instruments, sensors, transmitters, communication modules, computer hardware should be repair / replaced with new components.

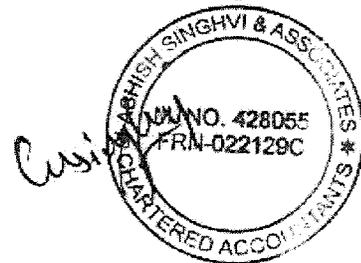
OPERATIONS AND MAINTENANCE DOCUMENTATION

O&M analysis will be performed to determine the O&M data required to support maintenance of the SCADA system. This analysis should determine maintenance parameters and O&M data that are available. Typical O&M data requirements include the following items:

- System documentation as defined in FDS, FAT & SAT documents.
- Minimum spare parts list.
- Recommended spare parts list.
- Recommended onsite test equipment.
- Recommended O&M training.

CHEMICAL REQUIREMENT

SL. NO.	Description of Chemicals
1.	Urea
2.	DAP
3.	NaOCl
4.	De watering Polymer



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7.0 DETAIL PROPOSAL FOR RAW SEWAGE COLLECTION & PUMPING

7.1 PROCESS DESCRIPTION & DESIGN DETAILS

The raw sewage from sewerage network shall is being collected in the existing Sewage Lifting Wet Well after coarse screening. From Sewage Lifting Wet Well the raw sewage shall be transferred to STP area via sewage transfer pumps and underground piping network.

From the sewage transportation network, the sewage shall be introduced in the Stilling Chamber located at the inlet of the proposed Sewage Treatment System. The outlet of the Stilling Chamber will connect to the fine screening & grit removal system before getting collected in the SBR Tanks.

7.2 BASIC COMPONENTS

The basic components of existing raw sewage pumping station are given below:-

SEWAGE COLLECTION & LIFTING SYSTEM

This component is already constructed at Sanganer Road. As JSAW has already constructed a pumping facility to collect and lift raw sewage at existing Pumping station at Sanganer Road for existing 10 MLD STP. Augmentation of existing pumping station for the proposed additional 10 MLD STP to be done and transmission pipeline has to be laid from the existing Pumping station (PS) to the proposed STP.



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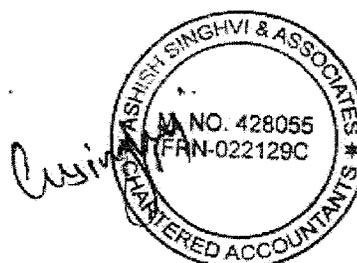
8.0 PROPOSAL FOR RAW SEWAGE TRANSPORTATION PIPING

8.1 RAW SEWAGE TRANSPORTATION SYSTEM

The system shall comprise of pumping raw sewage / storm water up to STP site with 2 KM of DI pipeline.

8.2 DESIGN BASIS & DESIGN OF RAW SEWAGE TRANSPORTATION SYSTEM

Design Flow	:	10 MLD
Average Hourly Flow	:	416.67 cum/hr
Pipe Length	:	2 KM
MOC of Pipe	:	DI K7
Velocity Considered	:	1.5 m/s
Diameter	:	300mm



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9.0 DETAIL PROPOSAL FOR SEWAGE TREATMENT PLANT (STP)

It is proposed to treat the total sewage flow of 10 MLD in the Aerobic Biological Treatment System based on high efficiency Sequential Batch Reactor (SBR) Technology.

9.1 RAW SEWAGE CHARACTERISTICS CONSIDERED FOR DESIGN OF STP

The characteristics of the raw sewage considered for designing the STP are as per the table below:

S.N.	Parameters	Unit	Quality
1.	pH		6.4 – 7.2
2.	TSS	mg/l	150 – 250
3.	COD	mg/l	404 – 563
4.	BOD ₅ at 20°C	mg/l	160 – 172 (250 considered for designing)

NOTE :

- In case the actual chemical characteristics of the raw sewage to be treated indicates concentrations exceeding the above figures, or elements other than what are mentioned above, we reserve the right to modify our proposal accordingly.



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9.2 TREATED SEWAGE CHARACTERISTICS ENVISAGED

The treated water at the outlet of Sewage Treatment Plant shall be as per the table below:

PARAMETER	UNIT	QUALITY
pH	-	6.5 – 8.5
TSS	mg/l	< 20
BOD	mg/l	< 10
COD	mg/l	< 50

The above quality of treated water is achieved subject to the following:

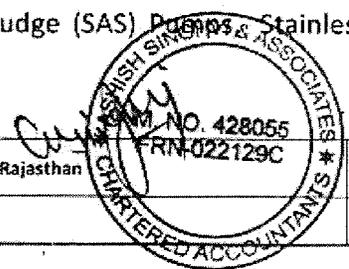
The feed quality is same as specified in 9.1 above. In case of any change in the quality of raw sewage, there may be certain impacts on operating parameters or on treated water characteristics.

Treatment Philosophy:

STP process consists of **Biological Treatment Units based on Cyclic Activated Sludge and Sequential Batch Reactor (SBR) technology.** The activated sludge converts most organic wastes to stable inorganic forms or to cellular mass. In this process, the organic material is metabolized by a diverse group of microorganisms (bacteria) to carbon dioxide and water. Some fraction of incoming organic matter is converted to cellular mass that can be separated from the effluent by settling. Bacteria culture is responsible for oxidizing the organic matter present in sewage water.

The STP treatment process consists of Coarse & Fine Screening, De-gritting, Biological Treatment Units based on Cyclic Activated Sludge (C-Tech) & Sequential Batch Reactor (SBR) technologies, Chlorination System, Centrifuge and Sludge Handling System.

The raw sewage is being collected and pumped into the Primary Treatment Units comprising Inlet Chamber, Coarse & Fine Screen Channels and Grit Removal Units etc. The primary treated sewage is taken into Biological Treatment Units based on Cyclic Activated Sludge (C-Tech) & Sequential Batch Reactor (SBR) technologies. The C-Tech Basins has Air Blowers, Diffusers, Grid Piping, Return Activated Sludge (RAS) Pumps, Surplus Activated Sludge (SAS) Pumps, Stainless Steel Decanters, Auto Valves and PLC etc.



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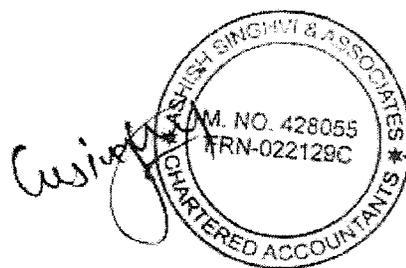
The primarily clarified water is passed to two aeration tanks in sequence, one after other. In aeration tank air is blown through blowers for two hours. For next two hours, the dirt is allowed to settle and water is decanted. The entire process takes four hours. All cycles will be automatically controlled using PLC.

Excess sludge at a consistency level of 0.8% will be pumped intermittently with the help of SAS Pumps. This can be taken further for Sludge Dewatering or Drying as per process requirement. The decanted water after filtration and chlorination is pumped through pipeline to plant for use. The sludge generated in the process is fully digested and does not require any further digestion. The sludge is withdrawn at 0.8 - 1% consistency and taken directly into centrifuge for dewatering to 20% truck able quality. The centrate from the centrifuge is taken back into the primary unit. Generated digested sludge cake is used as compost for plantation, green belt development, agriculture purpose etc.

The activated sludge process configuration is designed to operate on extended aeration activated sludge principle for BOD reduction, Nitrification. De-nitrification as well as biological phosphorous removal, using energy efficient fine bubble membrane diffused aeration system, with automatic control of oxygen uptake rate, resulting in 20-30% power savings. Nitrogen and phosphorous removal has been optimized using cyclic activated sludge technology by simultaneous nitrification-De-nitrification and biological phosphorus removal.

The complete biological operation is divided into cycles and operated in a batch-fed reactor mode. Each basic cycle comprises of the following steps which take place independently in sequence to constitute a cycle and then gets repeated.

- ✓ Fill / Aeration
- ✓ Sludge Settling
- ✓ Decanting



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Figure-1 shows the Flow Chart of Sewage Treatment Plant

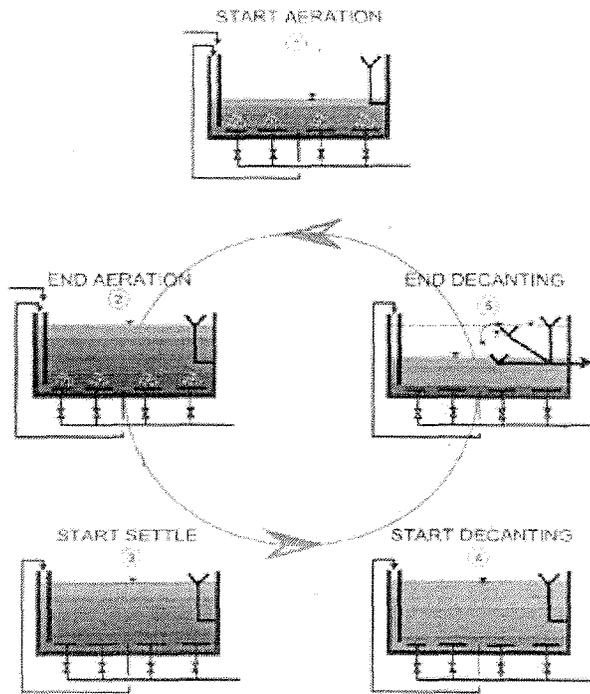
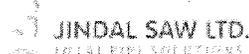


Figure-1: C-Tech Cycle

Table-1 indicates the Raw Sewage Quality and the Treated Water Quality



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9.3 DESIGN BASIS

DESIGN BASIS FOR SEWAGE TREATMENT SYSTEM

Design BOD load : 2,500 Kg/day
Design TSS load : 2,000 Kg/day
Capacity of each stream : 10 MLD

Inlet Chamber

No. of Tank : 1
Construction : RCC

Fine Screen System

Design Flow : 937.5 cum/hour (Peak flow)
Nos. of Screen : 3 Nos.
Operation : 2 no. Automatic + 1 no. Manual
Construction : RCC

Grit Removal System

Design Flow : 468.75 cum/hour (Peak flow)
Nos. : 2
Size of grit to be removed : Upto 0.3 mm (65%)
Disposal arrangement for grit : Screw/ Rack Classifier
Construction : RCC

SBR Tank

Volume of Tank : Of suitable capacity
No. of Tank : 4
Aeration Arrangement : Aeration Grid (Fine Bubble)
Construction :- RCC



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Sludge Sump

No. of Tank : 1
 Volume : As required
 Construction : RCC
 Mixing Arrangement : Coarse Bubble
 Construction : RCC

Sludge Dewatering System

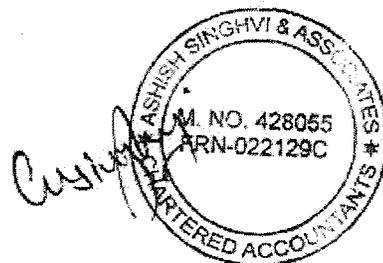
No. of Unit : 2
 Operating Hours : 8
 Type of Unit : Centrifuge

Chlorine Contact cum Treated Water Transfer Tank

No. of Tank : 1
 Volume : As required
 Construction : RCC

DESIGN BASIS FOR TREATED WATER PUMPING STATION

Design Flow : 416.7 cum/hr
 Pipe Length : 23.5 km
 MOC of Pipe : DI K9 + MS



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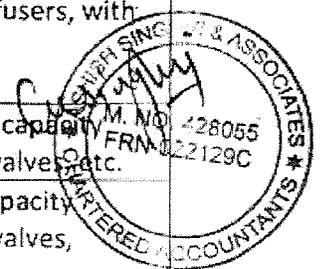
9.1 LIST OF CIVIL UNITS

S.No.	NAME OF UNIT	QTY
01.	Inlet Chamber	1
02.	Fine Screen Channel	3
03.	Grit Chamber	2
04.	SBR Tanks	4
05.	Sludge Sump	1
06.	Chlorine Contact cum Treated Water Transfer Tank	1
07.	Admin Building Cum Lab	
08.	Structural Shed for Housing Centrifuges & Monorail Hoist	1
09.	Pump House for Treated Water Transfer Tank	1
10.	Building for Air Blowers, various pumps, chemical dosing systems, etc	Lot
11.	Electrical & Control for Sewage Treatment System	Lot
12.	Equipment Foundations	Lot
13.	Staircases	Lot
14.	Pathways	Lot



9.5 LIST OF ELECTRO-MECHANICAL UNITS

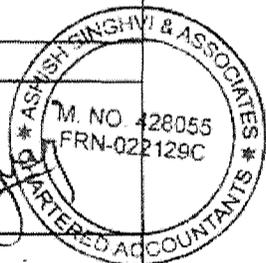
A. MECHANICAL ITEMS:			
S.N.	NAME OF UNIT	QUANTITY	BRIEF SPECIFICATION
01.	Fine Screen	3 Nos.	2 No. Mechanical & 1 no. manual
02.	Grit Removal system	2 Set	As required
03.	Air Blowers for SBR Tanks	5 Nos. (4W+1S)	Roots (Rotary Twin Lobe) type, MOC – CI,
04.	Accessories for Air Blowers such as NRV Air Filters, Safety Valves, V-Belts and Guard, etc.	4 Set	As per manufacturer
05.	Air Header Piping for SBR Tank	Lot	As required, MOC – SS (wetted piping)
06.	Sub-Header Piping for SBR Tank	Lot	As required,
07.	Air Diffuser – Fine Bubble Diffusers for SBR Tank	Lot	As required
08.	Sludge recycle and surplus wasting Pumps	8 Nos.	Submersible Pumps of suitable capacity complete with piping, fittings, valves, etc.
09.	SBR Decanter	4 Set	As required
10.	Liquid Chlorine Solution Dosing Pumps	2 Nos. (1W+1S)	Metering Pumps of suitable capacity complete with piping, fittings, valves, pressure gauges, PRV, etc.
11.	Air Blowers for mixing in Sludge Sump	2 Nos. (1W+1S)	Roots (Rotary Twin Lobe) type, MOC – CI,
12.	Accessories for Air Blowers such as NRV Air Filters, Safety Valves, V-Belts and Guard, etc.	2 Set	As per manufacturer
13.	Air Header Piping for Sludge Sump	Lot	Qty. As required, MOC - IS 1239, Medium quality MS Pipes painted on outside with Tar Epoxy paint
14.	Sub-Header Piping for Sludge Sump	Lot	Qty. As required, HDPE/PVC
15.	Air Diffusers – Course Bubble Diffusers for Sludge Sump	Lot	As required, Course Bubble Diffusers, with other necessary fittings
16.	Centrifuge Feed Pumps	3 Nos. (2W+1S)	Submersible Pumps of suitable capacity complete with piping, fittings, valves, etc.
17.	Poly Solution Dosing Pumps for Dewatering	2 Nos. (1W+1S)	Metering Pumps of suitable capacity complete with piping, fittings, valves, pressure gauges, PRV, etc.



 JINDAL SAW LTD. <small>GLOBAL LEADERS IN PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System, Bhilwara, Rajasthan	PAGE NO.	25
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18.	Centrifuge	2W + 1S No.	Counter current type, Differential speed : Cyclo gear
19.	Monorail Hoist for Centrifuge	1 No.	Capacity : 1.0 Ton (Manual) MOC : Steel, Type : With traveling trolley and monorail
20.	Centrate / Supernatant Transfer Pumps	2 Nos. (1W+1S)	Submersible Pumps of suitable capacity complete with piping, fittings, valves, etc.
21.	Treated Water Transfer Pumps	3 Nos. (2W+1S)	Horizontal Centrifugal Pumps of 210 M ³ /hr capacity complete with fittings, valves, etc.
ALL INTER-CONNECTING PIPINGS FOR FOLLOWING APPLICATIONS			
a)	Sewage Lines	Lot	As required
b)	Filtered Water Lines	Lot	As required
c)	Service Water Lines	Lot	As required
d)	Sludge Lines	Lot	As required
e)	Chemicals Dosing Lines	Lot	UPVC / HDPE
f)	Air Lines	Lot	MS for Process Air, GI for Instrument Air
02.	VALVES		
a)	Butterfly Valves	Lot	As per requirements of the application.
b)	Gate Valves	Lot	As per requirements of the application.
c)	NR Valves in discharge of all Centrifugal Pumps, Screw Pumps and Air Blowers	Lot	As per requirements of the application.
d)	Ball Valves in Chemical Dosing Lines	Lot	As per requirements of the application.
e)	Gate Valves in Sampling Lines	Lot	As per requirements of the application.

Sl. No.	NAME OF UNIT / EQUIPMENT	QTY.	BRIEF SPECIFICATIONS
03.	Fittings for Various Piping Networks	Lot	As per requirements of the application.
04.	Pipe Racks / Cable Rack / PipeBridges / Pipe Supports, etc.	Lot	MOC : Rack : Steel, Sleeper : RCC, Trench : RCC
B. ELECTRICAL ITEMS:			
01.	Push Button Stations (PBSs) / Local Control Stations (LCSs) for all Electrical Drives	As Required	IP-55/FLPs as required
02.	Cable	As Required	Copper conductor, armored cable
03.	Cables Trays	As Required	Ladder type



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04.	Cable Glands	As Required	Double compression type
05.	Earthing Material	As Required	GI earth strip & wires
06.	Earthing Pits	As Required	As per IS-3043
07.	Lighting Panel Board	As Required	With MCB, surface mounted
08.	Lighting Fittings	As Required	Fluorescent tube fixtures
09.	Exhaust Fans	As Required	18" sweep, industrial time
C. INSTRUMENTATION			
01.	Junction Box	As Required	Sheet steel, made from 2 mm CRCA Sheet, fully gasketed with ELMED 2.5 mm ² Melamine rail mtd terminals & WP Double compressor board, Cable glands, Separate JBS will be used for analog signals & digital switch cabling
02.	Copper Conductor	As required	1.5 mm ² , PVC insulated cable, wire armoured, 1100 Volts grade size : 3C x 1.5 mm ² (Twisted) overall Aluminium Mylar shielding
03.	Cable Trays	As Required	As Required
04.	Various Instruments	As Required	As per P & ID enclosed
05.	PLC with display for Complete Plant	As Required	Consisting PLC, Computer, Printer, Hub for intercommunication, PLC Panel, Battery Back-up

D. CHEMICAL&POWER CONSUMPTION

Chemicals

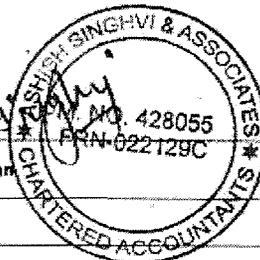
The following chemicals shall be used for sewage recycling system:

S. No.	Chemicals	Consumption per day
1.	Liquid Chlorine (calcium or sodium hypochlorite) for disinfection	50 kg
2.	Polyelectrolyte for sludge dewatering	1 kg

Power

The power consumption for complete sewerage system shall be approx. 6,000 KWH / day.

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10.0 EXECUTION METHODOLOGY

10.1 SITE MOBILIZATION

Soon after the receipt of all the relevant permissions, we shall commence construction. The area to be excavated shall be cleared of fences, trees, plants, logs, stumps, bush, vegetation, rubbish, slush, etc. and other objectionable matter. If any roots or stumps of trees are met during excavation, they shall also be removed. The material so removed shall be burnt or disposal off as per relevant environmental guidelines. Where earth fill is intended, the area shall be stripped of all loose/soft patches, topsoil containing objectionable matter/materials before fill commences.

10.2 EXCAVATION

All excavation work shall be carried out by mechanical equipment's unless, in the opinion of Engineer, the work involved and time schedule permit manual work.

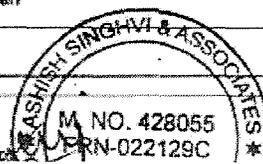
Excavation for permanent work shall be taken out to such widths, lengths, depths and profiles as are shown on the drawings or such other lines and grades as may be specified by Engineer. Rough excavation shall be carried out to a depth 150 mm above the final level. The balance shall be excavated with special care. Soft pockets shall be removed even below the final level and extra excavation filled up as directed by Engineer should be carried out just prior to laying the mud-mat.

All excavation shall be done to the minimum dimensions as required for safety and working facility. Prior approval of Engineer shall be obtained by us in each individual cases, for the methods he proposes to adopt for the excavation, including dimensions, side slopes, dewatering, disposal, etc.

10.3 FILL, BACK FILLING AND SITE GRADING

As the work in foundations has been accepted and measured, the spaces around the foundations, structures, pits, trenches etc, shall be cleared of all debris, and filled with earth in layers not exceeding 45 cm., each layer being watered, rammed and properly consolidated, before the succeeding one is laid. Each layer shall be consolidated to the satisfaction of Engineer. Earth shall

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be rammed with approved mechanical compaction machines. The final backfill surface shall be trimmed and levelled to proper profile

Plinth filling shall be carried out with approved material as described above in layers not exceeding 45 cm, watered and compacted with mechanical compaction machines. The final backfill surface shall be trimmed and levelled to specified profile. At places backfilling shall be carried out with local sand if directed by Engineer.

Filling in trenches for pipes and drains shall be commenced as soon as the joints of pipe and drains have been tested and passed. The backfilling materials shall be properly consolidated by watering and ramming, taking due care that no damage is caused to the pipes.

Site grading shall be carried out as indicated in the drawings and as directed by Engineer. Excavation shall be carried out as specified in the specification. Filling and compaction shall be carried out as specified.

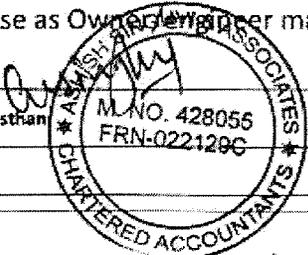
10.4 LAYING OF PIPELINE

a. EXCAVATION

Before excavating the trench the alignment of pipeline shall be approved by Engineer. The excavation of trenches and pits for manholes/ chambers shall be carried out in accordance with the Relevant IS Specification and shall be done such that it does not get far ahead of the laying operation as approved by Engineer. The relevant Indian Standards and the rules and regulations of local authorities in regards to safety provisions shall be observed.

During excavation, large stones and rubble shall be separated and removed from the excavated soil and stacked separately. The material from excavation shall be deposited on either side of the trench leaving adequate clear distance from the edges of the trench and pit, or as may be necessary to prevent the sides of the trench pit to slip or fall, or at such a distance and in such a manner as to avoid covering fire hydrants, sluice valves, manholes covers etc. and so as to avoid abutting the wall or structure or causing inconvenience to the public and other service organizations or otherwise as Owner/Engineer may direct.

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When Welding is to be carried out with the pipes and specials in the trench, additional excavation of not more than 60 cm in depth and 90 cm in length shall be made at joints in order to facilitate Welding.

The excess excavated material shall be carried away from site of works to a place up to a distance as directed by Engineer. This shall be done immediately so as not to cause any inconvenience to the public or traffic.

b. BEDDING

The type of bedding for pipes shall be as per specifications.

c. LOWERING AND JOINTING

The pipe shall be lowered into the trenches by removing only one or two struts at a time. It shall be seen that no part of the shoring is disturbed or damaged and, if necessary, additional temporary struts may be fixed during the lowering operations. It shall also be necessary to see that the gunite coating of pipe is not damaged in anyway during the lowering and assembling. After the pipe is lowered into the trench, it shall be laid in correct line and level by using the leveling instruments, sight rails, theodolite, etc. Care shall be taken to see that the longitudinal joints of two consecutive pipes at each circumferential joints are staggered by 90°. While assembling the pipes, the ends shall have to be brought close enough to leave a uniform gap not exceeding 4mm. If necessary, a marginal cut may be taken to ensure a close fit of the pipe faces. For this purpose, only experienced cutters who can make uniform and straight cuts, shall be permitted to cut the faces of the pipes. No extra payment shall be made for such marginal cutting. There shall be no lateral displacement between the pipe faces to be joined. If necessary, spiders from inside and tightening rings from outside shall be used to bring the two ends in perfect contact and alignment. It may also be necessary to use lacks for this purpose. In no case shall hammering or longitudinal slitting be permitted. When the pipe is properly assembled and checked for correct line and level, it shall be firmly supported on wooden beams and wedges and tack welded. Some portion of the trench may be refilled at this stage so as to prevent the pipeline from losing its alignment. The tack welded circumferential joints shall then be welded fully. Only

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experienced welders, who shall be tested from time to time shall be permitted to carry out the welding work. On completion of the pipe jointing and external protection, the trench and the welding pits shall be cleaned of guniting rebound. The welding shall be filled and compacted in 150mm layers with the bedding material. Afterwards back filling shall be carried out as per specifications.

d. LAYING

The pipeline shall be erected on R. C. saddles or laid on natural ground. No material shall be erected unless they have been previously passed by the Engineer.

Erection of fabricated shells shall be carried out by us and we shall equip it, at our cost, with all necessary tools, machinery, labour etc. required for the purpose.

e. WELDING

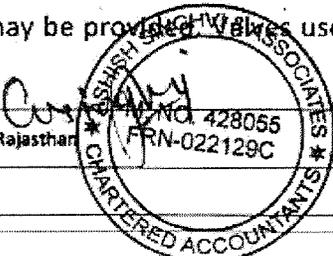
Except for routine welding of joints, no other work shall be done in the absence of our engineer, either during the day time or at night. Chipping shall not be kept in arrears for more than 15 joints.

f. ERECTION OF SHELLS

The erection shall be true to position, lines and grade as shown in the drawings or as modified by the Engineer. We shall provide at his cost necessary saddles, pads, spider etc., all necessary instruments and other materials and labour required for proper erection of shells in position and for the Engineer in checking the correctness of the erection.

g. FIXING OF VALVES :

Loading at store and unloading at site of works shall be done carefully using suitable mechanical handling devices such as crane, chain pulley etc. The arrangement of housing the valves with chambers and stable and firm foundations. The chamber and top roof cover with removable lid shall be provided so that it shall be possible to remove or replace or recondition the valves seats and to remove the parts without removing the valves from the pipe work. For this suitable flange adapters may be provided. Valves used on pipeline shall

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be straight through type and non chokable. Each valve or its operation equipment shall bear an approved name plate stating its function. All operation spindles, gears and head stocks shall be provided with adequate points for lubrications. The tightening of nut and bolts shall be done smoothly in such a way that no excessive strain occurs on any one side: The nuts shall be tightened on diametrically opposite site at a time.

h. FLANGES

Flanges shall be provided at the end of pipes or special where sluice valves, blank flanges, tapers etc. have to be introduced. The flanges received from the manufacturers will have necessary bolt holes drilled. We shall assemble the flanges in the exact position by marginal cutting, if necessary, so as to get the desired position of the sluice valves, etc. either vertical or horizontal and shall then fully weld the flanges from both sides in such a way that no part of the welding protrudes beyond the face of the flanges.

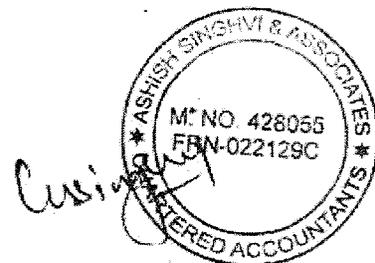
i. FIELD HYDRAULIC TEST

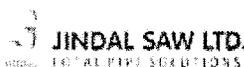
After erection at site and after the concrete anchor blocks have been constructed but prior to internal painting, the entire pipeline shall be subjected to a hydraulic test as per the specifications.

10.5 CONCRETE

a. General

Concrete grade shall be as designated on drawings. In concrete grade M15, M20, M25 etc. the number represents the specified characteristic compressive strength of 150 mm cube at 28 days, expressed in N/sq.mm as per IS : 456. Concrete in the works shall be "Design Mix Concrete" or "Normal Mix Concrete". All concrete works of grade M5, M7.5 and M10 shall be Nominal whereas all other grades, M15 and above, shall be Design Mix Concrete.



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b. Mix Design and Testing

For Design Mix Concrete, the mix shall be designed according to IS : 10262 and SP: 23 to provide the grade of concrete having the required workability and characteristics strength not less than appropriate values given in IS : 456.

c. Batching and Mixing of Concrete

Proportions of aggregates and cement, as decided by the concrete mix design, shall be by weight. These proportions shall be maintained during subsequent concrete batching by means of weigh batchers capable of controlling the weights within one percent of the desired value.

d. Nominal Mix Concrete

Mix Design and Testing

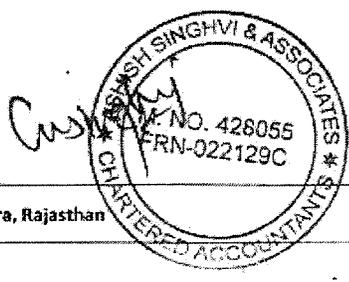
Mix design and preliminary tests are not necessary for Nominal mix Concrete. However works tests shall be carried out as per IS : 456. Proportions for Nominal Mix Concrete and water / cement ratio may be adopted as per Table 3 of IS : 456. However it will be our sole responsibility to adopt appropriate nominal mix proportions to yield the specified strength.

Batching and Mixing Concrete

Based on the adopted nominal mixes, aggregates and cement shall be measured by weight.

e FORM WORK

Form work shall be all inclusive and shall consist of but not limited to shores, bracings, sides of footings, walls, beams and columns, bottom of slabs etc. including ties, anchors, hangers, inserts, falsework, wedges etc. The design and engineering of the formwork as well as its construction shall be our responsibility. However, if so desired by Engineer the drawings and calculations for the design of the formwork shall be submitted to Engineer for approval.



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f TRANSPORTING, PLACING AND COMPACTING CONCRETE

Concrete shall be transported from the mixing plant to the formwork with minimum time lapse by methods that shall maintain the required workability and will prevent segregation, loss of any ingredients or ingress of foreign matter or water.

Concrete shall not be placed in flowing water. Under water, concrete shall be placed in position by tremies or by pipeline from the mixer and shall never be allowed to fall freely through the water.

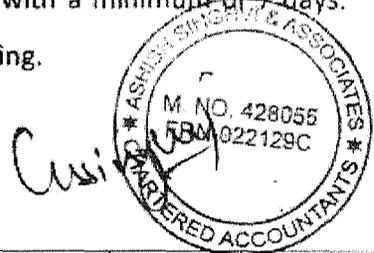
Concrete shall normally be compacted in its final position within thirty minutes of leaving the mixer. Concrete shall be compacted during placing with approved vibrating equipment without causing segregation until it forms a solid mass free from voids thoroughly worked around reinforcement and embedded fixtures and into all corners of the formwork. Immersion vibrators shall be inserted vertically at points not more than 450 mm apart and withdrawn slowly till air bubbles cease to come to surface, leaving no voids. When placing concrete in layers advancing horizontally, care shall be taken to ensure adequate vibration, blending and melding of the concrete between successive layers. Vibrators shall not be allowed to come in contact with reinforcement, formwork and finished surfaces after start of initial set. Over vibration shall be avoided.

g MASS CONCRETE WORKS

Sequence of pouring for mass concrete works shall be as approved by Engineer. We shall exercise great care to prevent shrinkage cracks and shall monitor the temperature of the placed concrete if directed.

h CURING

All concrete, unless directed otherwise by Engineer, shall be cured by use of continuous sprays or ponded water or continuously saturated coverings of sacking, canvas, hessian or other absorbent material for the period of complete hydration with a minimum of 7 days. The quality of curing water shall be the same as that used for mixing.



 JINDAL SAW LTD. <small>WATER & PIPES SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	34
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10.6 CONCRETE WORKS IN WATER RETAINING STRUCTURES:

A Shuttering:

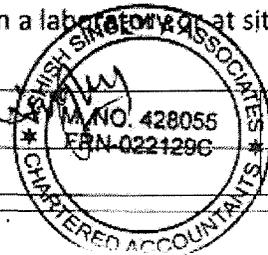
The centering and shuttering for all RCC and concrete work will be of steel/plywood as per BIS specification and as approved by the Engineer in charge Joints will be made sufficiently tight to prevent loss of cement slurry from concrete. All joints and holes in form work will be caulked with putty or cloth. Care will be taken to ensure that filling is kept away from reinforcement. All formwork will be leveled, aligned and all rubbish will be removed from the interior of the forms before concrete is placed. Forms for various types of structural component shall be removed before the maximum period specified in BIS, where exposed surface of concrete should be effectively sealed to prevent loss of water.

B Reinforcement:

The steel to be used for reinforcement concrete work shall comply with the requirements of BIS. All steel used for reinforcement will be free from loose scales and rust which will be removed with a wire brush. All bending will be done cold, gradually, evenly and without jerks. The steel will be properly brushed, supported and otherwise held in position by concrete special blocks and steel chairs so as to prevent displacement while concrete is putting. The correct number and sizing of reinforcing bars, stirrups and binder will be provided and placed in position strictly according to the drawings. Laps and splices for reinforcement will be as shown in the drawing. A steel fitter will be in full time attendance while pouring concrete to adjust and fix the reinforcement.

C Cement concrete (Plain/ Reinforced):

Concrete will be either ordinary or controlled as per requirement of design and drawing. IS 3370 will be followed for liquid retaining structures. The quantity of fine and coarse aggregate will be determined by volume and weight. The water cement ratio will be as per IS codes. The minimum cement content for each grade of concrete will be as per IS code. Test cubes will be taken as per IS code and will be tested in a laboratory at site lab.

 JINDAL SAW LTD. <small>WATER TREATMENT SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System, Shilwara, Rajasthan		PAGE NO.	35
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D Mixing:

The workability of concrete will be checked at frequent intervals by slump test. Mixing time of not less than 2 minutes after all materials have entered the mixing drum will be considered as a satisfactory period for mixers up to 1 cum capacity. When the concrete is mixed the complete contents of the drum will be discharged in one operation into a hopper or container.

E Conveying Concrete:

Concrete will be handled and conveyed from the place of mixing to laying by approved means, before the initial setting of cement starts. No extra water will be poured onto the concrete while placing it. Conveying means for concrete will be well maintained and thoroughly cleaned before commencement of concrete mixing.

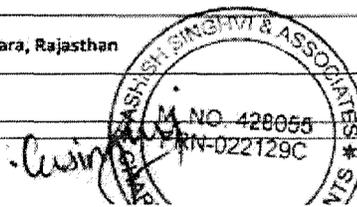
F Placing:

Concrete pour will be started after checking the shuttering and reinforcement. Tremie will be used for column concreting wherever required. Care will be taken to ensure that the inserts, fixtures, reinforcement and formwork are not displaced or distorted during placing of concrete. When concrete pour is in layers it will be ensured that under layer is not already hardened. Bleeding of under layer, if any will be effectively removed

G Compacting:

The concrete will be placed little in excess of its specified, so that after proper compaction its final desired depth is obtained. Manually rodding and tapping the concrete and tapping the formwork on its external face will be continuously carried out at the actual pouring head, while compacting the concrete with mechanical vibrations will be done sufficient distance

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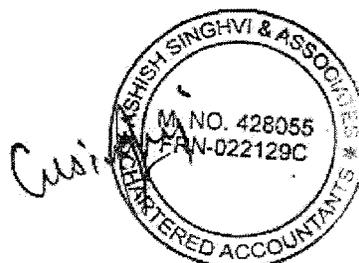
away from the pouring head, so that the vibrator is utilized only to compact the concrete and not to spread it.

H Curing:

All freshly placed concrete surfaces will be protected from the elements and defacement during building operations. Enough tarpaulins, hessain cloth or other suitable materials to cover completely or enclose, all freshly finished concrete will be provided. As soon as the concrete has hardened sufficiently to prevent damage, it shall be cured maintaining the concrete in damp condition. Concrete will be cured for a period as specified in IS code.

I Site Clearance:

On completion of work, all constructional plant, surplus materials, rubbish, temporary works shall be removed from site leaving the whole of the site and works clean and in a workmanlike condition.



 JINDAL SAW LTD. <small>PROVIDING TOTAL PIPE SOLUTIONS</small>	PROJECT	10 MLD Sewage Recycling System , Bhilwara, Rajasthan	PAGE NO.	37
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11.0 SPECIFICATIONS

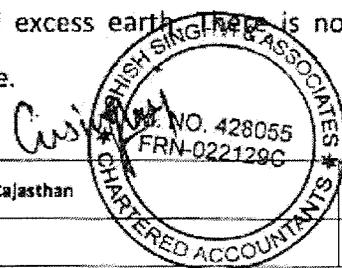
11.1 CIVIL

1. All the water retaining structures as per the Plant Layout shall be constructed in RCC (M25) conforming to the requirements of IS: 3370. The finishing shall be off-shuttering without any further treatment such as plastering/epoxy coating etc.
2. All the buildings shall be designed either as RCC (M25) framed structures with brick/block masonry cladding or as buildings with brick masonry load bearing walls.
3. All the RCC designs shall be done following Limit State Design methods as per IS: 456/ IS : 3370.
4. The masonry works shall be finished with plastering and painting as follows :
 - a. Plastering :
 - External: 15 mm thk in CM 1:6
 - Internal: 12 mm thk in CM 1:6
 - Ceiling : 6 mm thk in CM 1:3
 - b. Painting
 - External: Snowcem of approved colour
 - Internal: Oil bound Distemper of approved colour
 - Ceiling : White washing
5. All the exposed surfaces of water retaining structures shall be painted with snowcem of approved colour.
6. The flooring details shall be as follows :
 - a. Pump house, Chlorination building and other process buildings except Chemical storage/solution preparation tanks: 12 mm thk ironite floor finish on grade slab.

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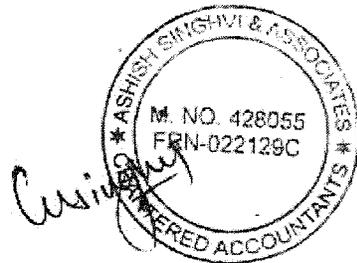


- b. Toilet blocks: Ceramic tile flooring with matching ceramic dado on walls to the max height of 2.1 m.
- c. Platforms, staircase: Trowel finish on concreting.
7. All the process buildings shall be designed with Steel Truss structure with MS coated sheet roofing.
8. MS doors, windows and ventilators building are considered for process buildings. The windows shall be fully glazed. The total area of ventilation shall be not more than 20% of the wall area.
9. The buildings shall be provided with protection in PCC 1:4:8, 100 mm thk. There is no consideration for garland drains.
10. Foundation Design:
- a. The Net Safe bearing capacity of soil is considered as 10 t/sq.m at 1.0 m depth. The minimum depth of foundation is considered as 1.0 m below the existing ground level.
- b. All the water retaining structures and buildings are designed with open foundations of appropriate choice such as strip footings, raft, and isolated footings. There is no consideration for deep foundations/pile foundations.
- c. All the foundations are designed with the assumption that the existing ground water table is beyond the foundation depths.
11. It is considered that the excavated earth shall be used for back filling and the excess earth shall be used for site grading and leveling. The topography of the site is considered as flat ground with variation in levels not exceeding 0.5 meter from the lowest to highest ground. Also, the finished ground level will be just about 0.3 m above the existing ground level which will be achieved by spreading the excavated excess earth. There is no consideration for raising the FGL by burrowed earth from outside.



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12. In case of excess excavations, the filling will be done by selected gravel fill compacted to 95% proctor density.
13. The plinth level of all buildings shall be 0.5 m above the road level. The top of roads shall be 0.15 m above the finished ground level (FGL).
14. The roads, storm water drainage and foul water drainage are considered as indicated in the Layout plan.
15. The compound wall of 2.5 m depth in stone masonry will be constructed for the STP as per layout. The pump house area shall be provided with barbed wire fencing.
16. The hand rails of 1m height are considered in MS pipes of 32 mm dia, medium duty. The hand rails shall be in two rows with verticals at 1.1 m c/c.
17. Materials of construction :
 - a. Cement: PPC grade 43 or grade 53 of any ISI certified make.
 - b. Steel Reinforcement : HYSD bars of Fe415 conforming to relevant BIS standards and ISI certified
 - c. Bricks: First class bricks for load bearing walls. Hollow blocks or second class bricks for non-load bearing walls



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11.2 ELECTRICAL

A. SEWAGE TREATMENT PLANT

Power will be made available at The Incomer of the HV Switchgear Provided at the SWGR Room by JSAW.

HV SWGR is of One No Incoming Feeder and Two Nos. Outgoing Feeders for Transformer

One No's of 1000 KVA Transformer is connected through 11 KV HT cable at Primary side and Secondary side is connected by 0.43 KV LT Cable to MCC Incomer

SWGR Room will be provided in the plant area having the MCC & PCC LV Switchgear for the Whole sewage treatment plant.

LV Switchgear Consist of 4 Pole Draw out Type ACB Incomer with Aluminum Bus Bar and sufficient DOL, Star/Delta Feeder for LT Drives, with Control Transformer for 220 Volt Control Supply.

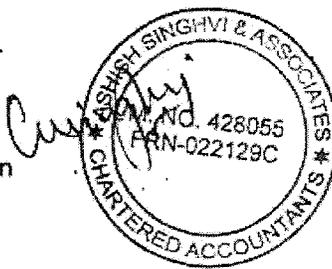
Suitable rated Starters are provided for each motor for easy start and to control the Drives Locally LPBS is Provided Locally at each Drive. Also power Capacitor banks are connected with LV Switchgear Bus Bar to control the power factor within the accepted limits.

Two No's of sufficient capacity of Drives for Fine Screen

Two No's of sufficient capacity of Drives for Grit Separator

Two No's of sufficient capacity of Drives for Organic Return

Two No's of sufficient capacity of Drives for Decanter



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Three No's of sufficient capacity of Drives for Air Blower

Two No's of each of sufficient capacity of Drives for Polydosing system

Three No's of sufficient capacity of Drives for Centrifuge Feed Pump

Three No's of sufficient capacity of Drives for Centrifuge

Two No's of sufficient capacity of Drives for Treated Water Transfer Pump

Suitable rated Starters are provided for each motor for easy start and to control the Drives Locally LPBS is Provided Locally at each Drives. Also power Capacitor banks are connected with LV Switchgear Bus Bar to control the power factor within the accepted limits.

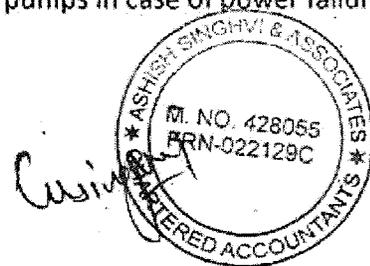
430 Volt Power cable is provided with suitable control cable for Each Drive in Plant from LV Switchgear to each Drive

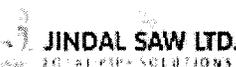
Battery and Battery Charger for the control supply at HV SWGR

Proper Lighting Arrangement is provided in Each Pump House, MCC room, Chemical House, and Area Street Lighting

Proper Earthing Arrangement is provided to Each Electrical Apparatus Including, Drives, LV Switchgear, Poles, Boards, Building etc.

500 KVA DG set (100% Power back up) is provided to run the pumps in case of power failures.



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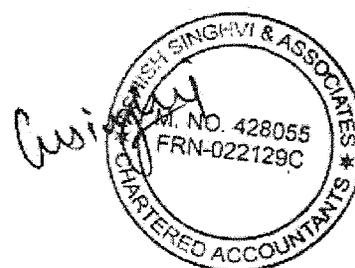
11.3 INSTRUMENTATION & CONTROL

A) INSTRUMENTATION AND CONTROL SYSTEM:

- ❖ Dial type Pressure gauges shall be provided at each delivery of Pump at each Pump House.
- ❖ Pressure Switch in the rising main in the recirculation Line.
- ❖ It is also proposed to locate the Level Switch in each sump to control the level and protection of motors.
- ❖ Over Head Tanks (Poly Dosing Tanks) will also have a Local Level Indicator as well as a Level Switch for Low level Alarm purpose.
- ❖ Each Aeration Tanks will have Process Control in lieu with a PID Control with Air Blowers and DO₂ Analyzer.
- ❖ All above mentioned Instruments have indications at Control desk at Control Station.
- ❖ Motorized valve/ gate shall have control over the flow with full controlling from the PLC as mentioned (only in SBR tanks):
 1. ON/OFF(Open)
 2. On/Off(Close)

B) OPERATIION PHILOSOPHY

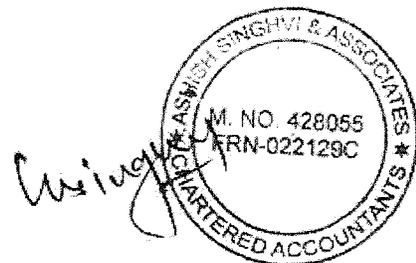
- ❖ Push buttons are provided at Field and LED's at the MCC panel for manual start and stop of the pumps.
- ❖ Open / close control switches push buttons are provided at the motorized valve actuators / for local/remote manual operation.
- ❖ A complete Chlorination system with separate console will be provided final transportation.



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12.0 PROJECT SCHEDULE – ACTION PLAN

- Clearance / Approval (Consent to Establish) from Rajasthan Pollution Control Board (RSPCB), Bhilwara / Jaipur for setting up of STP and Pipeline for Sewage & Treated water
- Clearances from various Govt. Agencies, such as, PWD, WRD, UIT, MCB, AVVNL etc. would be needed for laying the pipeline from Sewage Water Intake to STP.
- Clearances from various Govt. Agencies, such as, Railway, NHAI, PWD, WRD, UIT, MCB, Gram Panchayat, AVVNL etc. would be needed for laying of approx. 25 Km pipeline for supply of Treated Water from Kewara village (Bhilwara) to the JSAW Steel Plant site.
- In addition, JSAW needs to enter into agreement with respective private land owners for the Right of Way / Right of Use for laying the pipeline.
- Project will be completed within 36 months after getting the above-mentioned clearances.



ASHISH SINGHVI & ASSOCIATES
CHARTERED ACCOUNTANTS

PROJECT NO. JSAW/2021-2022/BHL/PR/01

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13.0 PROJECT CAPITAL COST ESTIMATE

Total proposed project cost of 10 MLD STP including Transmission Pipeline (Raw Sewage line and Treated Water line) is estimated to be around Rs. 49.83 Crs. The tentative bifurcation of project cost is asunder.

S. No.	Description	Amount (in Rs. Crores)
1.	Land Development	0.52
2.	Plant and Machinery	11.42
3.	Civil Work	7.99
4.	Pipe Lines	25.5
5.	Infrastructure (Road, drains, Lighting etc.)	2.05
6.	Contingency	2.35
	Total Capital Investment	49.83

OPERATING COST ESTIMATES

Operating Cost of STP is estimated approx. Rs. 7.12 Crs/annum.

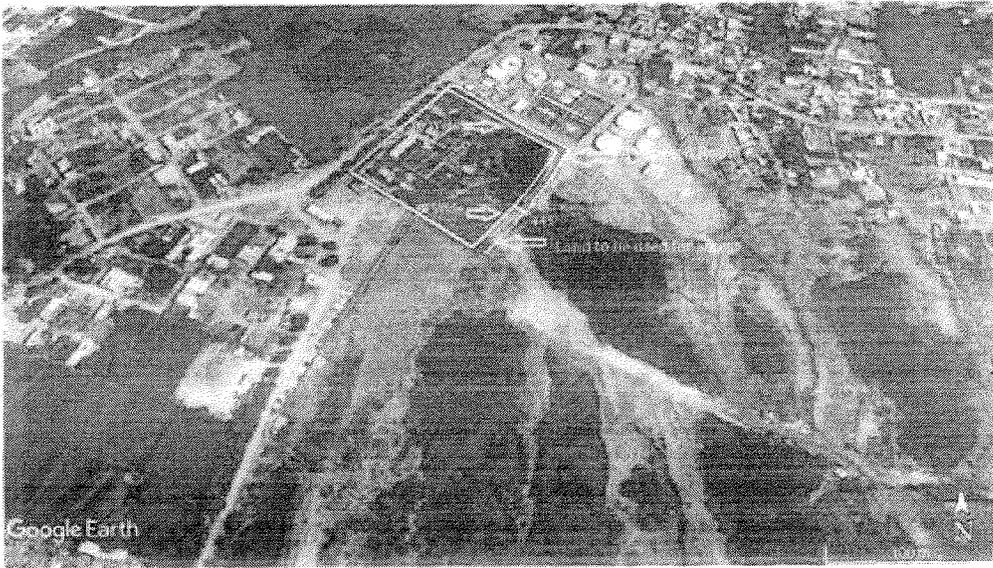
Sl. No.	Item	Cost, Rs Lacs/annum
01	Admin Expenses	110
02	Operation and Maintenance	250
	Total	360

For-ASHISH SINGHVI & ASSOCIATES
CHARTERED ACCOUNTANTS

(Signature)
(ASHISH KUMAR SINGHVI)
PROPRIETOR
M. NO. 428055
ERN-022122G

UDIN:- 22428055AFAYKR9230

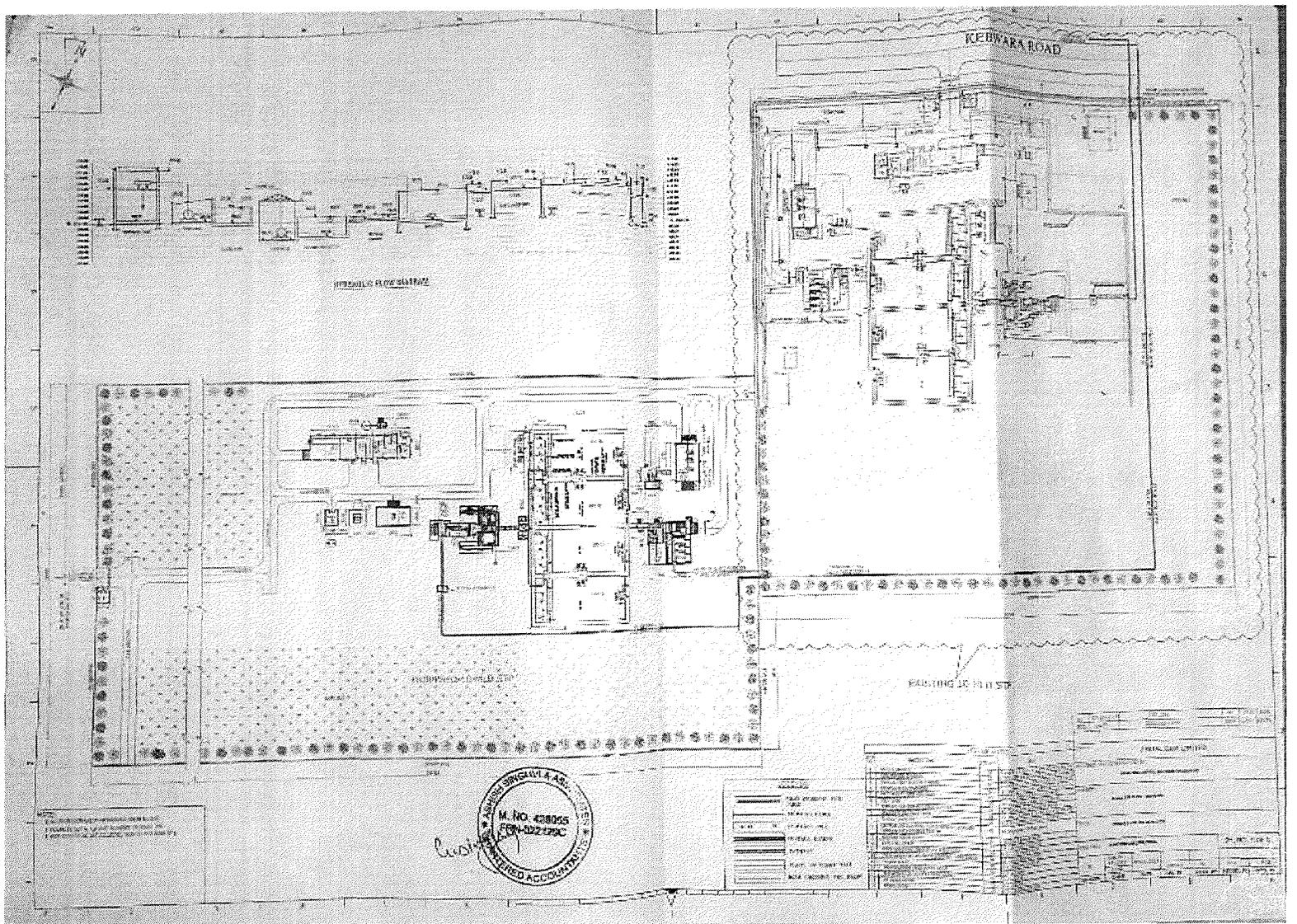
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[Handwritten signature]
For Director SAW Ltd.
[Handwritten signature]

[Handwritten signature]
* ASHISH SINGHVI & ASSOCIATES *
M. NO 428055
B.S. NO 022129C
* CHARTERED ACCOUNTANTS *

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Annexure - A/2 (copy)

From: donotreply.rspcb@raj.gov.in [mailto:donotreply.rspcb@raj.gov.in]

Sent: 19 March 2022 14:57

To: shitanshu.pandey@jindalsaw.com

Subject: RSPCB - Your Application Information

Importance: High

Dear Jindal Saw Ltd.,

Online Application Submitted Successfully, at Rajasthan State Pollution Control Board.

Please use following application details for further use.

Your Unit Id. : 11938

Your Application No. : 305881

Your Registered E-mail: shitanshu.pandey@jindalsaw.com

Kindly print the submitted application

Note: Please wait along with your original documents for the next communication from the RSPCB.

Please be in touch with our website to check your application status.

Thanks

Rajasthan State Pollution Control Board

4, Institutional Area,

Jhalana Doongri, Jaipur

Rajasthan. Pin: 302 004

Phone: 0141-5159609 Email: acp.rpcb@rajasthan.gov.in

This message has been analyzed by RSOC Email Security Appliances.

Welcome AJAY PRATAP SHRIVASTAVA Remove From Online Monitoring Helpline 12 Alerts Logout

Home Plant/Lease New Application Utility Reports Search App. Cess Auto Renewal Special Dispensation

Make Payment

Application Information								
SrNo	Unit Id	Unit Name	Application ID	Plant/Lease	Description	Application For	Applied On	Address
1	11938	Jindal Saw Ltd.(11938)	305681	Sewage Treatment Plant	CTE WA (Consent to Establish Air /Water)	Fresh	17/03/2022	Address Kharsa No. 338, village Kewara City NA District Bhilwara Tehsil Bhilwara

After submission of pre-screening fee and Consent Fee, you are required to press submit button at the end of the payment page so that application will successfully transferred to concerning GEC/RO.

Challan Details	
Revised Fee Amount	₹ 75000
Payment Mode	--Select--

Payment Process Challan Detail						
Challan No.	Bank Account No. For NEFT/RTGS Fund Transfer	Payment Mode	Challan Amount	Challan Date	ReSend OTP	Status
CTE-AW66828842	333331104229052	New E-mitra(Online-Rajasthan Payment Platform)	75000.00	11/04/2022	ReSend	Success
CTE-AW70463720	333331903222852	New E-mitra(Online-Rajasthan Payment Platform)	2000.00	19/03/2022	ReSend	Success

Success Payment Transaction Details						
Challan No.	Payment Mode	Bank Name	DD/RTGS/NEFT No.	Date	Token No.	Amount
CTE-AW70463720	New E-mitra(Online-Rajasthan Payment Platform) (Registration Fee)		69434901	19/03/2022	69434901	2000.00
CTE-AW66828842	New E-mitra(Online-Rajasthan Payment Platform)		71079122	11/04/2022	71079122	75000.00

Rajasthan State Pollution Control Board

<http://rspcbmis.environment.rajasthan.gov.in/ONLINECONSENT/RegisMakePayment.asp...>

Nodal Officer : Ravindra Gupta, ACP, RPCB, Jaipur
Computer Cell, RPCB, Jaipur | Contact : 0141-2716809
Email : acp.rpcb@rajasthan.gov.in

Part VI: Information related to Consent Fee Deposition

DD Number	DD Date	DD Amount	Challan No.	Payment mode	Token No	Transaction Date	Transaction Status
69434901	19/03/2022	2000.00	CTE-AW70463720	New E-mitra(Online-Rajasthan Payment Platform)	69434901	Mar 19 2022 12:00AM	SUCCESS
71079122	11/04/2022	75000.00	CTE-AW66828842	New E-mitra(Online-Rajasthan Payment Platform)	71079122	Apr 11 2022 12:00AM	SUCCESS

From: donotreply.rspcb@raj.gov.in
Sent: Monday, March 28, 2022 11:01 AM
To: shitanshu.pandey@jindalsaw.com
Subject: RSPCB - Your Application Information

Importance: High

Dear Jindal Saw Ltd.,

Your application id: **305881** and Unit ID: **11938** dated **19/03/2022** is under the pre-Screening Process,
Please logged in on the RSPCB portal and make payment upto **12/04/2022**.

Please be in touch with our website to check your application status.

Thanks

Rajasthan State Pollution Control Board

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This message has been analyzed by RSOC Email Security Appliances.

proof of service

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From: Anurag Abhishek

Sent: Tuesday, April 19, 2022 4:07 PM

To: nluadvrohitsharma <nluadvrohitsharma@gmail.com>; npbhilwara <npbhilwara@gmail.com>; rorpcb.bhilwara <rorpcb.bhilwara@gmail.com>; akshay19rathore96@gmail.com <akshay19rathore96@gmail.com>

Cc: Nilava Bandyopadhyay <nilava@snalawoffices.com>

Subject: Service of Status Report filed on behalf of Respondent no.2 (Ex. Application no. 02 of 2020 - Babu Lal Jajoo Vs. State of Rajasthan & Ors.)

Dear Sir/Ma'am,

In compliance to the directions of the Hon'ble National Green Tribunal, Central Zone Bench, Bhopal issued vide order dated 24.02.2022, we, on behalf Respondent no.2, are serving the copy of the Status Report along with documents. Please find the same as attachment to this mail.

You are requested to kindly issue your respective acknowledgments upon receipt of this mail. This mail shall be treated as sufficient service of the **Status Report** filed by Respondent no.2.

In case of any further clarification or assistance, please feel free to reach us.