

VOLUME: II-A PART 1
PROJECT DESCRIPTION

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PROJECT DESCRIPTION

2.1 Scope of Work

The scope of Sewage Treatment Plant (STP) includes but is not limited to detailed design including hydraulic, process, equipment design and preparation of detailed layout working drawings for process of the STP work. Layout plan, general arrangement drawings, civil, electrical, mechanical, instrumentation and structural drawings, electrical, mechanical, instrumentation system, automation diagrams, data sheets of equipments and cable schedules and detailed structural steel fabrication drawings for the proposed STP work. Preparation of design report manufacture and testing at places of manufacture, painting, packing, transport, delivery, supply, storage, erection, building-in, setting work, commissioning, testing, painting, lining and finishing after erection of all plant required for the Sewage Treatment Plant work. Pipelines, pumps, pumping installations, machinery apparatus, flow meters at various installations, on line monitoring equipments for monitoring process parameters, whole plant computer based automation system, pipe work, lifting, handling and ventilation equipment. Electrical equipment instrumentation, control, lighting systems, earthing and lighting protection system, materials, articles, fittings and accessories, ancillaries, electrical switchyard, ancillary works, enabling works of all kind and nature required for installations of the highest possible operative standards. Compliance with the standards prescribed in the specification and with the particulars and guarantees furnished by the contractor in the (hereinafter referred to as “the Works”), and constructed facilities following successful completion of the commissioning and issuance of the Taking-Over Certificate for the Works. It broadly comprises the following works:

- All preparatory work, including required topographical survey, clearing out trees, shrubs, debris, leveling and dressing of the site, excavation in wet saturated soil and disposal of surplus excavated earth within the site to the extent possible and proper disposal of the extra surplus excavated earth to a suitable location as decided by the Employer’s Representative.
- Carrying out of necessary site surveys and soil investigations as are deemed necessary by the Contractor for the purpose of designs/ drawings check and if the soil bearing capacity is less, then contractor has to do soil treatment work on their own cost which will be subsequently approved by the Employer.
- Process and Hydraulic Design
- Preparation of GA Drawings, Site Layout, Unit Process / Equipment / Facility / Building layouts, Hydraulic Profile, Process Flow Diagram, Piping and Instrumentation Diagram (P&ID).
- Detailed Sizing, Design and Engineering of all treatment units, buildings, structures, and equipment (including all civil, mechanical, electrical, architectural, instrumentation, control, automation and SCADA components)

- The GAD (General arrangement drawing) should include all the units for the design requirement of capacity as mentioned in Bid documents. The placement / layout of units (for STP capacity requirement) should be clearly shown in the available land area.
- Design and Construction of all Civil Structures and Building Works
- Design, Construction and Commissioning of Bypass Lines
- Full Sewage Treatment Plant including Automation.
- Submission of Detailed Engineering Designs, Drawings, Process & hydraulic Calculations, Mass Balance Calculations, and Data Sheets as per bid requirements.
- Procurement, Supply and Installation, Erection of all Mechanical, Electrical, Instrumentation, SCADA Equipment.
- Execution of all Civil, Mechanical, Electrical, Instrumentation, SCADA Works at Site including Construction, Erection & Testing.
- Construction of Internal Plant Roads, Curbs, Pavements, Parking Spaces, Compound Wall (as per the specifications mentioned in this tender), and plant water supply and sewage disposal and Storm Water Drains.
- Construction of compound wall all around the plot boundary and fixing of compound gates as the requirement and as per the approval of Employer or Employer's Representative and construction of bypass channel for excess sewage from grit chamber outlet channel to chlorine contact tank and then it should go the ultimate disposal point of treated effluent or excess sewage.
- Transportation and Disposal of Sludge
- Plantation and Landscaping work
- Receiving Raw Inlet Sewage at site and discharge of Plant Effluent to nearby water body as specified in Employer's requirements.
- Design, construction, and commissioning of pipelines, conduits for the disposal of plant effluent from chlorine contact tank to nearby water body at site maximum length of the line shall be 500 Meters.
- Plant Testing, Commissioning, Stabilization, Demonstration of Performance Guarantee. This item shall include proper maintenance according to manufacturers' instructions of entire plant and its components during any inactive period that may be required if influent wastewater is not available at the time of STP completion.
- Submission of Commissioning Procedure
- Submission of Operation and Maintenance Manuals
- Operation & maintenance of entire system for 5 years including three year defect liability period of all Sewage Treatment Plant in this contract from the date of completion of the Works and successful passing test on completion as per the Conditions of Contract given in Volume-1 of bid document.

- Construction and equipping of analytical laboratory for routine testing of raw and treated sewage quality on a day to day basis and control of process parameters; Instituting Quality Assurance and Quality Control procedures during construction and O& M period;
- Providing Training Services to Employer's Personnel
- Preparation and Submission of As-Built drawings for all Civil, Mechanical, Electrical, Instrumentation and SCADA Works
- Design, construction, installation, testing, commissioning, and training for any and all other equipment, systems, components, and/or services that might be necessary for a complete, fully functional facility in compliance with all requirements of these bid documents.

Funding Agency

Funds for Contract are being provided under World Bank Scheme.

Site Conditions at Plant Locations

Please refer **clause 11 of Volume I.**

Location of the Sites

Lat 31.148816° Long 77.181106°

At Shimla Dhalli-II at Ghati near Mohanpur Shimla.

2.2 Design Life (Minimum)

The Plant components shall be designed and constructed to provide the minimum service life listed below for each component.

Buried Piping	:	75 years
Reinforced Concrete Structures	:	60 years
Other Concrete Structures	:	50 years
Steel Structures	:	50 years
Mechanical Equipment	:	20 years
Electrical Equipment	:	15 years
Buried Earth Electrode System	:	40 years
Control Panels	:	15 years
Instrumentation Systems	:	15 years
Computer Systems	:	10 years

2.3 Survey and Geotechnical Data

Bidder has to carry out the topographical survey, geotechnical investigation and all other details necessary for proper formulation of his price proposal before submission of bid.

After award of contract, Contractor shall carry out independently fresh survey, geotechnical investigation and all other details including disposal location necessary for proper planning and detailed design.

2.4 Access for Other Contractors

The Contractor shall allow reasonable access to other Contractors engaged on the Site or on areas adjoining the Site to carry out their works. In the event of a dispute over access or priority between Contractors, the Engineer shall be informed in writing. The Engineer shall inform all parties concerned in writing of his decision.

Where any part of the Works is associated with or in physical contact with plant supplied under a separate contract, the Contractor shall satisfy himself that the work carried out by the other contractor is consistent with the correct operation of the Plant. In the event of the Contractor considering any work being carried out or any work already completed to be detrimental to the ultimate operation of the Plant, Bidder shall report the matter at once to the Engineer.

If the work of the Contractor is delayed because of any acts or omissions of any other Contractor, the Contractor shall have no claim against the Employer on that account other than for an extension of time.

2.5 Interface with Other Contracts

The Works under this Contract will physically interface with other contracts of SJPNL/SMC project. The Contractor of this contract shall co-ordinate with Employer and the Contractor of other contracts as applicable and ensure that all interfaces are designed, constructed, installed, tested, commissioned, operated, and maintained properly to provide a fully functional system meeting all applicable performance requirements.

The Contractor of this contract shall be fully responsible for independently field-verifying any and all information he considers relevant in order to provide a fully functional system.

2.6 Access to the Sites

The Employer will provide to the Contractor access to and possession of the Site for carrying out the Works. Access road design and construction should be in contractor scope. The Contractor shall be deemed to have inspected the STP Site including access before submitting his Bid.

The Contractor shall ensure that all the plant components offered are of a size and weight or can be divided into sections of a size and weight suitable for access to the place of installation.

The Contractor shall ensure that equipment used for installation purposes shall be able to gain access and position for such purposes.

Maintenance of the Site

The Contractor shall be responsible for maintaining all the site structures, buildings, equipment, contract display board and related services until expiration of the Contract period or until such time as the aforementioned facilities are removed with the Engineer's prior approval, whichever is earlier.

At each proposed STP site under the contract, access main gate and access road extension shall be provided by the Contractor.

Areas outside the Site

In the event of the Contractor making use of any special or temporary way leave or accommodation acquired by him for the disposal of surplus materials, or any borrow pit or quarry, he shall obtain the written consent of the owner, occupier or authority having charge of the land in which such way leave, accommodation, is situated and shall make a written record, acknowledged and signed by the owner, of the condition of the surface of that land before entering thereon, with liberal use of photographs.

The Contractor shall permit the Employer and any person authorised by the Employer access for the purposes of the Contract to any such special or temporary way leave or additional accommodation.

In the event of the Contractor making use of any special or temporary way leave or additional accommodation made available to him by the Employer for the purpose of the Contract, the land in which such way leave or accommodation is situated shall be deemed to be part of the Site. Under these circumstances the Contractor shall form a Working Area extending no more than 5 m from the edge of the Permanent Works or accommodation on all sides. The Contractor shall restrict his activities to within this Working Area. On completion of the works in this area, the Contractor shall reinstate the area to its original condition to the satisfaction of the Engineer. For the purposes of this Clause, "accommodation" shall be deemed to include housing, offices, workshops, warehouses, and storage areas.

Road Works

The Contractor shall obtain all permits required for carrying out works such as excavation on public roads and shall liaise with the appropriate authorities with regard to the timing and execution of the road works.

The Contractor shall be responsible for establishing and maintaining temporary road diversions for the duration of the road works. The road shall be kept open at all times during the road works period, and the work shall be carried out in such a manner as to minimise the disruption

to traffic. The Contractor shall reinstate all the roads to their original condition to the satisfaction of the Employer after completion of works.

Maintenance of Existing Access Roads

The Contractor shall use existing access roads within the Site boundary which are necessary for the execution of the Works. The Contractor shall obtain the Employer's approval in writing before utilising existing access roads within the Site. Once the Employer's approval has been given the Contractor shall be solely responsible for the maintenance of the existing site access roads. This responsibility shall continue until the completion of the Defects Liability Period and O & M Period, or until such earlier date as the Employer may advise the Contractor in writing. Such maintenance work shall include general up-keep and any necessary repairs to damaged road surfaces, pavement, drainage, associated slopes, etc. to a standard at least equal to their original condition. While carrying out such maintenance work, the Contractor shall make arrangements to maintain through passage for the Employer's and his staff's vehicles and also those of other contractors over these access roads. Such arrangements may comprise temporary diversions, all to the approval and satisfaction of the Employer.

The Contractor shall not run tracked or unsprung vehicles on surfaced roads without the written approval of the Employer who may require that planking or some other protective material be used to protect the road surface.

Clearance of the Site

The Contractor shall clear the Site to the extent required by the Employer for checking the setting-out.

Clearance of the Site shall also include demolition and removal of all articles, objects and obstructions which are expressly required to be cleared.

The Contractor shall ensure that the parts of the Site to be occupied by the Permanent Works are clear, and shall maintain the remainder of the Site as may be required for access and temporary works areas.

The Contractor shall remove the material arising from such clearance and dispose of it in a manner and at a location that are both in compliance with all applicable laws and regulations. The Contractor shall backfill with appropriate specified materials and procedures those cavities and losses of soil which result from clearing the parts of the Site not subsequently to be occupied by the Works.

The Contractor shall not clear the Site of any existing structure(s) without the prior written instruction of the Employer.

Clearance and Reinstatement of the Site on Completion of the Works

On completion of the Works, the Contractor shall clear any temporary works areas and temporary access roads and reinstate the areas to their original condition and to the satisfaction of the Employer.

Access for the Employer and Engineer

The Contractor shall permit the Employer and any person authorised by the Employer including workmen of the Employer, other Contractors or utility undertakings access for the purposes of the Contract to all areas of the Site and to any additional accommodation or temporary way leave for the duration of the Contract period.

Water Supply at Site

The Contractor shall make his own arrangements for water supply at the site for the duration of the contract.

The Contractor shall ensure the quality of the water remains suitable for the purpose for which it is intended. The Contractor shall also conduct monthly test for water quality and comply with the quality requirements.

Wastewater shall be disposed off clear of the Site to the satisfaction of the Employer so as to maintain the hygienic condition at the site and no damage or complaint.

Toilets, Latrines, Washing Facilities, and Wastewater Disposal

Throughout the period of construction of the Works the Contractor shall provide, maintain, and cleanse suitable and sufficient toilets, latrines and washing facilities for use by his employees. He shall ensure that his employees do not foul the Site but make proper use of the latrines.

Where practicable all wastewater generating facilities on site shall be connected to the nearest public sewer or if this is not practicable the Contractor shall provide an adequately sized septic tank and soak pit.

After completion of the works, the temporary toilets, latrines, washing facilities, septic tanks, and soak pits shall be removed, all ground disinfected and the surface restored to its original condition to the satisfaction of the Employer.

Electricity for Contractor's Use on Site

The Contractor shall be responsible for provision of an electric supply to the site, energy meter, and distribution of the supply for the purpose of constructing the Works.

The installation shall comply with all the relevant regulations, Indian Standards and Codes of Practice, and Health and Safety requirements. The Contractor shall take all precautions to ensure that the installation is safe and injury to personnel or damage to plant and buildings is avoided. The Contractor shall be fully responsible for all safety aspects.

The Contractor shall test the temporary site power distribution system including energy meter every 3 months for compliance with the relevant standards.

Camp Facilities

The Contractor shall construct and maintain to the Employer's satisfaction a camp to provide living accommodation for all Contractors staff and operatives who have no other local accommodation. The Contractor's camp shall be located close to site or on the Site itself and at a location approved by the Employer.

Responsibility for providing all services to the living quarters and compliance with all sanitary laws and other laws and regulations shall be borne by the Contractor. Security and the fencing of these areas shall be the responsibility of the Contractor.

Compressed Air Use on Site

The Contractor shall provide the necessary compressed air plant and equipment required for construction of the Works.

Electrically driven compressors connected to the site electricity supply shall not be used. Diesel engine driven compressors shall not be sited within buildings or in a location that may cause a health hazard to personnel owing to exhaust fumes or noise.

Refuse Disposal from Site

Refuse and rubbish of every kind shall be removed from the Site and disposed of by the Contractor at his own expense, frequently and regularly at a minimum period of one week so as to keep the Site in a wholesome and tidy condition to the satisfaction of the Employer.

Safety and Security on Site

The Contractor shall at all times maintain safe work methods and procedures and shall comply with all enactments, regulations and working rules relating to safety, security, health and welfare of all persons who may be affected by his work.

In particular he shall ensure that only persons who are properly trained for their duties are employed, and that appropriate, approved tools, safety equipment (**PPE-Good Quality Make with ISI- Standard**), and procedures are used. Nothing which has been written into or omitted from the Employer's Requirements shall be taken to relieve the Contractor from his obligations

under this clause. No clause in the Employer's Requirements shall prevent the Contractor from drawing the attention of the Engineer to any feature of the Works which is not consistent with normal safety practices nor prevent him from putting forward proposals at any time which would increase the safety of the installations. **The Contractor shall be responsible to carry out Third party inspection & Certifications of all Construction machineries, such as cranes, hoist, generator, Lifting tools tackles etc.**

Not later than four weeks before work commences on the Site, the Contractor shall submit to the Employer his comprehensive **(EOHS)** plans and proposals relating to the all aspects of health and safety on the Site. The proposals shall be appropriate for all grades of labour and personnel who will work on or visit the Site on behalf of the Employer or Contractor.

The Contractor shall appoint a suitably qualified representative as **Safety Officer** who shall be responsible for the implementation of site procedures as per relevant standards. The Safety Officer's responsibilities shall include but not be limited to:

- safety;
- working in hazardous areas;
- permit to work;
- fire and smoking regulations;
- first aid;
- warning signs;
- trenching scaffolding and other construction structures;
- safety barriers;
- protective clothing and equipment;
- safety training;
- safety meetings and inspections;
- Health and welfare.

The Employer shall have the power to stop any activity or work in any area where there is a breach of the published site safety rules or health and safety is otherwise endangered.

The Contractor shall ensure that all other Contractors working on the Site also follow established health and safety procedures. The Contractor shall bring any violation of Site safety rules by others to the attention of the Employer in writing.

First Aid and Life-saving Apparatus on Site

The Contractor shall provide on the Site such life-saving apparatus as may be appropriate and an adequate and easily accessible first aid outfit or such outfits as may be required in any government ordinances, factories acts, etc, published and subsequently amended from time to

time. **The Contractor deploy permanent emergency vehicle with driver exclusively for site emergency handling.** In addition, an adequate number of persons permanently on the Site shall be instructed in their use, and the persons so designated shall be made known to all employees by the posting of their names and designations in a prominent position on Site.

Electrical Safety on Site

The Contractor shall be responsible for the electrical safety of all Plant and equipment supplied and installed. Whilst any equipment is being installed or tested, the Contractor shall ensure that all necessary precautions are taken to safeguard personnel working on site. If necessary, this shall include fencing off areas which are considered to pose a risk, and erecting warning notices.

The Contractor shall be responsible for ensuring that the electrical installation is carried out by suitably trained competent personnel and that the work is carried out in a safe manner.

The Contractor shall be responsible for the operation on the Site of a permit to work system during the period of electrical equipment installation and testing. **The Contractor must be ensuring LOTO System is implemented for Electrical activities.** This system shall regulate the installation, the energisation and the use of electrical Plant and equipment installed and the method of work adopted.

Noise

The Contractor shall ensure that the operations entailed in the construction of the Works do not cause annoyance to others working on the Site or to persons living adjacent to the Site.

Warning and Safety Signs

During construction of the Works statutory safety signs shall be adequately provided throughout the Works, both indoors and outdoors. These safety signs shall cover mandatory, prohibition, warning, emergency, fire-fighting and general notices. All signs shall be positioned around the Works at highly visible points. Provision of signs and the positions of signs shall be subject to the Employer's approval. Special attention shall be given to areas designated hazardous.

Warning signs shall be in English and Hindi Languages.

Site Working Hours

The Site working hours are detailed in the Condition of Contract. The Contractor shall not extend the working hours without the prior approval of the Employer.

Delivery to Site

The Contractor shall be responsible for the transporting, handling, and delivery to site of all the Plant and equipment. The proper storage and protection of all Plant and equipment at the Site shall be the Contractor's responsibility.

The Contractor shall check all items against packing lists immediately on delivery to the Site and shall also inspect for damage and shortages. Damages and shortages shall be remedied with the minimum of delay.

The Contractor may, with the prior approval and at no extra cost to the Employer, make arrangements for any other contractor or agent to take delivery of, unload and store the Plant on the Site on behalf of the Contractor.

All deliveries shall take place during the Contractor's normal working hours.

Protection from Weather and Storage

An area and/or building on the Site for use by the Contractor for storage of Plant prior to erection will be subject to the approval of the Engineer.

The Contractor shall provide all facilities for the safe and proper storage of Plant and equipment, as recommended by the manufacturers, with particular consideration being given to temperature, rain, sunlight, wind and ground conditions.

The Contractor shall remain responsible to the Employer for the care and insurance of the Plant and the provisions of this Clause shall not relieve the Contractor of any of his liabilities under the Contract.

Stored Plant items shall be laid out by the Contractor to facilitate their retrieval for use in the required order as recommended by the manufacturer.

Stacked Plant items shall be protected from damage by spacers on load distributing supports and shall be safely arranged. No metalwork shall be stored directly on the ground.

Small Plant items shall be held in suitable bins, boxes or racks and be clearly labelled.

Items of Plant shall be handled and stored so that they are not subjected to excessive stresses and so that protective coatings are not damaged.

The Contractor shall comply with the manufacturer's package and plant markings concerning the use and location of lifting slings, chains and hooks, and all other handling, storage, protection, and installation instructions.

Contract Signboards

The Contractor shall supply and erect signboards at locations to be specified by the Employer. The layout and dimensions of the signboards and their construction shall be to the approval of the Employer and the lettering in Gujarati, Hindi and English Languages shall be black on a white background.

Advertising

The Contractor shall not use any part of the Site for any form of advertising without the prior written approval of the Employer.

-----End-----