



TATA MEMORIAL CENTRE
Advanced Centre for Treatment, Research and Education in
Cancer (ACTREC)
A grant-in-aid institute under Department of Atomic Energy,
Government of India

AT

NAVI MUMBAI, MAHARASHTRA

NAME OF WORK:

CONSTRUCTION AND EXECUTION OF SEWAGE TREATMENT PLANT AND
MASTER SEWER LINE INCLUDING OPERATION AND MAINTAINENCE OF
PLANT AT ACTREC, KHARGHAR, NAVI MUMBAI - 410210

TECHNICAL SPECIFICATIONS AND TERMS OF REFERENCE

DATE: -03-02-2021

TENDER DETAILS

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SECTION – I INTRODUCTION AND PROJECT DETAILS

A. PROJECT DETAILS

1. PROJECT BRIEF:

This tender is invited for the carrying out **Supply, installation, testing & commissioning of Sewage Treatment Plant** which has a civil work execution for 600KLD Sewage treatment plant but an electromechanical set up for 300KLD plant scalable upto 600KLD in next 4-5 years. The project also consists of construction and execution of master sewer line throughout the campus.

2. EMPLOYER:

M/s **Tata Memorial Centre, Advanced Centre for Treatment, Research and Education in Cancer** their heirs, executors, administrators and assignee as appointed by the competent (tendering) authority collectively hereinafter referred to as the “EMPLOYER”.

3. CONSULTANT:

M/s Planoscape Architects and planners as Project Management Consultant, herein after referred to as the (“PMC”) authorized to provide engineering and project management consultancy for the project.

4. WORK:

The work involves complete Sewage Treatment Plant of various items described in BOQ for Proposed 600 KLD STP project as indicated in **scope of work & bill of quantities**.

INSTRUCTIONS TO BIDDERS

1. The following instructions shall be carefully noted by the Bidder as failure to comply with them may lead to invalidation of the Tender.
2. **Some Drawings will not be published along with tender documents. The bidders has to visit KS-203, Khanolkar Shodhika, Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Kharghar, Sector 35, Navi Mumbai to review such drawings prior to submission of tender.**
3. Bidders are advised to visit the site and get themselves acquainted about the site conditions before the submission of Tenders. Bidder is responsible for obtaining all information which may be necessary for the purpose of Tendering. He shall carefully examine the Tender drawings / documents and satisfy himself as to risks, obligations and responsibilities to be undertaken into the Tender. Ignorance of the site conditions shall not be an excuse for any claim for compensation or Time extension. All Bidders shall be deemed to have full knowledge of all the relevant documents, approvals from the authorities, makes of materials specified, samples, and their scope of work under this tender.
4. At any time prior to the Tender submission date, ACTREC may, for any reason, whether on its own initiative or in response to a clarification requested by a Bidder, amend the Tender documents by an Addendum, Corrigendum or issue Clarification memo.

5. In case any clarification is required the same can be sought from ACTREC Head Office via email to: hkelkar@actrec.gov.in and pghadi@actrec.gov.in .
6. Correction, if any, shall be made by completely crossing out, initialing, dating and rewriting the corrected figures or words. No overwriting is allowed.
7. Successful Bidder shall enter into an agreement within 15 days of receipt of Work order. However, till a formal agreement is signed, the Work order alongwith all the tender documents shall constitute a binding contract between both the parties. ACTREC will also issue Letter of Intent (LOI) to the successful bidder. Accordingly the bidder has to submit performance guarantee as specified in the tender for issuance of work order within 15 days from date of issue of letter of intent.
8. Bidder and any of his employees or agents will be granted permission on appointment basis with ACTREC, to enter the project premises and lands for the purposes of inspection in connection with the Tender. It shall however be only on the condition that the Bidder releases and indemnifies ACTREC and his agents from and against all liabilities in respect of personal injury or damage to property and any other loss, damage, cost and expenses which would not have arisen without such permission.
9. Should there be any obscurity, ambiguity or doubt in the meaning of any of the Tender documents, the Bidder must set forth such obscurity ambiguity or doubt in writing and submit the same to ACTREC immediately on it being observed in the tendering stage itself compulsorily before the pre-bid clarification. Failure to do so then decision of ACTREC shall remain final and binding on any clarification of such obscurity, ambiguity or doubt throughout the work period.
10. The prices included in the Tender are deemed to be inclusive of all taxes except GST which will be paid extra as applicable, and prices shall also be inclusive of transport, levies, loading, unloading of materials, plant, equipment, tools and labour as applicable and shall remain fixed for the duration of the Contract Period including any extension of time allowed under the Works Contract Conditions therein. Statutory taxes i.e. Goods and Service Tax shall be shown separately in the Bill of Quantities. ACTREC shall not be liable to pay for any account of increase in the cost of materials, labour, plant, equipment, services, taxes, duties, levies, customs, and transport charges, etc.
11. The rates included within the Bill of Quantities are deemed to include for all necessary works and activities to be undertaken by the Contractor to complete the Works Contract until the Virtual Completion certificate is issued by the ACTREC. ACTREC till then shall not be responsible for any damage to the works.
12. All documents issued and information given to the Bidder shall be treated as confidential and in the event of a tender not being submitted or not being accepted all documents shall be immediately returned to the ACTREC.
13. In case the bidder fails to submit tender for any reason, the bidder have to send a regret letter via mail or hard copy whichever is possible before the tender submission date.
14. Currency - The currency of the Tender will be Indian Rupee (INR).
15. Language - Tender shall be submitted in English. All accompanying literature and correspondence also shall be in English.

16. The Tender must be signed by the principal of the firm or any authorized representative holding the power of attorney for the purpose of signing the tender document. In such a case, a copy of power of attorney should be attached along with the tender. The registered name and address of the Bidder must be printed in a block capital in the space provided.
17. Bidder to furnish following Technical information on receipt of Letter Of Intent :
 - a) Organization Chart
 - b) Construction Master Programme related to (the scope of work) in the form of a Bar Chart / Network Diagram showing the sequence of completion dates for the
 - i. Works or part thereof on MS Project).
 - ii. Plant, Equipment, Machinery and Tools proposed with model, make, and age to be deployed for the work.
 - iii. Manpower deployment schedule
 - c) List of similar works executed in the recent and past three years together with Customer details, Original Contract Period & Actual Completion Period, Principal reasons for delay, Value of Work order, Value of completed works. The PMC reserves a right to make a reference to the customer if so, deems fit.
 - d) GSTN registration number and HSN Codes.
 - e) Work Methodology statement.
 - f) List and Names of Sub-Contractors if any, proposed to be deployed for the various items of work comprising the Tender, along with brief profiles/resumes of the Sub-Contractors and their period of association with the Bidder.
 - g) Area of space required for site office, and storage yard including site laboratory / testing facilities, in a "Layout / Logistics Plan" that shall be a part of the "Site Plan".
 - h) Copies of Quality Assurance & Quality Control, Safety plan of the Bidder.
 - i) Any other documentation required to clarify the submission.
 - j) Registration under Shops & Establishment Act, Labour Act, GST Number, Certificate of Incorporation/Commencement in case of company.
 - k) Articles of Association/Memorandum of Association in case of Company, Partnership Deed.
18. No alteration other than filling in all blanks intended to be filled in shall be made in any of the documents issued. If any alterations are made and if these instructions are not fully complied with the Tender may be rejected.
19. The tender shall remain valid till completion of works from the date of submission and it shall remain binding upon the Bidder.
20. The Employer/ACTREC shall not be responsible for any expenses which may be incurred by any Bidder in the site visits, preparation and submission of the Tender.
21. Confidentiality of documents: All documents issued and information given to the Bidder shall be treated as confidential and in the event of a Tender not being submitted or not being accepted all documents shall be immediately returned to the ACTREC.

SECTION – II
FORM OF TENDER

1. We agree and confirm that all details provided by us are true and correct to the best of our knowledge.
2. We hereby agree that before the execution of a formal Contract, this Tender together with written acceptance from the Employer thereof, shall constitute a binding contract between the said two parties and will be governed by the conditions of the Contract as if the Contract were executed.
3. We hereby solemnly declare that we have visited the site of the work and have familiarized ourselves of the working condition in all respects and in particular the following: -
 - a) Statutory Approvals required
 - b) Topography, Geology and subsurface conditions of the area
 - c) Sources and availability of material
 - d) Obstructions road/rail traffic, buildings, structures, railway electrification, HT/LT power lines, water/sewer lines, communication lines etc.
 - e) Rates for material
 - f) Availability of local labor, both skilled and unskilled and the prevailing labour rates.
 - g) Availability of water and electricity.
 - h) The existing road and access to the works.
 - i) Availability of space for putting up, offices, stores, godowns, engineering yard etc.
 - j) The preliminary Tender Drawings/Master Plan
 - k) Local site-specific condition
 - l) Proximity to existing residential and office areas and the necessary measures like site barrication required to control the sound and dust pollution etc.
4. We hereby convey no objection on our part to the eventuality that with the possibility of GST being implemented during the currency of the tender/contract, the necessary changes in the tax structure may have to be adopted and the Contract may have to be modified accordingly on mutually agreed basis and for this purpose we submit our assumptions on input and output taxes considered at the time of bidding.
5. We have visited the site and acquired all the details about the tendered work. We understand that the civil work is being carried out with shuttering method and we will cope up with required pace and resources.

In addition to the conditions contained in the Contract except as modified herein and in so far they cast responsibilities and obligation to the Contractor, shall be binding in pursuance thereof.

Yours faithfully

(Signature of Tenderer with seal of the firm)

(Power of Attorney, in case the tender is signed by the authorized nominees must be enclosed.)

Signature of the Contractor with Stamp/Seal

SECTION – III
DEFINITIONS AND INTERPRETATIONS

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- 1. EMPLOYER:**
M/s. Advanced Centre for Treatment, Research and Education in Cancer (ACTREC) their heirs, executors, administrators and assignee collectively hereinafter referred to as the “EMPLOYER”.
- 2. STP CONSULTANT:**
Planoscape Architects and planners as Project Management Consultant/ STP consultant and also the structural consultant, authorized to provide engineering and project management consultancy for the project.
- 3. WORK:**
The work involves complete Sewage Treatment Plant work of various items described in BOQ as indicated in scope of work & bill of quantities.
- 4. Good for construction drawings (GFC drawings):**
Drawings furnished by the Contractor during the progress of the work as approved by ACTREC, based on which the actual construction of the Works will proceed; or engineering data and design development drawings submitted by the Contractor during the progress of the work provided such drawings are approved by ACTREC.
- 5. Contract:**
Contract means the documents forming the formal agreement executed between the competent authority / ACTREC on behalf of Employer and the Contractor, together with the documents referred to therein including LOI, Definitions & Interpretation, General Conditions, Scope of work, Annexures, tender documents, drawings and instructions issued from time to time by Engineer and all these documents taken together, shall be deemed to form one Contract and shall be complementary to one another.
- 6. Approved and Approval:**
Shall mean, respectively, approved by and approval of ACTREC or ACTREC representative in writing.
- 7. Certificate of Virtual Completion:**
Shall mean the certificate issued by ACTREC upon completion of the Works as directed and clearance of the Site to the satisfaction of ACTREC.
- 8. Contract Price:**
Contract Price shall mean the amount of money the ACTREC has agreed to pay to the Contractor plus applicable Goods and Service Tax, for performing the Work through the Contract along with all the Contract Documents and Amendment Orders and includes any adjustments made in accordance with the conditions of the Contract.
- 9. Drawings:**
Tender drawings furnished by ACTREC. Supplementary drawings furnished by ACTREC or the Engineer to clarify and to define in greater detail the Works; Drawings submitted by

the Contractor, his sub-contractors or suppliers provided such drawings are acceptable to the ACTREC.

- 10. Engineer/Engineer-in-Charge/Site-in-Charge:**
Shall mean the person appointed by ACTREC to act as “Engineer / Engineer-in-Charge /Site-in-Charge” for the purpose of the Works.
- 11. Notice in Writing or Written Notice:**
Shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received) by registered post to the last known private or business address or registered office of the address and shall be deemed to have been received when in the ordinary course of post, it would have been delivered.
- 20. “Day” means English calendar day and “Year” means 365 days.**
- 21. Authorities:**
Shall mean local authorities and for the time being having jurisdiction over the Site and/ or any aspect of the Project and “Authority” shall mean any one of them;
- 22. Date of Commencement:**
Shall mean the date specifically mentioned in the work order or Letter of intent (LOI) issued by the ACTREC.
- 23. Date of Contract:**
Shall mean the English calendar date on which the ACTREC and Contractor have signed the 'Contract'.
- 24. Effective Date of Contract:**
'Effective Date of Contract' shall mean the English calendar date on which the ACTREC has issued to the Contractor the 'Letter of Intent'.
- 25. “Time for Completion”**
Shall means the time for completing the Works or a Section (as the case may be), and passing the Tests on Completion, calculated from the Date of Commencement.
- 26. “Retention Money”** means the accumulated retention money retained by the ACTREC.
- 27. “Cost”**
Means all expenditure properly incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.
- 28. “Plant”**
Means machinery and apparatus intended to form or forming part of the Permanent Works, including the supply-only items (if any) which are to be supplied by the Contractor as specified in the Contract.
- 29. “Materials”**

Means things of all kinds (other than Plant) to be provided and incorporated in the permanent Works by the Contractor, including the supply-only items (if any) which are to be supplied by the Contractor as specified in the Contract.

30. “Contractor’s Equipment”

Means all machinery, apparatus and other things (other than Temporary Works) required for the execution and completion of the Works and the remedying of any defects, but does not include Plant, Materials, or other things intended to form or forming part of the Permanent Work.

31. “Good Industry Practice”

Shall mean the exercise of that degree of skill, diligence efficiency, reliability and prudence and those practices, methods, specifications and standards of equipment, safety, services and performance, as may change from time to time and which would reasonably and ordinarily be expected to be used by a skilled and experienced contractor engaged in the construction of residential development.

SECTION – IV
GENERAL CONDITIONS OF CONTRACT AND SCOPE OF WORK

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1. Type of Contract

The Contract shall be an Item-Rate contract. The Contractor shall be paid for the actual quantities of works executed as measured at site and as certified by ACTREC unless otherwise specifically mentioned anywhere in the contract to include/load rate of any pertinent risks associated with the execution of work, at the rates included in the Bill of Quantities. However contractor is responsible for overall completion of work as per the instruction of Engineer in charge.

2. Selection of Manufacturer

Bidder shall select manufacturer for the equipment from the ‘Approved manufacturer’s list’/ List of Makes as mentioned in the Annexure VIII and as per the Bill of quantities given in the financial bid. Where no manufacturer is appeared in the list, Bidder has to get the manufacturer approved from to be approved by the Employer / consultants.

3. Scope of Work

The sewage treatment plant (STP)-600 KLD will be based on Moving Bed Bio Reactor (MBBR) process. The Bidders shall submit offers which comply with the documents, including the basic technical design requirements as indicated in the Specifications including below mentioned item

- Civil works
- Pipes and inserts and embedded parts
- Raw Sewage Supply
- Water Supply
- Electric Supply
- Permissions from various authorities

The following works shall include the Bidder/STP contractor scope and nothing extra is payable in this account

- a. Bidders to verify the space allocation for STP pump room, all existing civil tanks with respect to MBBR process, system requirements and provisions allocated in the layout.
- b. The bidder has to provide Shop drawings suitable for an installation of 300KLD electromechanical setup however scalable space to be kept to expand the set up to 600KLD STP Plant.

- c. Bidder shall provide all the detailed GA Drawings based for all the civil structures of the STP. All civil GA shall be prepared by bidder and get approved from the Employer/consultant.
- d. Supply, testing, material storage when required, delivery to site, unloading and site transportation, erection, site testing, painting and finishing of the Plant Equipment.
- e. Process and hydraulic design, Development of Process Flow Diagram, Hydraulic Flow Diagram, Piping & Instrumentation Diagram, Plant Layout.
- f. Trial run, testing and commissioning of the Sewage Treatment Plant.
- g. Defect liability period for one year after commissioning of the plant (dry run).
- h. Operation and maintenance manuals and As-Built drawings;
- i. Provision of training for the Employer's personnel.
- j. Providing comprehensive operation and maintenance for 01 year including spare and consumable to be provided by STP contractor and installed by them under this warranty period free of charge.
- k. Detailed operation and maintenance scope is further detailed below in this document.
- l. This bid is for the Design verification, engineering, manufacture, supply, installation, testing and commissioning, operation and maintenance of the STP system including the Civil Work execution in line with the details given in this document which includes construction of Master Sewer Line.
- m. The scope of work includes all mechanical and bought-out equipment, piping, electrical and instrumentation work. The turnkey supplier shall provide all the drawings, DBR and details as required for the Consultant and contractor to carry out civil design and work for the STP. Turnkey supplier has to consider visits to site at key stages for guiding the civil Contractor, if required, to ascertain that work is carried out as per the drawing requirements.
- n. Treatment process is forwarded for the turnkey (STP Contractor) suppliers' information in this document. However, System supplier has to understand and verify the calculations/sizing etc. based on the design criteria to satisfy himself and deviations/comments, if any, along-with technical justification must be quoted in the Technical Proposal. Process Performance Guarantee will also be in system supplier' scope.
- o. Mobilization of plant, equipment's, scaffoldings, cranes/ hoists (as required), tools and tackles, materials, transport and manpower.
- p. Demobilization and clearing of all temporary works/ facilities after completion of work at site and cleaning work are before handing over.

- q. Day to day housekeeping, site cleaning and debris evacuation to the satisfaction of the engineer/project manager.
- r. Safety precautions measures by all workers including PPE's (personal protective equipment's viz Helmet/ Safety harness/ Safety Shoes etc.).
- s. Right of the way for execution will be given by engineer in charge. Noting down the timeline for getting right of the way and any delay for such execution should be documented and the register/document maintained and to be signed by Engineer-in charge on fortnightly basis. The contractor will not be eligible to claim time extension due to delay in obtaining right of the way for the work if the document is not maintained as per the procedure mentioned in this clause.
- t. In sensitive areas manual excavation should be carried out such that no cables or pipelines are damaged in any circumstances. Also manual excavation is to be done on specific instruction of Engineer-incharge of the project. However it does indemnify the contractor for causing any damages to utility services and should be address as per the below mentioned clause.
- u. If the contractor damages any cables or pipelines or any ACTREC property during the execution work then he has to make good/repair/ install cables or pipeline or ACTREC property without any additional cost. Hence contractor is to consider such contingencies while quoting for the tender. With reference to this clause the damage to bituminous road and pavements is not applicable for areas which are permitted by Engineer in charge.**
- v. If contractor fails to execute work as per the above clause then Engineer-in charge may initiate the repair works from other agency at the cost of contractor which will be recovered from performance bank guarantee or from subsequent bills and contractor shall have no right to object to the implementation of such incidental cost. This is in addition to the penalty imposed on the contractor as per the relevant clauses.
- w. After commissioning of STP, daily 2 times report should be generated (in the morning and in the evening) for both the treated water and untreated sewage and should satisfy the engineer in charge with the required quality of water. This is to be continued during operation and maintenance totaling a period of 6 years (1 year warranty + 5years O&M). The cost is to be considered in the O&M and warranty expenses**
- x. If the quality of water is not up to mark then contractor has to arrange to repair/redress the defects and troubleshoot the problem which is in the scope of contractor for entire 6 years period. Clause 2.34 of GCC is applied in this matter.**
- y. Hard Barricade is to be provided during the laying of pipeline and should ensure all warning and safety signs are installed to avoid falling in the pit.**

4. Testing and Commissioning

All equipment and components of the STP shall be tested for the performance as per the duty points and specifications. Also, the untreated and treated wastewater quality shall be tested at various stages for polluting parameters to ascertain that the STP meets the stage-wise and

overall desired treatment requirements. The Contractor and consultant shall prepare a schedule of such stage-wise testing.

The Contractor shall maintain a record of all such testing carried out duly signed by Contractor, Employer and consultant.

5. Operation and Maintenance Services during Warranty:

After the issue of virtual completion certificate, the contractor shall operate the STP for a period of one year under his control. The Contractor shall also provide the operating manpower and consumables for this. The contractor is liable to repair and address any defects/repair works as per the relevant tender clauses.

6. Drawings and Documentation

STP Contractor shall submit the shop drawing at various stages (06 numbers of copies) 04 hard copy/ 02 soft copies shall be as instructed by Consultant/Employer.

a. Bid Stage:

P & I diagram, General Layout, Hydraulic Flow diagram, data sheets of mechanical equipment, performance curves, DBR and catalogues for offered components, Bar Chart for Project Completion.

b. Execution Stage:

In addition to final approved drawings of bid stage, GA drawings for all civil work, foundation drawings, piping and electrical layout, Electrical Scheme diagram, detailed DBR and calculations etc. as applicable shall be submitted to consultant for approval prior to fabrication/ ordering.

Material submittal for major items to be submitted to get the approval from Employer/consultant.

Material inspection request to be raise to get the material approval after material delivery at site.

Inspection request to be raise to get the approval on installation.

c. Post-Completion Stage:

The system supplier will submit all as built drawings (04 nos. Hard copy), trial runs and commissioning report and operation and maintenance manual in Four (04) sets in required format, as final documentation on completion of the STP.

Commissioning check list to be duly signed by Consultant/Employer after completion of system (format to be shared when STP contractor will come on board).

After work completion dry run commissioning to be done by STP contractor immediately and for the wet run commissioning sewage water to be arranged by Employer.

2.5% retention of tendered value to be kept for 12 months after successful completion of dry run test.

7. Technical Datasheet:

Technical datasheet of all the electromechanical for which the contractor has selected the (preferred) make shall be submitted alongwith the tender. The technical data sheet should comply with BOQ requirement otherwise deviation statement to be prepared and separately attached with tender which will be considered by technical evaluation committee. However considering or rejecting such deviation shall be the sole discretion of ACTREC.

8. Time of Completion

Time is an essential quality of this contract. The total completion period shall be twelve months including monsoon period from date of Letter of Intent (LOI) which includes preparation and approval of drawings/details, manufacture/ procurement and supply at site and completion of site fabrication and installation work.

Bidder shall submit a bar chart along-with the bid document. The successful bidder shall prepare a detailed schedule of activity immediately on award of the work, for monitoring purposes.

9. Available Land Area

The approximate total area available for STP is as shown in the layout plan in tender documents or may be collected from ACTREC office.

10. Battery Limits and Exclusions

Battery limits for the system supplier scope:

- Entry Point - Inlet of collection tank
- Discharge Point - Treated Water Tank
- Sludge/ Solids - Till Centrifuge processing
- Electrical - From MCC to Motors
- Piping - All interconnecting piping within the STP
- Instrumentation - As per P & I diagram

11. Biological Seed Culture for Commissioning – In scope of STP Contractor.

12. Operating Chemicals and Consumables required for STP - To be provided by

Contractor for commissioning. This is also included during the operation and maintenance period of the work.

12. Service Water

Contractor has to make his own arrangement for Electric power supply and water connection.

Electrical Incoming Feeder – To be provided by Employer. All outgoing feeders/instrument supply etc. in Contractor's scope.

Area Lighting – To be provided by contractor as per the shop drawing approved by Engineer incharge.

Storage Space – Storage space shall be provide if available during construction at site. However, Contractor may have to construct temporary secure site store, if space is not available. Contractor is responsible for any theft or loss of material.

13. Civil Work

System Contractor shall provide the GA drawings, loading data etc. as required for the consultant to carry out the RCC / civil drawings for execution. Validation of existing system with proposed design and if any additional requirement or modification required to be highlighted

All major and minor civil work such as water retaining tanks, foundations, paving making and refilling trenches for laying pipes, pipe/cable rack supports, chasing in walls and beams, making holes in brick walls etc. shall be executed by contractor.

Making of closed culvert drain is also included in the scope of contractor. Quoted RCC and reinforcement rates will be applicable.

14. List of Mechanical and Bought-out Equipment

This section lists the brief specifications/requirements for the mechanical and bought-out equipment, piping, electrical and instrumentation work. It also lists the major equipment within the scope of work. However, the Contractor shall be responsible for supply, installation, testing and commissioning of the complete STP system as per the general scope of work and the exclusions listed within the tender document.

Contractor may suggest any change in the quantity/ duty point/ material of construction of major equipment from that listed below, with a technical justification for the same.

Plants and equipment's to be proposed by vendor as per their design parameters.

However, tentative size/capacity of plant/equipment given below for the reference purpose. Final selection of equipment is in contractor scope and shall be provided by the contractor at the time of bidding.

14.1 EQUIPMENT DETAILS

14.1.1 Automatic Bar Screen:

Application	To remove floating material from raw sewage at screen chamber. The screen chamber is to be fitted in RCC chamber of 2500 L mm x 2000 W mm x 3650 Ht
Quantity	1No.
Clear Spacing	10 mm
MOC	SS304

14.1.2 Sewage Transfer Pump

Application	To lift the sewage from collection tank
Type	Submersible
Quantity	2 No. (1W + 1S)
Capacity	15 m ³ /hr
Head	10 – 12 m
MOC	CI Base
Impeller MOC	CI
Shaft	SS410
Motor Housing	SS304
Solid Handling Capacity	35-45 mm

14.1.3 Anoxic Tank Recirculation Pump

Application	To lift the effluent from collection tank
Type	Submersible
Quantity	2 No. (1W+ 1S)
Capacity	45 m ³ /hr
Head	10 – 12 m
MOC	CI Base
Impeller MOC	CI
Shaft	SS410
Motor Housing	SS304
Solid Handling Capacity	35-45 mm

14.1.3 Filter Feed Pump

Application	To feed the clarified water to filtration system
Type	Vertical/horizontal, coupled dry pit installation, centrifugal with mechanical seal
Quantity	2 No. (1W + 1S)
Capacity	15 m ³ /hr
Head	35 m
MOC	CI

Rotor	CI
Shaft	CI

14.1.4 Sludge Recirculation Pump

Application	To recirculate the sludge from tube settling tank to aeration tank
Type	Self-Priming
Quantity	2 No. (1W + 1S)
Capacity	10 m ³ /hr
Head	14 m
MOC of base	CI
MOC of shaft	SS 316

14.1.5 Screw Pump

Application	To feed the sludge to filter press
Type	Screw Pump positive displacement
Quantity	2 No. (1W+ 1S)
Capacity	5 m ³ /hr
Pump Housing	CI
Base Plate	Mild Steel MOC : SS410 for shaft
Motor Efficiency Class	IE3
Rotor & Shaft	SS 304 & SS410 respectively
Stator	Neoprene

14.1.5 Air Blower

Application	To supply the air into Equalization and Aeration tank
Type	Twin Lobe
Quantity	2 No. (1W+ 1S)
Capacity	253 m ³ /hr@0.5 Kg/cm ²
MOC	CI
Base Plate	Mild Steel
RPM of Blower	1000 - 1200
Noise level	Not more than 85 dB after 3 meter
Motor	TEFC, 415V + 10%, 50 c/s + 5%, combined + 10%, Class 'F' insulation
Accessories	Silencers at both ends, air filter, swing check type non-return valve, NRV, pressure gauge, sluice valve, pulleys, base frame, anti-vibration pads, V-belts, belt guard and foundation bolts. One set of pulleys with belts for about 70% speed of blower. Single skin/common enclosure over both blowers for reduction of noise level below 84 dB.

14.1.7 Chlorine Dosing System

Application	To disinfect the treated water
Type	Metering
MOC	Poly Propylene
Quantity	1 No.
Capacity	0 – 12 LPH
Tank	100 liter
MOC	HDPE

14.1.8 Polyelectrolyte Dosing System

Application	To disinfect the treated water
Type	Metering
MOC	Poly Propylene
Quantity	1 No.
Capacity	0 – 6 LPH
Tank	100 liter
MOC	HDPE

14.1.9 Pressure Sand Filter

Application	Basically, to remove suspended solids from the secondary treated sewage water.
Quantity	1 No.
Size	1.2 m dia x 1.5 m shell height, having 50 mm diameter frontal piping.
MOC	MSEP
Shell Thickness	8 mm
Dish Thickness	10 mm
Painting	Internally epoxy painted, externally enamel painted after applying two coats of zinc rich primer with FRP coating
Under drainage	MS plate with PVC Nozzles
Accessories	One 450 mm dia. manhole on top and one 450 mm dia manhole on bottom dish end, M.S. frontal piping with valves, pressure gauge, air release valve and drain valve.
Filter Media	Multigraded quartz silica sand
Quantity	2000 Kg

14.1.10 Activated Carbon Filter

Application	Basically, to remove suspended solids from the secondary treated sewage water.
Quantity	1 No.
Size	1.2 m dia x 1.5 m shell height, having 50 mm diameter frontal piping.
MOC	MSEP

Shell Thickness	8 mm
Dish Thickness	10 mm
Painting	Internally epoxy painted, externally enamel painted after applying two coats of zinc rich primer with FRP coating
Under drainage	MS plate with PVC Nozzles
Accessories	One 450 mm dia. manhole on top and one 450 mm dia manhole on bottom dish end, M.S. frontal piping with valves, pressure gauge, air release valve and drain valve.
Filter Media	Multigraded quartz silica sand + Activated Carbon IV 1000
Quantity	Sand 900 Kg & Carbon 550 Kg

14.1.11 Filter Press

Application	Sludge Volume Reduction
Quantity	1 No.
Size	610 mm x 610 m with hydraulic closing device operated by pump
MOC	MS Fabricated structure
Type	Plate/ Chamber
Filtration area per filter press	16.00 m ² / Filter press
No. of plate/ chamber	20 No.
Accessories	Compressor require for air supply

14.1.12 Ozone System

Application	To disinfect the filter water
Quantity	1 No.
Capacity	75 gm./ hr
MOC	SS
Oxygen generator to give 5 lpm oxygen at 90% purity	1 No.
Accessories	Require pump, Venturi, Ozone pipe, Oxygen pipe

14.1.13 MS Piping for Air Blower

Application	To provide oxygen to bacteria in aeration tank by supplying air from air blowers to Aeration tank, equalization tank and also to Sludge tank.
Quantity	1 Lot including valves and fittings.
Size	As per air requirement
MOC	M. S.
Accessories	Valves and pipe fittings

14.1.14 Electrical Panel

Application	To provide power supply to various units and controls.
Quantity	1 No.
Type	IP 52, Compartmentalized, free standing, front operated, with

	cable alley on front side and cable entry from top.
Major components for motor feeders	MCCB for all three phase motors and MCBs for single phase motors, power contactor, control fuse, remote/local SS, ammeter, ON/OFF/TRIP indicating lamps, auto/manual selector switch where auto operation is provided. Remote/Local S/S as required. Overload, relay, SPP, ASS rotary switch, Timer
Other feeders	MCB of required poles and ratings

14.1.15 Electrical Cabling

Application	To provide power and/or control supply to equipment/controller.
Quantity	1 Lot
Size	For power minimum 2.5 sq.mm and for control minimum 1.5 sq.mm.
Type	YWY for power and control.
Accessories	Lugs, glands, clamps, flexible conduit for power cable, etc.

14.1.16 GI Trays/Channel

Application	To provide support and protection to cables.
Quantity	Lot of 150/100/75/50mm GI perforated tray.
Size	Size as required. Thickness 14 gauge
Accessories	Painted MS supports, SS 304 fixing anchor fasteners/screws, etc.

14.1.17 Earthing

Application	To provide safety to human beings.
Quantity	1 Lot to meet requirement of electrical authorities
Size	Minimum 12 swg for 415V motors upto and inclusive of 5 hp. Above 5 hp minimum 8 swg copper wires or GI strip, as required.
MOC	Annealed Copper/GI.
Accessories	Painted MS supports, SS 304 fixing anchor fasteners/screws, etc.

14.1.19 Instruments

Application	To Measure the Flow
Quantity	1 No.
Capacity	15 m ³ /hr
Type	Inline

Pipe Size	50 mm
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14.1.20 Spares/ Tools

Belts	1 Set for all belt drive equipment
Level Switch	2 Nos.
Pressure Gauge	3 No.
Mechanical Seal	1 No. of each type
Tools	One set of open-ended spanners One set of ring spanners One set of allen keys One set of screw drivers One insulated plier One insulated nose plier One insulated cutting plier One electrical tester One tong tester for current

14.1.21 Air diffuser

Particulars	Specifications
Perforation	Bubbles
Membrane MOC	EPDM
Type of Diffuser	Disc/Tubular Type
Dia./ Length	65/150/1000 mm
Optimum Through Put	8 m ³ /hr
Quantity	32 No.

14.1.22 MBBR Media

Particulars	Specifications
Shape	Cylindrical
Diameter	22 mm
Height	20 mm
MOC	PVC/PP
Area	520 m ² /m ³
Quantity	8 m ³

14.1.23 Tube media

Particulars	Specifications
MOC	PVC
Shape of tube	Square
Thickness	1.0 to 1.2 mm
Vertical Height	520 mm
Max. Working temp.	45° deg. C
Quantity	14 m ²

14.1.23 Submerged and Internal Piping

Application	Submerged and Internal Piping
MOC	UPVC
Type	Schedule 40/80
Quantity	Lot
Size	Size as required.
Accessories	Ball valve, Tee, MTA, FTA etc.

15. Base Design Data

Quality and quantity projection for the wastewater generated is as per Table 15.1.

Table 15.1 Wastewater Quality and Quantity Projection

Sr. No.	Parameters	Unit	Inlet Raw Water Parameter	Treated Water Parameter
1	pH	-	6.0- 8.0	6.5 – 8.0
2	COD	mg / lit.	500	≤ 30
3	BOD (5 days)	mg / lit.	250	≤ 10
4	Suspended Solids	mg / lit.	200	≤ 10
5	Oil & Grease	mg / lit.	10	≤ 01
6	Total Nitrogen	mg / lit.	--	≤ 10
7	Total Phosphate	mg / lit.	--	≤ 10

15.1 Treatment Requirements and Performance Projection

Table 15.2 Stage-wise performance projection

Sr. No.	Parameter	Unit	Raw Water	After Secondary Treatment	After Filtration System
1.	Quantity	M ³ /d	300	300	300
2.	pH	---	6 to 8	7.0 – 7.2	7.0 – 7.2
3.	COD	mg/l	500	100	<30
4.	BOD 3 days @ 27 ⁰ C	mg/l	250	50	<10
5.	TSS	mg/l	200	30	<10
6.	TDS	mg/l	1500	1000	1000
7.	O & G	mg/l	10	--	<01

15.2 SCHEME OF TREATMENT

The Sewage Treatment Plant will be designed to treat a sewage quantity of 300 cum/day.

The Sewage Treatment Plant will consist of the following units:

15.2.1 RECEIVING SUMP

The Receiving Sump of size 9.2 m dia x 8 m x 6 m (water depth 2.5) is provided to collect sewage generated from the centre and pump the same at a uniform rate to the subsequent treatment units. The Technical Specification shall be read as “The Sewage shall be made available in receiving sump”. The battery limit of supplier starts from receiving sump.

The condition given in Financial bid Stands with clarification as follows:

Pump with motor, pressure gauge with isolation cock, Isolation valve, NRV on delivery line, strainer at suction. Solid Handling Capacity shall be 35-45 mm. The Capacity is 45 m³/hr Head-12 meter Type-Cutter type battery limit. – Applicable for Item No. 53 of financial bid.

15.2.2 ANOXIC TANK

An Anoxic Tank of size 5.6x2.0x4.0m (water depth 3 m) is provided for denitrification process. Denitrification is a process that involves the reduction of nitrogen present in waste streams to an acceptable level. Lowering nitrate levels in a waste stream is achieved through creating an anoxic environment in which heterotrophic bacteria use nitrate as an oxygen source to break down organic substances. In anoxic tank sewage is recirculated using 15 m³/hr@10 m head. In the denitrification process, an anoxic zone is created by using an unaerated tank where the dissolved oxygen levels are kept below 1 mg/l. A target operating point would be between 0.2 to 0.5 mg/l. The concentration of mixed liquid and suspended solids must also be kept in balance. The pH of the anoxic zone should be close to neutral (7.0) and never drop below 6.5.

15.2.3 AERATION TANK

Treated sewage in Anoxic tank overflow taken into the aeration tank of size 5.6x4.5x4.0 m (water depth 3 m) for secondary biological treatment. In aeration tank air spraying arrangement will be provided to mix the contents of aeration tank and transfer atmospheric oxygen into the system. The dissolved organic matter is subject to biological degradation by bacterial action in presence of oxygen & nutrients. This will convert dissolved organic matter into stable settleable matter. The bacterial concentration (MLSS) of 5000 mg/l and dissolved oxygen of 2 mg/l will be maintained in the Aeration Tank. An air blowers sparging 253 cum /hr and 0.5 kg/cm² shall be provided for tank along with silicon coated membrane diffuser for supply of air to the Aeration Tanks.

15.2.4 TUBE SETTLER

The biological sludge developed in the Aeration Tank shall be settled in a tube settling tank 5.6x3.0x4.0 m (water depth 2.8 m). The sludge accumulating in the Central Sludge Pit is transferred to the Aeration Tanks by means of Return Sludge Pumps. The bottom slope for the settling tank shall be 1:8. The process of returning the sludge back into the Aeration Tanks shall be done continuously. The excess sludge shall be process for dewatering using filter press unit.

15.2.4.1 RETURN SLUDGE PUMP

Two nos. of horizontal non-clog Centrifugal Pumps set shall be installed adjacent to Settling Tank to return the sludge to Aeration Tank for maintaining mixed liquor suspended solids (MLSS). Excess sludge can be directly pumped to the sludge holding tank. The Pumps shall be capable of pumping 10 m³/hr @ 14 m head and will be coupled to a motor of suitable capacity. The motor shall be with IP55 winding and class B insulation. The pumps shall be mounted horizontally the delivery shall be provided with valves to regulate the flow in the Aeration Tank.

15.2.5 Sludge Holding Tank

The sludge tank of capacity 5.6 x 2.5 x 4.0 m (water depth 3 m) is provided to hold the sludge received from tube settler. Sludge hold in tank further process to dewatering in filter press of size 610 mm x 610 mm using screw pump of capacity 5 m³/hr.

15.2.6 Filter Feed Tank

The treated water overflowing from the tube settler shall accumulate in the filter feed tank of size 5.6x4.8x4.0 m (water depth 2.6 m). The treated sewage shall be dosed with Sodium Hypochlorite solution in the pipeline. Two nos. of horizontal Non-clog monobloc Pump of capacity 15 m³/hr @ 35 m head shall be provided to pass the treated water through filtration system.

15.2.7 Pressure Sand Filter and Activated Carbon Filter

The treated water from filter feed tank shall be pumped through a Pressure Filter and Activated Carbon Filter. The Filters will have an average flow rate of 15 cum/hr each and shall be filled with multigraded quartz silica sand and activated carbon IV 900 respectively.

Filters will have a backwash arrangement and shall be provided with frontal piping and valves.

15.2.8 Disinfection

The tertiary filter water is further disinfected using ozonator.

15.2.9 Treated Water Tank

The filter water from the filtration system store in treated water tank of size 11.6 x7.6x4.0 m (water depth 3.0 m). The treated water can be further use for gardening or irrigation.

16. Lump sum items given in the bill of quantities shall have a meaning that complete work given in item is to be executed on turnkey basis considering all the items required for execution. Guidance and instructions will be provided by the Engineer in-charge as well as the STP Consultant of the project. No extra payment will be made for such turnkey items except for the entire amount quoted in BOQ.

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SECTION IV: - OTHER TERMS & CONDITION

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SECTION IV: - OTHER TERMS & CONDITION

1. Associated Civil Works

Following civil works associated with STP installation are included in the scope of this contract. These shall be executed in accordance with approved shop drawings of, and under direct supervision of the contractor+

- a) RCC foundation for machines, pumps & large equipment with angle iron frame work at the edges to protect these from damage.
- b) RCC work for water tanks
- c) PCC foundation blocks with angle iron frame work edging for all motor control center.
- d) Water proofing of floors.
- e) Masonry drain channels and sumps in plant room.
- f) Sleeves placing is in Contractor's Scope
- g) Any core cutting required will be done by contractor if sleeves are not placed at required locations.
- h) Contractor shall supervise and ensure that the sleeves are placed at perfect location as per shop drawings.
- i) Bore packing around the pipes will be done by contractor. Material for the same shall be: micro concrete / cebex / GP2 which is to be loaded in the rate for water proofing and concreting work and is contingent with the execution of main works as per the risk of contractor.
- j) Master sewer line laying and allied civil works related to construction of manholes around the campus including excavation and backfilling as per the bill of quantities mentioned in the contract.
- k) Construction of all the tanks including water proofing works as per the BOQ.
- l) For detailed specification CPWD Specification 2019 Volume 1 and Volume 2 are to be referred however the specifications given in the BOQ shall override the CPWD specifications.

2. Performance Guarantee

The contractor shall carry out the work in accordance with the Drawings, Specifications, Schedule of quantities and other documents forming part of the Contract.

The contractor shall be fully responsible for the performance of the selected equipment (installed by contractor) at the specified parameters and for the efficiency of the installation to deliver the required end result.

The contractor shall guarantee that the STP system as installed shall maintain the design conditions as described under "Basis of Design" and relevant clauses in the specifications.

Complete set of architectural drawings is available in the Architect/Consultant's office and reference may be made to same for any details or information. The contractor shall also guarantee that the performance of various equipment individually, shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating, during testing and commissioning, handing over and guarantee period.

3. Plant Hand Over

Plant will be handed over after the completion of the following stages:

- Successful running of the Plant for one year from Virtual Completion.
- On showing complete operation and on providing training to our operators.
- Supplying O & M Manuals, warranty certificates and completion certificate.
- Furnishing analysis report of the treated water for at least twelve months (minimum 12 sets of analysis) after stabilization of the Plant to the General Contractor's satisfaction.

4. Drawings

The STP Drawings which may be issued with tenders, are diagrammatic only and indicate arrangement of various systems and the extent of work covered in the contract. These Drawings indicate the points of supply and of termination of services and broadly suggest the routes to be followed. Under no

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circumstances shall dimensions be scaled from these Drawings. The architectural/interiors drawings and details shall be examined for exact location of equipment and water supply / drainage piping etc.

The contractor shall follow the tender drawings in preparation of their shop drawings, and for subsequent installation work. Contractor shall check the drawings of other trades to verify spaces in which contractor work will be installed.

Maximum headroom shall be maintained at all points. Where headroom appears inadequate, the contractor shall notify the Architect/Consultant/General Contractor/ACTREC site representative before proceeding with the installation. In case installation is carried out without notifying, the work shall be rejected and contractor shall rectify the same at his own cost.

The contractor shall examine all architectural, structural, plumbing, electrical and other services drawings and check the as-built works before starting the work, report to the General Contractor's site representative any discrepancies and obtain clarification. Any changes found essential to coordinate installation of his work with other services and trades, shall be made with prior approval of the Architect/Consultant/ General Contractor's site representative without additional cost to the General Contractor. The data given in the Drawings and Specifications is as exact as could be procured, but its accuracy is not guaranteed.

5. Fees and Permission

The Contractor shall pay reasonable crane charges for installation of equipment and obtain work permission required for the installation of equipment. On completion of the work, the contractor shall obtain and deliver to the ACTREC/Employer, certificate of final inspection and approval by the ACTREC.

6. Technical Data:

Each tenderer shall submit along with his tender, the technical data for all items listed in PART B of financial bid as per the manufacturers' format. Failure to furnish complete technical data with tenders may result in summary rejection of the tender.

7. Bill of Quantities:

The Bill of Quantities is meant to indicate the intent of the work and to provide a uniform basis for tendering. The ACTREC reserves the right to increase or decrease any of the quantities or to totally omit any item of work and the Contractor shall not claim any extras or damages on these grounds.

8. Interpretation:

In interpreting these Conditions of Contract. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about the Conditions of Contract.

9. Delegation:

The Engineer may delegate any of his duties and responsibilities to other people except to the Dispute Review Expert after notifying the Contractor and may cancel any delegation after notifying the Contractor.

10. Communications:

Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered.

11. Other Contractors:

The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the ACTREC/Employer between the dates given in the Schedule of Other Contractors. The Contractor

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shall as refer to in the Contract Data, also provide facilities and services for them as described in the Schedule. The employer may modify the schedule of other contractors and shall notify the contractor of any such modification.

12. Electrical Installation:

The electrical work related to STP Work, shall be carried out in full knowledge of, and with the complete coordination of the contractor. The electrical installation shall be in total conformity with the control wiring drawings prepared by the contractor and approved by the Architect/Consultant. All equipment shall be connected and tested in the presence of an authorized representative of the contractor. Being a lumpsum item the work is to be carried out as turnkey basis work. Additional payment will not be entertained for any increase in quantities if suggested by Engineer incharge or STP Consultant. Contractor should consider this risk while loading the rates for the works.

The STP system shall be commissioned only after the contractor has certified in writing that the electrical installation work for STP services has been thoroughly checked, tested and found to be totally satisfactory and in full conformity with the contract Drawings, Specifications and manufacturer's instructions. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements, of the electrical installation work for STP services, lies solely with the contractor.

13. Key Personnel:

The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons. The Contractor shall ensure that the person leaves the site within seven days and has no further connection with the work in the Contract.

14. Sufficiency of Tender:

The Contractor shall be deemed to have visited the site, thoroughly examined the tender documents, and by their own independent observation and enquiry, acquainted themselves fully with local conditions, the accessibility of the site and the full extent and nature of all operations necessary for the full and proper execution of the contract, including availability of water, electricity, space for the construction of temporary works, for storage of materials, plant and equipment, necessary facilities for the labor etc.

It is presumed that the Contractors have also satisfied themselves with laws, rules and regulations relevant thereto and restrictions if any imposed by the local/statutory authorities.

The Contractor shall be deemed to have satisfied themselves before tendering, as to the correctness and sufficiency of the tender and that the tendered rates and prices shall cover all his obligations under the contract and all matters and things necessary for the proper execution and maintenance of the works. No claim whatsoever on the grounds of want of knowledge or any misunderstanding or otherwise shall not be entertained.

15. Shop Drawings:

15.1 All the shop drawings shall be prepared on computer through AutoCAD System based on Architectural Drawings, site measurements and Interior Designer's Drawings. Within four weeks of the award of the contract, contractor shall furnish, for the approval of the Architect/Consultant, two sets of detailed shop drawings of all equipment and materials including layouts for Plant room, Pump room, detailed piping drawings showing exact location and type of supports, valves, fittings etc; external insulation details for pipe insulation etc; electrical panels inside/outside views, power and control wiring schematics, cable trays, supports and terminations. These shop drawings shall contain all information required to complete the Project as per specifications and as required by the Architect/Consultant/

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General Contractor's site representative. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work by other contractors. Each shop drawing shall contain tabulation of all measurable items of equipment/materials/works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings. Minimum 4 sets of drawings shall be submitted after final approval along with CD.

15.2 Each item of equipment/material proposed shall be a standard catalogue product of an established manufacturer strictly from the manufacturers listed in List of makes and quoted by the tenderer in technical data part of compliance form.

15.3 When the Architect/Consultant makes any amendments in the above drawings, the contractor shall supply two fresh sets of drawings with the amendments duly incorporated along with check prints, for approval. The contractor shall submit further twelve sets of shop drawings to the General Contractor's site representative for the exclusive use by the General Contractor's site representative and all other agencies. No material or equipment may be delivered or installed at the job site until the contractor has in his possession, the approved shop drawing for the particular material/equipment/ installation.

15.4 Shop drawings shall be submitted for approval four weeks in advance of planned delivery and installation of any material to allow Architect/Consultant ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to contractor failure to produce shop drawings at the right time, in accordance with the approved programme.

15.5 Manufacturers drawings, catalogues, pamphlets and other documents submitted for approval shall be in two sets. Each item in each set shall be properly labelled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.

15.6 Samples of all materials like valves, pipes, insulation, control wires etc shall be submitted to the General Contractor's site representative prior to procurement. These will be submitted in two sets for approval and retention by General Contractor's site representative and shall be kept in their site office for reference and verification till the completion of the Project. Wherever directed a mockup or sample installation shall be carried out for approval before proceeding for further installation.

15.7 Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contract.

15.8 Where the contractor proposes to use an item of equipment, other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundation, piping, wiring or any other part of the mechanical, electrical or architectural layouts; all such re-design, and all new drawings and detailing required therefore, shall be prepared by the contractor at his own expense and gotten approved by the Architect/Consultant/ General Contractor's site representative. Any delay on such account shall be at the cost of and consequence of the Contractor.

15.9 STP Contractor shall prepare coordinated services shop drawings based on the drawings prepared by Electrical, HVAC & Low Voltage Contractors to ensure adequate clearances are available for installation of services for each trade.

15.10 Where the work of the contractor has to be installed in close proximity to, or will interfere with work of other trades, contractor shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the General Contractor's site representative, the contractor shall prepare composite working drawings and sections at a suitable scale, not less than 1:50, clearly showing how contractor work is to be installed in relation to the work of other trades. If the Contractor installs there

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work before coordinating with other trades, or so as to cause any interference with work of other trades, contractor shall make all the necessary changes without extra cost to the General Contractor.

15.11 Within four weeks of approval of all the relevant shop drawings, the contractor shall submit four copies of a comprehensive variation in quantity statement, and itemized price list of recommended (by manufacturers) imported and local spare parts and tools, covering all equipment and materials in this contract. The Project Manager shall make recommendation to General Contractor for acceptance of anticipated variation in contract amounts and also advise General Contractor to initiate action for procurement of spare parts and tools at the completion of project.

16. Completion Drawings:

Contractor shall periodically submit completion drawings as and when work in all respects is completed in a particular area. These drawings shall be submitted in the form of two sets of CD's and four portfolios (300 x 450 mm) each containing complete set of drawings on approved scale indicating the work as - installed. These drawings shall clearly indicate complete plant room layouts, piping layouts, location of wiring and sequencing of automatic controls, location of all concealed piping, valves, controls, wiring and other services. Each portfolio shall also contain consolidated control diagrams and technical literature on all controls. The contractor shall frame under glass, in the plant room, one set of these consolidated control diagrams.

17. Operating Instruction & Maintenance Manual:

Upon completion and commissioning of part STP system the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one each for retention by Consultant and General Contractor's site representative and two for General Contractor's Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 6-year period of maintenance of each equipment.

“Preventive Maintenance Schedule for each equipment / panel shall be submitted along with Operation and Maintenance Manual”.

18. On Site Training:

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labor and helpers for operating the entire installation for a period of fifteen (15) working days of ten (8) hours each, to enable the General Contractor's staff to get acquainted with the operation of the system. During this period, the contractor shall train the General Contractor's personnel in the operation, adjustment and maintenance of all equipment installed.

19. Inspection and Testing:

The Employer/ACTREC may carry out inspection and testing at manufacturer's works for this contract. No equipment shall be delivered without prior written confirmation from the ACTREC site Engineer. Tests on manufacturers' site of completed works shall demonstrate the following:

That the equipment installed complies with specification in all respect and is of the correct rating for the duty and site conditions.

That all items operate efficiently and quietly to meet the specified requirements.

That all circuits are fully protected and that protective devices are properly co-ordinated.

That all non-current carrying metal parts is properly and safely grounded in accordance with the specification and appropriate Codes of Practice.

The contractor shall provide all necessary instruments and labour for testing, shall make adequate records of test procedures and readings, shall repeat any tests requested by the ACTREC/Employer and shall

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provide test certificate signed by an authorized person. Such test shall be conducted on all materials and equipment and tests on completed work as called for by the ACTREC/Employer at contractor's expenses unless otherwise called for.

If it is proved that the installation or part thereof is not satisfactorily carried out then the contractor shall be liable for the rectification of the same. Site Engineer's decision as to what constitutes a satisfactory installation shall be final.

All tests shall be carried out by a test house approved by the ACTREC/Consultants.

20. Materials and Equipment's:

All materials and equipment shall conform to the relevant Indian Standards and shall be of the approved make and design. Makes shall be in conformity with list of approved manufacturers as per List of makes. Approved equivalent will be considered subject to ACTREC/Employer's confirmation & Consultant's technical evaluation.

The Contractor shall be responsible for the safe custody of all materials and shall insure them against theft or damage in handling or storage etc. The responsibility of security of partly completed works lies with contractor till the completion of testing and commissioning.

Contractor shall make joint measurement A list of items of materials and equipment, together with a sample of each shall be submitted to the ACTREC site representative within 15 days of the award of the contract. Any item which is proposed as a substitute, the contractor shall state the credit, if any, due to the Employer/ACTREC in the event the substitution is approved. All changes and substitutions shall be requested in writing and approvals obtained in writing from the ACTREC/Employer's site representative.

21. ACCESSIBILITY:

The Contractor shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his piping and other ancillaries. His failure to communicate insufficiency of any of the above, shall constitute his acceptance of sufficiency of the same. The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for each concealed, valve or other devices requiring attendance, shall be finalized and communicated in sufficient time, to be provided in the normal course of work. Failing this, the Contractor shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment / device / accessory and shall be clearly nomenclature / marked.

22. Uptime Guarantee:

The contractor shall guarantee for the installed system an uptime of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability period shall get extended by a month for every month having shortfall. In case of shortfall beyond the defects liability period, the contract for Operation and Maintenance shall get extended by a month for every month having the shortfall and no reimbursement shall be made for the extended period.

The Contractor shall provide log in the form of diskettes and bound printed comprehensive log book containing tables for daily record of all temperatures, pressures, treated sewage, and power consumption. Starting and stopping times for various equipment, daily services rendered for the system alarms, maintenance and record of unusual observations etc. Contractor shall also submit preventive maintenance schedule.

Each tenderer shall submit along with the tender, a detailed operation assistance proposal for the ACTREC/Employer's site representatives/Consultant's review. This shall include the type of service planned to be offered during Defects Liability Period and beyond. The operation assistance proposal shall give the details of the proposed monthly reports to the Management.

The tenderer shall include a list of other projects where such an Operation Assistance has been provided.

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23. Maintenance During Defects Liability Period:

Complaints

The Contractor shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 24 hours of receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

Repairs

All equipment that require repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs concurrently with the defects liability period.

24. Contract Drawings:

In general the Drawings shall indicate dimensions, position and type of construction; any work indicated on the drawings and not mentioned in the Specifications or vice versa shall be deemed included as though fully set forth in both. The Contractor's work shall not deviate from the Drawings and the Specifications. The ACTREC interpretation of these documents shall be final. Errors or inconsistencies discovered in the Drawings and Specifications by the Contractor shall be promptly brought to the attention of the ACTREC, for interpretation or correction. Local conditions which may affect the work shall likewise be brought to the PMC/Employer's attention. If at any time, it is discovered that work is being done which is not in accordance with the Contract Drawings and Specifications, the Contractor shall correct the work immediately. Corrections of defective work shall not be a basis for any claim for additional cost and extension of time. Any work done before receipt of such details, if not in accordance with the same, shall be removed and replaced or adjusted, as directed by the ACTREC/Employer's without expense to the PMC/Employer's. All drawings, Bills of Quantities and Specifications and copies thereof furnished by the ACTREC/Employer's are his property. They shall not be used on any other work and shall be returned to the ACTREC/Employer's at his request upon completion or termination of the Contract.

- a) Drawing(s) given along with the Work Order may be revised, amended or substantiated by several other details and drawing in conformity with the design intent of the Architect/MEP Consultant, PMC/Employer's for execution of the contract. The Contractor will not be admissible for any extra claim on this account and hence no variation in the contract value.
- b) For details, set out and dimensions, only architectural & structural drawings shall be used.
- c) Figured dimensions on the scale drawings and large-scale details shall govern. Large-scale details shall take precedence over small-scale drawings.
- d) The Contractor shall examine all architectural, structural, services drawings and verify all dimensions as built at site before start of work, and bring discrepancies, if any, to the notice of the Employer. Any changes found essential to co-ordinate the installation of the plumbing and electrical work with other installations shall be made with prior approval of the ACTREC/Employer's only. However, it shall be brought to the ACTREC/Employer's notice 20 days prior to occurrence of any activities.
- e) The ACTREC/Employer's shall issue free of charge soft copy of Contract Drawings, approved for construction, to the contractor. The Contractor as and when required shall make copies at their cost.
- f) The ACTREC/Employer's may from time to time during the course of the contract issue, the contractor with revised contract drawings and the contractor shall ensure that all superseded drawings are removed from site and replaced by revised Contract Drawings.
- g) The Contractor shall ensure that a complete up-to-date list of drawing is maintained at site. All Contract Drawings shall be properly filed and indexed for ready reference.
- h) In case of any class of work for which there is no specifications, such work shall be carried out in accordance with the latest IS Specifications and in the event of there being no such specifications, the work shall be carried out in accordance with the instructions and requirements of the Employer and the Consultants.
- i) For want of any additional details and other information on the drawings provided, the Contractor shall approach the ACTREC/Employer's within 7 days from the date of receipt of the referred drawing. They shall submit "Request for Information" [RFI] as per the format

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prescribed by the ACTREC/Employer's. Upon receiving of RFI the ACTREC/Employer's will provide the adequate details to the Contractor within maximum of 15 working days.

25. Contract Price:

The contract price shall be inclusive of all materials, labour, taxes, duties, royalties, levies only. Applicable GST on Work Contract shall be paid over and above this contract price.

The Contract price shall not be adjusted or altered in any way whatsoever other than in accordance with the express provisions of these conditions, any error whether of Arithmetic or otherwise in the computation of the Contract price shall be deemed to have been accepted by the parties hereto.

If any rate of tax on output, as mentioned in the work order / purchase order, is increased or decreased, a new tax is introduced, an existing tax is abolished, or any change in interpretation or application of any tax occurs in the course of the performance of the contract, which was or will be assessed on the contractor in connection with performance of the contract, an adjustment of the contract value shall be made by addition to the contract price or deduction therefrom to ensure no profiteering on the part of Supplier /contractor.

26. Mobilization

26.1 The mobilisation period shall be 15 days from the date of issue of LoI (Letter of Intent) whichever is earlier.

26.2 Mobilization Advance

Mobilization Advance is not payable under this contract

27. Payment on Completion – Final Bill:

Following the issue of the virtual completion certificate in relation to the Works Contract by the ACTREC/Employer's, the Contractor shall submit to the ACTREC/Employer's their final account for the Works executed as Final Bill and, in any event, no later than two (2) months from virtual completion. It shall be accompanied by all abstracts, vouchers etc. supporting it and shall be prepared in the manner prescribed by the ACTREC/Employer's. No charges shall be allowed to the Contractor for the preparation of the Final Bill. No further claims shall be made by the Contractor after submission of the Final Bill, and other claims if at all, shall be deemed to have been waived and extinguished with the Contractor's free consent.

The ACTREC/Employer's /Cost Consultant shall evaluate the Final Bill including all variations approved by the ACTREC/Employer's and agree with the Contractor the amount properly due and thereupon certify such agreed amount. The ACTREC/Employer's shall pay this amount to the Contractor within the period of 30 days from the date of submission of Final Bill along with all necessary documents as stipulated by the ACTREC/Employer's.

The Final Bill due to the Contractor shall take into consideration the following deductions:

- a) All previous payments,
- b) Deductible part of mobilization advance
- c) The retention amount as stated above clause,
- d) TDS, tax deductible at source (TDS),
- e) Any other tax deductions as applicable at prevailing rates,
- f) And other back charges or deductions deemed appropriate by the PMC/Employer's.

28. TAX COMPLIANCES

a) Notwithstanding anything contained in clauses above, consequent to the introduction of the Goods and Services Tax ("GST"), Supplier / Contractor shall strictly and in a timely manner, adhere to and undertake all acts, omissions and compliances required under the applicable GST laws to ensure that Employer is able to avail the Input Tax Credit/set off/rebate/refund of the GST (along with cesses and surcharges, if relevant) applicable on the supply of goods / services made by the Supplier / Contractor to the fullest extent possible under law. In this regard, without limiting the generality of the foregoing

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obligation in any manner whatsoever, Employer reserves the right to specify, for the supply of goods / services envisaged under this Contract by the Supplier / Contractor, the particular compliances to be undertaken (including aspects like (i) whether Supplier / Contractor should charge IGST or CGST-plus-SGST; (ii) from where the billing should be undertaken and to which registration of Employer; (iii) whether the Supplier / Contractor should be responsible to generate the E-Way Bill; (iv) the format of invoices/credit and debit notes/advance receipt vouchers; (v) maintenance of 'Compliance Rating' above a specified threshold; etc) and the relevant timelines for such compliances based on the applicable GST laws.

- b) The Supplier / Contractor acknowledges that any failure in the foregoing obligations (including undertaking the ones specifically instructed by Employer, if any) can cause significant losses to Employer in the form of loss of GST credit, statutory interest liability on such credit loss (under applicable GST laws) and adverse impact on compliance rating and thus, undertakes to carry out this foregoing obligation with sincerity, due diligence and without any delay or demur.
- c) The Parties agree that Employer will reimburse the GST component on supplies received only when the corresponding credit has become available in the electronic credit ledger of the relevant GST registration of Employer.
- d) Without prejudice to any other indemnification obligation under this Contract, the Supplier / contractor agrees to, at all times, to hold harmless and indemnify Employer from and against all claims, liabilities, expenses, proceedings, costs and losses that may be suffered or incurred by Employer which may arise out of or in connection with any failure by the Supplier to adhere to its obligations under clause (a) above. In this regard, the Supplier also hereby indemnifies Employer from any costs, claim or liability arising out of any claim or action or omission by any employee or consultant or agent or outsourced staff of the Supplier / Contractor.

29. Variation in Quantities:

The term "Variation" as used in this Works Contract shall mean alteration or modification of the quantity of the work as shown in the Contract Drawings and desired by or referred to in the Bill of Quantities. This includes the addition, omission or substitution of any work, the alteration of the kind of standard of any of the materials or goods to be used in the work, and the removal from the site of any works, materials or goods executed or brought thereon by the Contractor for the purposes of the work other than work, materials or goods which are not in accordance with this Works Contract.

The ACTREC/Employer's may issue instructions requiring a variation and sanction in writing any variation made by the Contractor otherwise than pursuant to an instruction of the ACTREC/Employer's. No variation required by the ACTREC/Employer's or subsequently sanctioned by them shall initiate this contract.

All variations required by the ACTREC/Employer's or subsequently sanctioned by them in writing shall be measured and valued by the ACTREC/Employer's /Cost Consultant who shall give an opportunity to the Contractor to be present at the time of such measurement and of taking such notes and measurements as the Contractor may require.

The rates included within the Contract Sum are valid for any increase/decrease in quantities of items till the end of the Defects Liability Period or any extended period thereof. The Contractor is not eligible to claim any escalation in the rates of items due to variations in quantities to any extent and shall remain valid for increase/decrease to any extent of Contract Sum.

30. Employer's Right To Deduction of Set-off:

Notwithstanding anything contained in this Works Contract, the /Employer's shall be entitled to withhold, deduct or set-off any sum/s which the Contractor is liable to pay to the ACTREC/Employer's under the Works Contract for other projects either completed or ongoing elsewhere by the Contractor with the ACTREC/Employer's against any amount/s to be paid to the Contractor (including retention money) under this Works Contract.

31. Claims:

If any claim which may arise during the execution of work or may come to the knowledge of the Contractor then it should be brought to the notice of the ACTREC/Employer's in writing within 15 days of its occurrence or coming to their knowledge giving complete details of the claim.

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In any case if the Contractor fails to intimate / put forward to the ACTREC/Employer's in writing within 15 days of occurrence of the claim or coming to his knowledge, then that claim shall not be entertained by the ACTREC/Employer's under any circumstances and shall be an absolute waiver thereof.

No omission by the ACTREC/Employer's to reject any such claims and no delay in responding thereto shall be considered a waiver by the ACTREC/Employer's of any rights in respect thereof.

The **Engineer** shall review any claims within a reasonable period of time and cause them to be discharged in a manner considered appropriate after due deliberation thereon.

The Contractor shall be obliged to continue with the execution of the Works during the period in which its claims are under consideration by the **ACTREC/Employer's**, irrespective of the outcome of such claims.

Where in the opinion of the **Engineer**, additional payment or compensation is considered justifiable in accordance with the Contract; the ACTREC/Employer's shall arrange to pay the same in the same manner as for Running Account Bills.

The Contractor shall send to the ACTREC/Employer's and the Engineer once in every thirty days an account giving particulars, as full and detailed as possible, of all claims for any additional payment to which the Contractors may consider themselves entitled and of all extra or additional work ordered by the Engineer which they have executed during the preceding month.

32. Extra Items:

The rates to be used for payment of additional items / extra work shall generally be the unit rates provided in the Contract or shall be derived from the rates of items of similar nature in the contract as the case may be.

In the event that unit rates for extra work so executed are not available under the Contract rates for such works shall be as per the Clause 38 of general instruction to tenderer.

In all matters pertaining to the applicability of unit rates/prices and the admittance, or otherwise, of a claim for extra work or otherwise by the Contractor the decision of the **Engineer** shall be final and binding.

33. Order of Precedence:

The documents forming the contract are to be taken as mutually explanatory of one another. In the event of any discrepancy between the details and/or description of item/activity to be executed as per scope of work, the drawings and the technical specifications, then for the purpose of interpretation, the priority of document shall be in accordance with the following sequence –

- 33.1 Contract Agreement
- 33.2 Work Order
- 33.3 Letter of Intent (LOI)
- 33.4 Technical bid
- 33.5 Financial bid
- 33.6 General condition of contract, technical specifications
- 33.7 Condition of Contract Booklet (80 pages)
- 33.8 Full-scale Tender Drawings
- 33.9 Working Drawings
- 33.10 Relevant I.S Codes
- 33.11 Any other document forming part of the Contract;

Any further interpretation of above clause shall be at the discretion of the Engineer, whose decision shall be final and binding on the parties to the contract.

34. Termination of Contract by the Employer:

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35.1 If at any time during the execution of contract, the ACTREC/Employer's shall for any reason whatsoever, other than the default on the part of contractor, desire that the whole or any part of the work specified in the tender should be suspended for any period or the whole or part of the work should not be carried out at all, they shall give the Contractor a notice in writing of such desire and upon receipt of such notice the Contractor shall immediately suspend or stop the work wholly or in part as required after having due regard to the appropriate stage at which the work should be stopped or suspended so as not to cause any damage or injury to the work already done.

35.2 The Contractor should have no claim to any payment or compensation whatsoever by reason of or in pursuance of any notice as aforesaid, on account of any suspension, stoppage or curtailment except to the extent of work done up to the time of such suspension of work.

35.3 In case, the work is suspended for more than 15 days at the instance of the ACTREC/Employer's, then the Contractor shall be entitled only for an extension of time for an equivalent time period.

35.4 If the Contractor fails to carry out any of his obligation, or if the Contractor has not executed the works in accordance with the contract, the Engineer may give 15 days' notice to the Contractor requiring them to make good such failure and remedy the same

- 35.5** If the Contractor;
- a) Abandons or repudiates the contract or
 - b) Without reasonable excuses fails to proceed with the works in accordance with the technical specifications or
 - c) Persistently fails to supply sufficient skilled superintendent and workmen or suitable materials or equipment or
 - d) Persistently fails to make prompt payments to sub-contractors or for labour, materials or equipment or
 - e) Disregards laws, ordinances, rules, regulations, or orders of any public body having jurisdiction or
 - f) Fails to comply with statutory requirements or
 - g) Violates any provisions of the contract or
 - h) Disregards the authority of the PMC/Employer's or neglects to execute the work in accordance with the contract documents or
 - i) Disregards commitments given to achieve the required progress as per the agreed schedule or
 - j) Wilfully executes the work in bad faith or
 - k) Becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compound with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which has a similar effect to any of these acts or events.
 - l) Assigns the contract or subcontract the works without the required consent.

Then the ACTREC/Employer's may, without prejudice to any of their right or remedy and by means of written notice sought explanation from the contractor within 3days, why the said contract should not be terminated.

On receiving the reply from the contractor, the ACTREC/Employer's may terminate the contract. The Contractor shall then deliver all relevant documents, and other design documents made by or for contractor, to the Engineer.

The ACTREC/Employer's may upon such termination complete the works by any other Contractor on risk and cost of contractor. The ACTREC/Employer's shall be entitled to recover from the Contractor the

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extra costs, if any, of completing the works by appointing new contractor. The recovery of such expenses will be made from any amount due to contractor or plants and equipment mobilized on site by contractor.

35. Defects Liability Period:

The Period of 12 months from the date of virtual completion shall be termed as Defect Liability Period. During this period on notification of **Engineer**, the Contractor shall be bound to replace and/or rectify and make good all defective materials, items, part or accessory and/or workmanship which arise in the works or come to notice subsequent to the Virtual Completion of works. If Contractor fail to comply with their duties / obligation during period of Defect Liability Period, **Engineer** has power to depute any other agencies to replace and/or rectify and make good any defective materials, items, part or accessory and/or workmanship and cost with applicable taxes incurred towards same shall be adjusted as per actual plus 5% towards ACTREC/Employer's overhead/supervision charges from Contractors' withheld retention money.

36. Time For Completion:

Time is an essence of this contract. The entire scope of works along with interim milestones shall be virtually completed within the time period as mutually agreed between the ACTREC/Employer's and the Contractor before issuing the Letter of Intent/Award. The Contractor shall complete the works in all respect within the time schedule stipulated in the contract document, subject to any adjustment granted in writing by the **Engineer** under the terms of Contract.

Whenever the failure of the contractor to complete the work as per the above stipulated dates arises due to reasons which are not attributable to the Contractor then an appropriate extension of time shall be granted before expiry of the contract period. The Contractor shall, within 7 days from the occurrence of any such delay notify the ACTREC/Employer's in writing the cause of delay, whereupon the PMC/Employer's may be able to take an action to mitigate the further delay. The ACTREC/Employer's will ascertain the facts and extent of delay and may extend the time period for completing the work. On event of such extension of time the Contractor shall submit revised schedule indicating the date of completion of work as per the extended time period.

37. Daily Site Report:

A daily register shall be kept in the ACTREC office. The Contractor shall supply all detailed information every day at 10.00 am. For the day the ACTREC/Employer's and the Contractor's representatives shall jointly sign proceedings and the diary, every day, in token of its correctness. A work instruction book, serially numbered, shall also be kept in the ACTREC/Employer's office and all day to day instructions shall be given in that book. The Contractor's Representative shall report every day to see these instructions and sign them at the bottom in token of him having seen them. The Contractor shall throughout the Contract Period, submit daily site reports to the ACTREC/Employer's.

The reports shall include, but not be limited to:

- 37.1** Record of the progress of Works
- 37.2** Number of employees on the site
- 37.3** Number of men employed on individual
- 37.4** Plant and machinery at site (including an indication as to whether the plant is working or on standby)
- 37.5** The weather conditions and temperature at site
- 37.6** Events influencing the progress Notification of accidents (if any).

The records should include all staff employed by the Contractor, sub-contractors and nominated contractors. The Contractor shall maintain a site register, which records the name and time of arrival on site of any visitors.

At the end of every week, the Contractor shall submit a weekly progress report and look ahead programme in the agreed format with the ACTREC/Employer's. The Contractor shall supply all information regarding procurement of materials and progress of construction work, as required by the ACTREC/Employer's for compiling the weekly progress reports. This information shall be supplied at

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10.00 am every day. At the end of each month (on last Monday of the month) the Contractor shall submit a monthly progress report in a format agreed with the ACTREC/Employer's. The report shall include 2 sets of progress photographs taken from pre-determined locations, which illustrate the progression of the Works.

38. Extension of time:

40.1 If the work is delayed by force majeure, suspension of work by the ACTREC/Employer's, serious loss or damage by fire, ordering of extra or additional work, over and above that specified in this contract or other special circumstances of any kind whatsoever, other than through the default of the contractor and the delay be such, as would fairly entitle the contractor to an extension of time and which in the absolute discretion of the ACTREC/Employer's is beyond the control of the contractor, then upon the happening of any such event causing delay, the Contractor shall immediately give thereof in writing to the **Engineer**, stating the cause and the anticipated period of delay and in any such case, the ACTREC/Employer's may give a fair and reasonable extension of time for completion of work.

40.2 Such extension shall be communicated to the Contractor by the **Engineer** in writing. The contractor shall not be entitled to claim any compensation or over run charges whatsoever for any extension granted except admissible variation, if any.

40.3 In case if the date of validity of any Bank Guarantee submitted by the Contractor needs to be extended, ACTREC/Employer's shall inform the contractor. If the contractor fails to extend the period of bank guarantee, after the ACTREC/Employer's has given the contractor written intimations therefore, the ACTREC/Employer's reserves the right to deduct the amount from the Contractor's bill stand/or from any amount which may become due to the Contractor.

39. Scope and Intent of Work:

The general character and the scope of the work shall be as illustrated and defined by the Specifications and the Bills of Quantities herewith attached and by the Tender Drawings. If the Contractor shall find any discrepancy in or divergence between the Contract Drawings and or the Contract Bills, they shall immediately give to the **Engineer** a written notice specifying the discrepancy or divergence and the **Engineer** shall issue instructions in regard thereto.

40. Execution of Works:

The Contractor shall execute the Works subject to and in accordance with this Works Contract in all respect, including inter-alia Initial Work Programme, Project Schedule, Field Quality Plan, BOQ, drawings and specifications to the reasonable satisfaction of the ACTREC/Employer's, and in conforming to all reasonable instructions and rules regulating the due performance of the Works.

41. Duties of Engineer:

The **Engineer** shall carry out such duties in issuing decisions, certificate and orders as are specified in the contract and such additional functions as are delegated to him/her by the ACTREC/Employer's from time to time. The **Engineer** shall co-ordinate, watch and supervises the works and examines materials to be used or workmanship employed in connection with the works.

Provided always that: -

45.1 Failure of the **Engineer** to disapprove any work or materials shall not prejudice the power of the ACTREC/Employer's and at his discretion the ACTREC/Employer's Representative or the Architect thereafter to disapprove such work or materials.

45.2 If the Contractor is dissatisfied by reason of any decision of the **Engineer**, they shall be entitled to refer the matter to the ACTREC/Employer's Representative, who shall thereupon confirm, reverse or vary such decision.

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42. Documents Mutually Explanatory:

46.1 All documents that form part of the contract shall be complimentary and cumulative and not alternative and shall be mutually explanatory and what is required by any one document shall be required by all.

46.2 In the event of ambiguities, discrepancies, and contradictions between the bills of quantities, drawings and/or specifications, the **Engineer** shall explain the same and shall in his/her sole discretion, determine which of the conflicting requirements govern and/or clarify any such ambiguity or discrepancy and the Contractor shall comply with such determination and shall not be entitled to any extension or time of any compensation due to such determination.

In case of difference in opinion, the decision of the **Engineer** in this regard shall be final and binding.

43. Contract Agreement:

The Contractor shall, enter into and execute a contract agreement on relevant stamp paper to be prepared and completed at the cost of the ACTREC/Employer's when called upon to do so, by the ACTREC/Employer's as per the format provided by the Employer.

44. Laws Governing the Contract:

The Contractor shall be governed by the Indian Laws for the time being in force and till the period of satisfactory performance of the Contract.

The Courts of Mumbai alone shall have exclusive jurisdiction in respect of any matter, claim or dispute arising out of or in relation to this Contract.

45. Instructions:

The Contractor shall forthwith comply with and duly execute any works comprised in such instructions issued to them by the **Engineer** in regard to any matter in respect of which the **Engineer** is expressly empowered by these conditions to issue instructions provided always that verbal instructions, directions and explanations given to the Contractor or their work representative by the **Engineer** shall if involving a variation be confirmed in writing.

If within seven days after receipt of a written notice from the **Engineer**, requiring compliance with an instruction the Contractor does not comply herewith, then the ACTREC/Employer's may employ and pay other persons to execute any work whatsoever which may be necessary to give effect such instructions & all cost including applicable taxes incurred with such employment shall be recoverable from the Contractor by the ACTREC/Employer's as a debt or may be deducted by them from any amount due or to become due to the Contractor under this Contract.

Upon receipt of what purports to be instruction issued to them by the **Engineer** the Contractor may request the **Engineer** to specify in writing the provision of these conditions which empowers the issue of the said instruction. The **Engineer** shall forthwith comply with any such request, and if the Contractor shall thereafter comply with the said instruction, then the issue of the same shall be deemed for all purposes of this Contract to have been empowered by the provision of these Conditions specified by the Site in-charge in answer to the Contractor's request.

All instructions issued by the **Engineer** shall be in writings. Any instruction issued orally shall be of immediate effect, but shall be confirmed in writing by the Contractor to the **Engineer** within seven days

46. Material – Storage, Issue & Reconciliation:

46.1 The materials issued free of cost by the ACTREC/Employer's are subject to reconciliation and permissible wastage limits as defined herein under. If the wastage of the materials exceeds the permissible limit, recovery for excess material shall be made from the said bill @ 1.2 times of the rate of purchase of the materials (rate based on weighted average of cumulative purchase done upto date from the start of the project including taxes). Reconciliation statement shall be submitted along

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with each Running account bill as well as the final bill. The ACTREC/Employer's reserves the right to check the physical stock against the stock statement of the free issued materials at any point of time. All recoveries will be made with additional applicable taxes.

46.2 Supply of all materials required to complete the work excluding those supplied free by PMC/Employer's shall be in the scope of the Contractor.

46.3 Material supplied by the Contractor shall be as per relevant IS codes &/or as per specification. For all bought out items, the Contractor shall submit samples and seek written approval from **Engineer**. Only on written acceptance, the Contractor shall procure such approved items.

50.4 Generally all free issue materials shall be issued from ACTREC/Employer's stores. The Contractor shall have to make their own arrangement for receiving the materials, loading, transporting and unloading the same to their own stockyard at no extra cost. Wherever possible the ACTREC/Employer's shall try to deliver material directly to the Contractor's stockyard but in such cases, the Contractor shall have to unload the material at their own cost. Storage space of Cement shall be constructed as per approved detail of ACTREC/Employer's.

50.5 It is the responsibility of the contractor to raise indent on the ACTREC/Employer's for free issue materials. The contractor shall raise quarterly indent after calculating its consumption commensurate to the work programme and must submit the same one month prior to the beginning of each quarter. Delay in raising indent may subsequently delay the process of supply for which the contractor shall be purely accountable.

50.6 Reconciliation of free issue materials will be based on given consumption norms of such materials in permanent works. Consumption coefficients will be arrived at based on IS codes/CPWD norms. Any free issue materials consumed for creating supporting infrastructure like survey pillars, water storage vat, safety barricades, etc. shall not be absorbed in reconciliation.

50.7 The unused or partly used free issue materials will be returned to store in good condition subject to approval of **Engineer**.

50.8 Material testing: The materials procured by the Contractor and material issued as free issue material by ACTREC/Employer's shall be tested as per the testing as per IS code. All such tests shall be arranged by the Contractor at his own cost.

50.9 It shall be the duty of the Contractor to inspect material supplied to him by the ACTREC/Employer's at the time of taking delivery and satisfy himself about the quality & quantity and that they are in good conditions. Necessary tests to ensure the same shall be conducted by the Contractor at their own cost as per the standard practice. Any defect detected in the free issued material(s) shall be brought to the notice of **Engineer** within 2 days of issue failing which it will be treated as material issued in good and defect free condition. In case of delay in reporting the defect, the ACTREC/Employer's may not accept the report and in that case the cost of replacement will be debited to the Contractor's account.

50.10 Housekeeping shall be of utmost importance - storage of material shall be in organized manner and in proper compartments. Storage on suspended floors shall not be permitted unless specifically approved in writing by the ACTREC/Employer's for specific materials in specific locations and in approved manner.

50.11 Cleaning in STP Premises will be in ACTREC/Employers scope.

50.12 deleted

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50.13 The Contractor shall arrange for the storage space for the materials issued free to or brought in by the Contractor, necessary arrangement for protection of the same in terms of security and/or preservation shall be made by the Contractor.

50.14 The materials which has no relevance with the subject work or have been rejected by the PMC/Employer's shall not be unnecessarily dumped at site.

50.15 The Contractor will not bear the following costs:

- (a) Cost of unloading of materials (including mathadi charges) directly issued free to them by the ACTREC/Employer's.
- (b) Cost of testing from external agency of the free issue materials as well as the materials provided by the Contractor.
- (c) Cost of insurance of all the materials under the responsibility of the Contractor (including those supplied free by the ACTREC/Employer's).
- (d) Cost of any or all transportation, loading, unloading etc. in case free issue materials are to be received from ACTREC/Employer's central storage space within the site.

All the materials and equipment brought to site by the Contractor for full performance of the contract must be provided through normal channels and must include import duties (if any), octroi, sales tax and other charges and must be the best of their kind available and efficient for carrying out of the work.

51. Quality of Work:

The quality of work will be perfectly as per Technical specification and as detailed in BOQ or elsewhere in the order or as per relevant Indian Standard and acceptable to the PMC/Employer's and/or their authorized representatives.

All works to be executed and material supplied shall confirm to the Field Quality Plan (FQP) of the ACTREC/Employer's, which shall be deemed as an integral part of the Contract and shall be made available to the Contractor along with the tender. The FQP shall form the basis of inspection and testing. Further, the Contractor shall fulfil all required documentation as advised by the ACTREC/Employer's from time to time while executing the work.

The Contractor shall immediately remove from the works any material and/or workmanship which in the opinion of the ACTREC/Employer's /Consultants is defective or unsuitable and shall substitute proper materials and/or workmanship at their own cost.

If they fail to proceed at once with the replacement of rejected materials and/or the correction of defective workmanship, the ACTREC/Employer's /Consultant may by contract or otherwise replace such materials and/or correct such workmanship and charge the cost thereof to the Contractor or may terminate their right to proceed further with the work.

The Contractor shall furnish promptly without additional charge all reasonable facilities, labour, materials and machineries, necessary for the safe and convenient inspection and test at site that may be required by the ACTREC/Employer's /Consultant.

During the inclement weather the Contractor shall take necessary protections for continuing works and shall ensure that the quality standards for works executed in such periods comply with the acceptable norms.

Should the work be suspended by reason of rain, strike, lock outs or any other cause, the Contractor shall take all precautions necessary for the protection of their work, material and equipment. The PMC/Employer's shall not be held responsible for any damage caused during this state.

52. Initial Work Programme, Project Schedule and Progress Chart:

While submitting tender, the contractor shall submit Initial work programme indicating completion date of each milestone and for the whole project matching with the total Contract duration. This initial

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programme with completion dates against each building shall form the interim milestones and imposition of Liquidated Damages and penalties shall take place against these interim milestones. Once the Contractor is issued the Letter of Intent/Letter of Award, the Contractor shall prepare detailed programme with cost based on the Initial Programme using Microsoft Project software and submit the same for approval of the ACTREC/Employer's /Consultant and for their record within 21 days of the Award of the Contract. This programme will then be called the Project Schedule.

The charts shall indicate the expected date of commencement and completion of each of the items of the work, cost against each item of work and shall be in a form approved by the ACTREC/Employer's. The total cost arrived from this schedule should exactly match with the Contract Sum. The chart shall also indicate the scheduling of samples, Shop Drawings and approvals. This detailed approved Project Schedule shall form the basis for calculation of deemed planned cost for escalation purpose.

53. Right of Access:

The ACTREC/Employer's and their authorized representatives shall at all reasonable times have access to the Works and to the workshops or other places of the Contractor where work is being prepared for the Works Contract and when work is to be so prepared in workshops or other places of a Sub-Contractor (whether or not a nominated Sub-Contractor), the Contractor shall have a term in the sub-contract so as to secure a similar right of access to those workshops or places for the ACTREC/Employer's and their representatives and shall do all things reasonably necessary to make such a right effective.

54. Disorderly Conduct:

The Contractor shall upon request of the **Engineer** immediately dismiss from the site any person employed thereon by them who may in the opinion of the **Engineer** be incompetent or misconducts himself and such person shall not again be employed for the Works Contract without the permission of the **Engineer**.

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his employees/workmen and shall take all necessary actions for the preservation of peace and protection of persons and property in the neighborhood of the Works.

55. Contractors Field Organization and Equipment's:

55.1 Engineer: The Contractor shall constantly keep on their work during its progress sufficient number of qualified and competent **Engineers** to ensure proper execution of the work as per ACTREC/Employer's requirement. They will work under the leadership of a competent **Engineer** who will be responsible for the carrying out of the works to the true meaning of the Drawings, specifications and Schedule of Quantities, Consultants' instructions and directions to the satisfaction of the Consultants. Any directions or instructions given to him/her by the ACTREC/Employer's or their Consultants shall be deemed to have been issued to the Contractor.

55.2 Equipment: The Contractor shall provide and install all necessary hoists, ladders, scaffolding, tools, tackles, plants, all transport for labour, materials and plant necessary for the proper carrying on execution and completion of the work to the satisfaction of the Engineer.

55.3 Security: The ACTREC shall make their security arrangements to guard the Site and premises at all times, at ACTREC own expense. The security arrangements shall be adequate to maintain strict control on the movement of material and labour.

55.4 ACTREC shall extend the security arrangements to guard the material stored and/or fixed on the premises.

56. Gate Pass System:

Suitable gate passes for materials, equipment and for workmen & personnel of all agencies working at site will be formulated by **Engineer**. No materials or equipment shall be taken out of the site without the

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written consent of **Engineer**. Workmen & personnel of all agencies shall require a valid gate pass to enter the area under construction.

The above arrangement does not absolve the Contractor of any of his responsibilities to safeguard their material and PMC/Employer's supplied materials and equipment as called for elsewhere in the documents.

57. Scaffolding, Staging, Guardrails:

The Contractor shall provide scaffolding, staging, guardrails, temporary stairs which shall be required during construction. The support for the scaffolding, staging, guardrails and temporary stairs shall be strong, adequate for the particular situation.

The temporary access to the various parts of the Building under construction shall be rigid and strong enough to avoid any chance of mishaps. The arrangement proposed shall be subject to the approval of the Engineer.

58. Statutory Obligation, Notices, Fees & Other Charges:

The Contractor shall comply with and give all notices required by any Government authority, and instrument, rule or order made under any Act or Parliament or any regulation or Bye-law of any local authority relating to the work or with whose system the same is or will be connected. The Contractor before making any variation from the Contract Drawings or Contract Bills necessitated by such compliance shall give to the ACTREC/Employer's a written notice specifying and giving reasons for such variations and the ACTREC/Employer's may issue instruction in regard thereto. If within 10 days of having given the said written notice, the Contractor does not receive any instructions in regard to the matters therein specified, they shall proceed with the work confirming to the Act of Parliament, instrument, rule, order, regulations or Bye-law in question and any variation thereby necessitated shall be deemed to be variation required by the ACTREC/Employer's.

The Contractor shall not pay and indemnify the ACTREC/Employer's against liability in respect of any fees or charges (including any rates and taxes) legally demandable under any Act of Parliament, instrument, rule or order or any regulation or Bye-law or any local authority in respect of the Work.

59. Royalties & Patent Rights:

All royalties or other sums payable in respect of supply and use in carrying out the Work as desired by or referred to in the Contract Bills of any patented articles, process or inventions shall be deemed to have been included in the Contract sum, and the Contractor shall indemnify the ACTREC/Employer's from and against all claims, proceedings, damages, costs and expenses which may be brought or made against the ACTREC/Employer's or to which they may be put by reason of the contractor infringing or being held to have infringed any patent rights in relation to any such articles, processes and inventions.

60. Sub-Contractor:

As soon as practicable and before awarding any Sub-Contract, the Contractor shall notify the ACTREC/Employer's in writing the names of the Sub-Contractor proposed for the principal parts of the work and for such other parts if the ACTREC/Employer's may allow and shall not employ any of whom the ACTREC/Employer's may have a reasonable objection.

61. Works To the Satisfaction of MEP Consultant:

The Contractor shall execute and maintain the works in strict accordance with the contract to the satisfaction of the Consultant and **Engineer** and shall comply with and adhere strictly to the Consultant's and **Engineer's** instructions and, directions on any matter whether mentioned in the contract or not, touching or concerning the works. The PMC/Employer's decision relating to the use and quality of materials and visual and aesthetic effect shall be final.

62. Program Evaluation and Review:

As mentioned earlier, the contractor shall submit Network based integrated time schedule called Initial work Programme with their offer which shall include details of mobilization of resources, materials, equipment and labour. After award of Contract, the Contractor shall expand the information given in the

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Initial Work Program to form the Project Schedule as mentioned earlier in clause under “Initial Work Programme/Project Schedule and Progress Chart until it is suitable for the efficient review of progress during the execution of the works and the critical path shall be determined.

It is the Contractor's obligation to ensure that such a program, duly approved by the ACTREC/Employer's, is available within 21 days of the commencement of work. The Contractor shall, on a fortnightly basis, or additionally whenever required by the **Engineer** or the ACTREC/Employer's Representative review and update this program and furnish for their information, in writing, details of the Contractor's arrangement for executing the works and of the constructional plant and temporary works which the Contractor intends to supply, use or construct, as the case may be.

63. Site Order Book:

The **Engineer**, the Consultants and their representative shall communicate or confirm their instructions to the Contractor in respect of the execution of work during site inspections in a "Works Site Book" maintained at the Site office of the **Engineer**. The pages of this book will be numbered and in duplicate. The Contractor or their authorized representative shall confirm receipt of such instructions by signing against the relevant orders in the book. If desired, the Contractor shall be furnished a copy of such instructions.

64. Site Security:

The ACTREC shall make their own security arrangements to guard the site and premises at all times. Security arrangements shall be adequate to maintain strict control on the movement of labour and materials.

65. Care of Works:

From the commencement of the Works until completion the Contractor shall take full responsibility for the care thereof. Provided that if the **Engineer** shall issue a Certificate of Completion in respect of any of the Works, the Contractor shall cease to be liable for the care of that part of the Works from the date stated in the Certificate of Completion. However, contractor will only be responsible for any defects arising out of poor quality of workmanship or material of such works in future.

66. Co-Operation with Other Contractors:

The Contractor shall, in accordance with the requirements of the **Engineer**, afford all reasonable opportunities for carrying out their work to other Contractors employed by the ACTREC/Employer's and their workmen and to the workmen of the ACTREC/Employer's who may be employed in the execution on or near the Site of any work not included in the Contract. The contractor shall not cause any hindrance or obstruction or impend their progress in any way.

In respect of the work of other contractors and agencies, where the commencement or progress of such work of any other contractor, or agency, is dependent upon the completion of particular portions of the contractor work or generally upon the contractor maintaining progress in accordance with the approved coordinated construction programme, it shall be the responsibility of the Contractor to complete with such portions and maintain such progress.

If any damage is caused to the Contractors work by any other contractor, the assessment and remedy including costing of the remedy will be as per the discretion of the **Engineer**.

67. Clearance of Site on Completion:

Before the **Engineer** issues the Certificate of Completion, the Contractor shall clear away and remove from the Site, all constructional plant, surplus materials belonging to Contractor, rubbish and temporary works of every kind and leave the whole of the Site and Works clean and in workmanlike condition to the satisfaction of the **Engineer** and the local authority.

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68. EMPLOYER'S POWER TO RECOVER

The ACTREC/Employer's shall, on a report having been made by an inspecting officer as defined in the Works Contract Labour regulations, Provident Fund Regulations, ESIC, have the power to deduct from the money due to the Contractor any sum required or estimated for making good the loss suffered by a worker or workers by reason of non - fulfilment of the Works Contract Conditions for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the norms of the Works Contract or non-observance of the said Contractor's Labour Regulations,

69. CORRECTION OF WORK BEFORE VIRTUAL COMPLETION

All references to correction of Works in this Section are related to the works undertaken by the appointed Contractor.

The ACTREC/Employer's and/or their representatives shall jointly conduct an extensive inspection just prior to the Virtual Completion of the Works and shall prepare a list of materials and workmanship which are defective or damaged or of substandard quality or improperly executed or generally unacceptable due to not being in conformity with the requirements stipulated in the Works Contract. The Contractor shall promptly remove, replace, re-execute, rectify and make good, to conform to the requirements stipulated in the Works Contract and to the satisfaction of the ACTREC/Employer's all such materials, equipment, and/or workmanship included or itemized in the said list and the Contractor shall bear and pay for all expenses in connection therewith and consequent thereon and incidental thereto, including the cost for all remedial work on the work of other contractors destroyed or damaged by such removal, replacement, re-execution, rectification and making good. If the Contractor fails to remove, replace, re-execute, rectify and make good the rejected materials, equipment, and/or workmanship within a reasonable time, fixed by written notice, the ACTREC/Employer's may employ and pay other contractors/ agencies to carry out such removal, replacement, re -execution, rectification and making good and all expenses incurred in connection therewith, including all damages, losses and expenses consequent thereon and incidental thereto shall be recovered from the Contractor and shall be deducted by the ACTREC/Employer's from any money that may be payable or that may become payable to the Contractor.

70. VIRTUAL COMPLETION OF WORKS

All references to Virtual Completion of Works in this Section are related to the works undertaken by the appointed Contractor.

The Works shall be considered as Virtually Complete only

- a) Upon fulfilment of the procedure laid down in above clause,
- b) Only after the Works have been completed in every respect in conformity with the Works Contract Documents,
- c) After all the testing and commissioning of works have been undertaken and approved by ACTREC/Employer's after the Site has been cleared, and
- d) When the ACTREC/Employer's has certified in writing that the Works are Virtually Complete.

The Defects Liability Period shall commence from the date of issue of such Virtual Completion Certificate by the ACTREC/Employer's.

Should, before Virtual Completion, the ACTREC/Employer's decide to occupy any portion of the Works, the same shall not constitute as an acceptance of any part of the Works, unless so stated in writing by the PMC/Employer's. Prior to issue of the Virtual Completion Certificate, the Contractor shall submit and hand-over to the ACTREC/Employer's the guarantee / warranty certificates associated with works and everything else necessary for the proper use of the Works for other works packages.

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71. CERTIFICATES

The Contractor shall submit all Guarantee/Warranty certificates of part/s of works, where applicable, during the course of execution and should be valid till the end of defect liability period for a period of 12 months from the date of installation or as specified otherwise, whichever is later, shall be submitted by the Contractor to the ACTREC/Employer's within 1 (one) month from the date of installation. Guarantee/warranty formats should be as approved by ACTREC/Employer's.

72. CONTRACTOR'S OTHER OBLIGATIONS

72.1 Safety compliance

The Contractor shall at their own expense provide all personnel protective equipment (safety helmets, shoes, belts, goggles, gumboots, gloves, mask, earplugs, first aid box, horizontal and vertical safety nets, barricades etc.) for their workmen in the course of carrying out the Works. The Contractor shall comply with the ACTREC/Employer's safety regulation including safety debit system (as enclosed in Safety Rules and Regulations) imposed on the site, failing which the Contractor shall not be permitted to work on site.

72.2 Provident fund

All statutory obligations according to acts/rules/regulations of the government in force has to be observed/maintained/followed by the Contractor with regards to the labours/employees/workers engaged in the project irrespective of the fact whether they are of permanent/temporary and/or casual in nature and that the ACTREC/Employer's will have no obligation to keep vigil on this issue. Any disputes/controversies in this respect will have to be met up by the Contractor at his own cost.

72.3 Protection

The Contractor shall protect existing works/structures voids, lift, shafts or works by the other contractors. They shall ensure that no nuisance of any kind or inconvenience is caused to the people occupying the existing building or in adjacent plots.

72.4 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or municipal authorities for the purpose of dealing with and overcoming such Epidemics.

72.5 Testing of works

All material shall be tested before use/installation and necessary test certificates shall be submitted for approval of ACTREC/Employer's.

The Contractor shall carry out all tests for performance after installation in the presence of the ACTREC/Employer's /Consultant as per specifications. The Contractor shall be responsible to any damage to the personnel or equipment resulting from improper test procedures. The Contractor shall check and test all materials supplied by the PMC/Employer's and installed by the Contractor. All equipment shall be in conformity with the test procedures outlined by the manufacturer or relevant IS.

The Contractor shall provide the PMC/Employer's with complete test certificates on an approved basis method of testing format

All defective materials/equipment supplied by the Contractor and defects due to poor workmanship revealed through field testing shall be rectified free of cost by the Contractor without affecting the Master Programme.

72.6 Standards

All materials/equipment supplied are require to be designed, manufactured, tested and installed in accordance with the latest revision of the Indian Standards (IS). All the process/procedures adopted

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during execution of the work must conform to the provisions of the latest revision of relevant Indian Standards.

One set of copies of all relevant IS codes shall be provided by the Contractor and available at site office at all times.

72.7 Fossils/antiquities

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site of the works shall be deemed to be the absolute responsibility of the ACTREC/Employer's. The Contractor shall take reasonable precautions to prevent their workmen or any other persons from removing or damaging any such article or thing and shall immediately, upon discovery thereof, and before removal, acquaint the ACTREC/Employers of such discovery and carry out, at the expense of the ACTREC/Employer's, the ACTREC/Employer's instructions as to the proper disposal of the same.

73. LABOUR HUTMENT

ACTREC shall at their own cost, make environment friendly & healthy labour hutments on site including all necessary safety and security arrangements. The labour hutment shall be constructed with brick masonry with GI roofing or clay tile roofing. Only usage of non - combustible materials are allowed for construction of labour hutment or any infrastructure facility related to this tender. ACTREC shall provide sufficient number of toilets at site premises as per the site requirements for their staff/workers and shall maintain in hygienic condition at their own cost.

74. WATER & POWER

74.1 Drinking & Construction Water: Water for Construction and Drinking purpose at Site/Labour hutments shall be arranged by ACTREC.

74.2 Electricity for Construction, Site office, store etc.: Electricity for Construction at Site/Labour hutments shall be arranged by ACTREC at single point.

75. CORRUPT PRACTICES

No representative of ACTREC/Employer's/Services Consultant or any one directly or indirectly involved in this Project shall be offered by the Contractor or any of their Sub Contractor, directly or indirectly, any benefit, fee, commission, dividend, gift or consideration of any kind in connection with the services and will not at any time offer gratuities or merchandise cash services or other inducement.

The Contractor must be aware of and familiar with the existence, provisions and purposes of the Anti-bribery laws. The prevention of corruption Act of 1998 (Indian Law) of the Indian penal code and the Foreign contribution (Regulation) Act of India (1976).

76. PHOTOGRAPHS AND VIDEOCDs

The Contractor may take photos and video from the locations approved by the ACTREC/Employer's to show the progress of work at monthly intervals throughout the construction period and furnish photographs and video CDs of required duration duly indicating the date of recording. Each photograph shall be marked with the description of the photograph and location from which it was taken. The copy right of all photographs shall be vested in the ACTREC/Employer's and are not to be used without their permission under any circumstances.

77. ASSIGNMENT / SUBLETTING

The Contractor shall not assign or sublet the Works or any portion of the same to any SubContractor or any other agent without the written consent of the ACTREC/Employer's.

The Contractor shall not assign the right to receive money due under the Works Contract to any person or ACTREC/Employer's without prior written consent of the ACTREC/Employer's, and no such

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assignment without consent, whether voluntary, involuntary or statutory shall be binding on the ACTREC/Employer's.

Any written consent given by the ACTREC/Employer's regarding Assignment to the Contractor shall not relieve the Contractor from any of its responsibilities, obligations and liabilities under this Works Contract.

The Contractor shall not sub-let the works either in whole or any part thereof without the prior written consent of the ACTREC/Employer's except as provided for in these conditions.

Such consent, if given, shall not relieve the contractor from any liability or obligation under the contract and they shall be responsible for the acts, defaults and neglects of any sub-contractor, their agents, servants or workmen as fully as if they were the acts, defaults or neglects of the contractor, their agents, servants or workmen. Provision of labour on a piecework basis shall not be deemed to be a subletting under the clause.

78. PROVISIONS AND USE OF SITE FACILITIES

The Contractor shall keep clean and maintain all plant, equipment and other property loaned to him by the ACTREC/Employer's and shall indemnify the ACTREC/Employer's against any loss, expenses or damages occurring to the same.

The tools belonging to or provided by the Contractor, their servants or agents shall be at the sole risk of the Contractor and any loss or damage to the same or caused by the same shall be the sole liability of the Contractor. Any insurance against such loss or claim shall be the sole responsibility of the Contractor.

The Contractor, their staff, sub-contractors, and nominated sub-contractors, suppliers and agencies shall not wrongfully interfere with the use of plant, gangway, scaffolding, mechanical hoists, appliances, etc, belonging to or provided by other contractors or be guilty of any breach or infringement of any Ordinance or bye-law, regulation, order or rule made under the same; provided that nothing herein contained shall prejudice or limit the rights of the Contractor in carrying out their respective statutory duties or contractual duties under this Works Contract.

The Contractor shall at their own expense erect necessary workshops, enclosures including lock sets for their tools stored therein, all with prior approval of the ACTREC/Employer's.

ACTREC shall provide and maintain site office at a location and open at all reasonable hours to receive directions, instructions, or other communication with contractor.

ACTREC shall provide and erect all necessary sanitary convenience for the Site -staff and the workmen maintain in a clean orderly condition and clean and deodorise the ground after removal.

79. HOUSE KEEPING

The Contractor shall be required to maintain the site, works and surroundings in a neat and orderly manner, free of accumulating debris, haphazard stacking of materials, unhygienic and unsafe environment. Cleaning of the site at all levels inside and outside, removal of unwanted materials, packing cases etc, shall be undertaken at least once on daily basis and all unwanted material/debris shall be carted away from site and disposed off on a daily basis.

The Contractor shall remove all debris in connection with the work on a daily basis and ACTREC will transport the debris off site with obtaining necessary permission.

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80. WORKMEN'S COMPENSATION POLICY

The Contractors responsible for providing Workmen's Compensation Liability Insurance in accordance with Workmen's Compensation Act 1923, Minimum Wages Act 1948 and Contract Labour (Regulation and Abolition) Act 1970 to cover the following:

Insure the Contractor and its subcontractors for liability for loss, damage, claim, demand, action or proceeding cost and expense arising at common law or under any statute (including any statute relating to accident compensation or ACTREC/Employer's liability) as a result of personal injury to, or the death of any person employed by the Contractor or by any subcontractor in connection with the execution of the Works or the performance of the Contract. Contractor shall ensure that they provide adequate cover to all their employees / workmen / subcontractor's workmen and officers deployed at the site as per provisions of Workmen's Compensation Act 1923.

The contractor shall keep the ACTREC/Employer's indemnified at all times at any default on this account or from any expenses, penalties, claims or liabilities arising out of their negligence / misconduct.

In case, it is found that the workmen compensation policy covers less no. of workers / employees / staff / officers than those actually working at site then the ACTREC/Employer's reserves the right to pay the insurance amount required for covering all the remaining workers / employees / staff / officers and this amount plus the overheads of the ACTREC/Employer's will be recovered from the contractor after giving him not more than two written intimation to do the necessary compliance.

81.ENGAGEMENT OF LABOUR AND LABOUR LAWS

The contractor shall give an undertaking on their letterhead that they will be fully and solely responsible for compliances of Child Labour (Prohibition and Regulation) Act, 1986, Payment of wages Act, 1948, Employers Liability Act, 1938, Workmen's compensation Policy Act, 1923, Contract Labour (Regulation and Abolition) Act, 1970 and rules there under from time to time. The contractor should give undertaking on their letter head that they will not employ any illegal element at their work site and will keep the PMC/Employer's indemnified at all times at any default on this account or from any expenses, penalties, claims or liabilities arising out of his negligence / misconduct. The Contractor shall assume liability & shall indemnify the PMC/Employer's from every expenses, liability or payment by reason of the application of any other labour law act, rule and regulations existing or to be introduced at a future date during currency of the contract.

The Contractor shall comply with the latest version of the following labour and industrial laws, rules, regulations, orders etc. of various authorities duly updated and any new and existing laws, rules, regulations, orders etc. not listed below but relevant to the execution of works under this contract.

- i. Payment of Wages Act 1936
- ii. Minimum Wages Act 1948
- iii. Employees Liabilities Act 1938
- iv. Industrial Disputes Act 1947
- v. Maternity Benefits Act 1961
- vi. Contract Labour (R & A) Act 1970
- vii. Workmen's Compensation Act 1923
- viii. Contract Labour (R & A) Central Rule 1971
- ix. Child Labour (Prohibition & Regulation) Act 1986
- x. Building & other construction workers (Regulation of Employment & Condition of Service) Act 1996
- xi. Building & other construction Welfare Cess Act 1996
- xii. Industrial Employment Act 1946
- xiii. Personal Injuries (Compensation Insurance Act)
- xiv. Payment of Bonus Act 1965
- xv. Provident Fund Act.
- xvi. Employees State Insurance Act

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81.1 The contractor shall make their own arrangements for the engagement of labour, local or otherwise, and for their transport, housing and adjustment. All labour engaged by the contractor shall be and remain the employees of the Contractor and no claim shall lie against the ACTREC/Employer's by them or Contractor or the Sub-Contractor or any person claiming on their behalf against the ACTREC/Employer's in respect of any right or benefit due to them in their employment.

81.2 The contractor shall obtain a valid license under the contract labour (Regulation and Abolition) Act 1970 before the commencement of the work and continue to have a valid license until the completion of work or expiry of maintenance period, if applicable.

81.3 The Contractor shall pay the labour employed by them directly or through Sub-Contractors wages not less than the minimum wages notified under the minimum wages act.

81.4 The Contractor shall in respect of labour employed by him either directly or through Sub. Contractor comply with or cause to be complied with the provisions of the adjustment of wages act 1936, minimum wages act, 1948, Employers liability benefit act 1938, workmen's compensation act 1923, maternity benefit act 1961, and contract labour (Regulation and Abolition) Act 1970, Employees provident fund act and any act, rules or regulations for labour as may be enacted by the Government or any modification thereof or any other law relating thereto and rules made there under from time to time.

81.5 The ACTREC/Employer's shall, on a report from inspective officer, defined under contract labour (Regulation and Abolition) Act 1970, have the power to deduct from the sum due to the contractor any sum notified under the provisions of the relevant Act.

81.6 The Contractor shall not give, barter or otherwise dispose of to any persons any arms or ammunition of any kind, or permit such actions at site by their agents, employees or Sub - Contractors.

81.7 In the event of any outbreak of illness of an epidemic nature, the contractor shall comply with and carryout such instructions, orders and requirements of medical or sanitary authorities for the purpose of dealing with and overcoming the same. The Contractor shall also, at their expense conform to all anti-malarial instruction given to them by the **Engineer** or by any local authority including filling up of borrow pits.

81.8 The contractor shall be liable to comply with all the statutory enactments which shall be applicable to it as a result of the contract under taken by it. The contractor in compliance with the provisions of law undertakes to submit all the statutory returns wherever required. In case of breach of any statutory enactment or rule framed there -under the contractor alone shall be liable for the consequences while no proceeding or penal action for such breach shall be maintainable against the ACTREC/Employer's.

81.9 The contractor undertakes to pay wages to it workers/ employees not less than the minimum wages as prescribed by the government and revised from time to time. The contractor shall also ensure full compliance with regard to the provisions of employees provident fund and miscellaneous provisions act and the scheme framed there under and shall deposit the requisite contributions (both ACTREC/Employer's and his employees share) with the concerned authorities with in the stipulated dated as laid down under law and also submit the statutory returns as under required. If the contractor is already a covered unit under the EPF and MP Act, it would cover the worker. Employees under the code number already allotted by the concerned RPFC and in case no such code number has been allotted, the contractor shall ensure that it obtains the coverage before the commencement of the project and PF contributions in respect of the worker/employees engaged in or in connection with the project are enrolled as member of the fund including those employed through a Sub-Contractor.

81.10 In the event of the applicability of the ESI Act, the contractor shall comply with the provisions of the said Act and deposit ESI contributions. If for any reason, the ACTREC/Employer's is required to pay any ESI contribution in respect of the labour engaged by the contractor/ sub-Contractor, law or otherwise,

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the same shall be immediately reimbursed by the contractor to the PMC/Employer's, failing which the amount so paid shall be recovered from the bills payable to the contractor.

81.11 The contractor shall obtain an insurance policy against the accident (s) in respect of all the workers/ employees including those employed through a Sub-Contractor providing adequate coverage any disability or infirmity or death which may be caused to the workers/ employees as a result of the accident on the site.

81.12 The contractor having been covered under the provisions of contract labour (Regulation and Abolition) Act-1970 shall obtain the requisite licenses from the concerned authorities clearly setting out the number of persons to be engaged by it for the construction of the project assigned under this agreement. The contractor shall maintain the requisites registration of muster roll and issue wages slips to each if its workers/ employees including those employed through a Sub-Contractor.

81.13 In case of an accident whether resulting in any injury or disability or death of the workers/ employee including those employed through a Sub-Contractor, the contractor shall be liable to pay to such worker/ employee compensation in accordance with the provisions of workmen compensation act, 1923. Such compensation shall be paid to the concerned worker/ employee or the legal heirs within one month of the date of the accident.

81.14 In the event the contractor fails to pay the requisite compensation to its worker/ employee including the one employed through a Sub-Contractor, the PMC/Employer's shall be entitled to pay to such worker/ employee of the contractor the requisite compensation and the adjustment so made shall be adjusted against the bills payable to the contractor by the PMC/Employer's.

81.15 It is clearly understood and agreed to by the contractor that it is the statutory obligation on the part of the contractor to faithfully comply with the provisions of all the statutory enactments that are applicable to it including the EPF and MP act and the scheme framed there under. The contractor shall with effect from the date of the appointment of each worker/ employee including those employed through a Sub-Contractor shall be covered by the provisions of the EPF and MP act and their PF contribution both PMC/Employer's and employee shall be deposited with the regional provident fund commissioner. In the event if it is found either by the office of the RPFC or otherwise that the PF contributions are not being paid or deposited in respect of all the workers/ employees including those employed through a Sub-Contractor and a liability on this account is created and is required to be paid to the RPFC by the ACTREC/Employer's, such amount shall be recovered from the bills that would be payable to the contractor by the ACTREC/Employer's and the contractor shall not be entitled to raise any dispute in this regard.

81.16 The contractor alone shall be the ACTREC/Employer's in relation to the workers/ employees employed by including those through the Sub-Contractor for fulfilment of its obligations under this agreement.

81.17 It is therefore, the contractor who alone shall be responsible and liable to pay wages to its workers/ employees including those engaged through a Sub-Contractor and as such, the ACTREC/Employer's shall in no case be liable for any such claim or claims.

81.18 The contractor shall strictly adhere to the safety manual of ACTREC/Employer's and shall ensure that all safety provisions as provided therein are strictly adhered to and implemented.

81.19 The contractor shall ensure that all workers/ employees including those engaged through a Sub-Contractor also adhere to the safety norms and use helmets, safety belts, safety boots, safety gloves, goggles etc. while performing their work. It shall be the responsibility of the contractor and he shall ensure that all safety equipment are also available at the site of the construction and no worker or employee shall be permitted to work on the site without using of the requisite protective covers forming part of the safety manual.

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81.20 In the event of any accident of any nature whatsoever at the site or otherwise the contractor alone shall be liable for all the consequences arising out of such accident (s) and provide explanation to the police/Authorities, if required. Since the ACTREC/Employer's is not involved in the construction of the project it shall not be responsible in any manner whatsoever in respect of such accident (s) and any legal proceedings if instituted, would lie against the contractor only and not against the ACTREC/Employer's. The contractor hereby expressly absolves the ACTREC/Employer's from all such liabilities.

81.21 It is clearly understood and agreed to by the contractor that if by virtue of the project undertaken by him and labour deployed at the said project, the ACTREC/Employer's is saddled with any liability-financial or otherwise under any statutory enactment or enactment, the amounts so paid shall be recovered from the money due to the contractor. It is further agreed that the contractor shall not be entitled to challenge any such deduction in any court of law or otherwise.

81.22 The contractor shall be fully responsible in respect of all matters including the adjustment or wages etc. in respect of the Sub-Contractor and the labour engaged through them. For the purposes of this agreement, the contractor shall be the deemed PMC/Employer's in respect of the labour employed by or through Sub-Contractor and as such it shall be the exclusive responsibility of the contractor to ensure that all statutory provisions of law which are applicable to the direct workers/ employees of the contractor are duly applied to the employees employed by or through Sub -Contractor, and they shall not be discriminated in any manner whatsoever, and the contractor shall not be entitled to absolve his responsibility and/ or liability on the plea that they are not his direct employees.

81.23 The contractor shall at all times take all reasonable precautions to prevent any un-lawful riotous or disorderly conduct by or amongst their employees and for the preservation of peace and protection of person (s) and property in the works, neighborhood of the works, against the same.

82. NA

83. URGENT REPAIRS

If, by reason or any accident, or failure, or other event occurring, either during the execution of the Works, or during the period of Maintenance, any remedial or other work or repair shall, in the opinion of the **Engineer**, be urgently necessary for the safety of the Works and the Contractor is unable or unwilling at once to do such work or repair, the ACTREC/Employer's may employ and pay other persons to carry out such work or repair as the **Engineer** may consider necessary. If the work or repair so done by the ACTREC/Employer's is work which, in the opinion of the **Engineer**, the Contractor was liable to do at their own expense under the Contract, all expenses properly incurred by the ACTREC/Employer's in so doing shall be recoverable from the Contractor by the ACTREC/Employer's or may be deducted by the ACTREC/Employer's from any money due or which may become due to the Contractor. Provided always that the **Engineer** shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof in writing.

84. PERSONAL LIABILITY

Neither the Employer nor the **Engineer** nor the Consultant or their representative or officer of the ACTREC/Employer's shall be personally bound or liable for the acts or obligations or any default or commission in the observance or performance of any of the acts, matters or things which herein contained.

85. NON-WAIVER OF DEFAULTS

Failure of the ACTREC/Employer's/Consultant/**Engineer** to insist upon strict performance of any terms and conditions of the Contract or condemnation by the ACTREC/Employer's of any breach by the Contractor or any Sub-Contractor of any of the stipulations and conditions of the Contract shall in no way prejudice or affect or be construct as a waiver of any rights and remedies that the ACTREC/Employer's/Architect/**Engineer** may have and will not be deemed a waiver of any subsequent default under the terms and conditions of the Contract.

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86. TECHNICAL EXAMINATION

The ACTREC/Employer reserves the right to have the work inspected at any time by any person, specialist, **Engineer**, quantity surveyor, officer or auditor, nominated by them who shall be empowered to check the records, estimates, structural designs (prepared by the Contractor), variations, rates, measurements interim and final bills and the quality of work and materials. Such inspections and observations by the nominated person or persons shall not absolve the Contractor and their Sub-Contractors of their own responsibility of supervisions, quality of materials and workmanship, structural soundness, safety and other provisions, under the Contract. The Contractor shall give all facilities to the nominated person (s) to carry out the work.

87. FIRE FIGHTING FACILITIES

NA

88. WORKS TO BE MEASURED

The **Engineer** shall, when he/she requires any part of the works to be measured, give a reasonable notice to the Contractor's authorized agent or representative, who shall attend or send a qualified representative to assist the **Engineer** or his/her representative in making such measurements, and shall furnish all particulars required by them.

Measurements shall be signed and dated by both the parties on the completion of each set of measurements. If the Contractor objects to any of the measurements recorded by the **Engineer**, the Contractor or their authorized representative shall record a note to this effect in the measurement Book against the items objected to and such a note shall be signed and dated by both the Contractor and the **Engineer** or their Representatives.

If the Contractor fails to attend or neglects or omits to send their authorized representative within 3 days of notice from ACTREC/Employer, then the measurements made by the **Engineer** or approved by him/her shall be taken to be correct measurement of the work. If after examination of such record of measurements, the Contractor does not agree with the same or does not sign the same as agreed, these shall nevertheless be taken to be correct, unless the Contractor shall have within fourteen days of such examination, notified the **Engineer** in writing in which respect the measurements recorded are claimed by him/her to be incorrect.

89. LICENSE FEE & INCIDENTAL CHARGES

All the required approvals, permits, licenses, registration and other statutory clearances/levies required for the construction of this Project from various local governing bodies and associated statutory deposits/payments/levies/liason if any are excluded from the scope of works of the Contractor.

90. FORECLOSURE OF THE WORKS CONTRACT IN FULL OR IN PART

If at any time after acceptance of the Contractor's Tender Offer as the Contract price (with due adjustments during the negotiation stage), the ACTREC/Employer may decide to abandon or reduce the scope of works for any reasons whatsoever and hence may require that the whole or any part of the works are not carried out. In such a case, the ACTREC/Employer shall inform the Contractor in writing to that effect and the Contractor shall have no claim to any payment or compensation or whatsoever on account of any profit or advantage which they might have derived from the execution of the Works in full but which they did not derive in consequence of the foreclosure of the whole or part of the works except for the work done prior to the foreclosure of the ACTREC/Employer.

The Contractor shall be paid in full for the work executed at the site prior to the foreclosure at the Works Contract rates, as certified by the ACTREC/Employer, for materials delivered to site under the Works Contract, if any. No further compensation for loss of profit, loss of business opportunity etc shall be payable by the ACTREC/Employer to the Contractor.

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91. SUSPENSION OF WORK

The PMC/Employer shall be at liberty to order a suspension of the work or parts thereof as it deems fit for any of the following reasons:

- a) On account of the Contractor's continued non-compliance of the instruction of the ACTREC/Employer,
- b) Or any default on the part of the Contractor, on account of unacceptable quality standards of workmanship / material
- c) for unsafe operations to the work or part thereof,
- d) for execution of the work or part thereof resulting in the default of the Contractor.
- e) Absence of Municipal/Statutory approvals in whole or in part.
- f) Stoppage of work due to sudden change in Government Policy or requirements of clearance as applicable during the Contract Period.
- g) force majeure

If the reason for suspension is due to reasons a), (b), (c) and (d) then the Contractor shall immediately comply with the instructions issued by the PMC/Employer and rectify the unsafe operation to the extent necessary.

If the suspension is due to reason (a),(b),(c),(d) above, the PMC/Employer shall have the right to also suspend payment under the Works Contract for such a time until the default has been rectified.

No extension of time shall be granted for suspension of work due to reasons (a), (b), (c) and (d).

If the suspension is ordered for reasons (e), (f) and (g) above, the Contractor shall be entitled to an extension of time equal to the period of such suspension as the case may be decided & approved by the PMC/Employer.

No compensation shall be payable to the Contractor for the delays caused to the Works Contract completion time due to suspension of work ordered under reasons (a), (b), (c) & (d) and upto 3 (three) months in case of reasons (e)/(f)/(g) mentioned above.

92. CONFIDENTIALITY

Confidential information shall mean and include all trade secrets, business plans and other information relating to (whether directly or indirectly) the business thereof (including, but not limited to, the provisions of this Works Contract) and in whatever form, which is acquired by, or disclosed to the other party pursuant to this Works Contract. In consideration of confidential information of each party (disclosing party) being made available to the other party (receiving party) under this Works Contract, the receiving party shall at all times:

Treat all such confidential information as secret and confidential and take all necessary steps to preserve such confidentiality. Not use any such confidential information other than for the purpose of performing its obligations under this Works Contract and in particular, not to use or seek to use such confidential information to obtain (whether directly or indirectly) any commercial, trading or other advantage (whether directly or indirectly) over the disclosing party.

Not disclose such confidential information to anyone other than with prior written consent (such consent to be granted or withheld at the disclosing party's absolute discretion) of the disclosing party.

Not make any copies of any such confidential information (including, without limitation, any document, electronic file, note, extract, analysis or any other derivation or way of representing or recording any such confidential information) without the disclosing party's prior written consent (such consent to be granted or withheld to the disclosing party's absolute discretion).

Upon written request by the disclosing party, promptly deliver to the disclosing party or by the direction of the disclosing party, destroy all materials containing any such confidential information all copies, extracts or reproductions of it (as permitted under this Works Contract) and to certify compliance to the disclosing party in writing.

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93. REMOVAL OF IMPROPER WORK AND MATERIALS

The **Engineer** shall have full powers to order in writing: The removal from the site, within such time as may be specified in the order, of any materials which, in the opinion of the Architect, the **Engineer**, or the ACTREC/Employer are not in accordance with the contract. The substitution of unaccepted material with proper and suitable materials, and the removal and proper re-execution, notwithstanding any previous test thereof or interim adjustment thereof, of any work which in respect of materials or workmanship is not; in the opinion of the Architect, **Engineer** or the ACTREC/Employer, in accordance with the contract.

94. INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS

The Contractor shall be liable to the ACTREC/Employer in respect of claims, proceedings, compensation, damages, losses and costs that they suffer or incur due to the Contractor infringing a patent, copyright or any other third-party intellectual property rights.

95. CHANGES IN CONSTITUTION

If the Contractor is a firm and if there is a change in the constitution of the firm after or prior to the award of Contract, and if prior approval is not obtained, the Contract shall have been deemed to have been assigned and the ACTREC/Employer reserves the right to determine the Contract and the same consequences shall follow as if the Contract was determined on the Contractor's default.

96. Safety Policy

A. Electrical Safety Measures at Construction Site.

- 1) Use of 3 core cable
- 2) Proper earthing.
- 3) Cable insulation
- 4) Proper joints
- 5) Loose connection
- 6) Proper Plug/ Socket
- 7) Rubber hand gloves
- 8) Rubber sole shoes
- 9) Welder's goggle
- 10) Portable light 24 Volts
- 11) Fire Extinguisher
- 12) Welding machine with on/off switch
- 13) Welding Cables

B. General Safety Measures At Construction Site

Following safety measures should be followed by all Contractors, Sub-Contractors, Site Engineers and Supervisors.

- a. All labours, workers, fitters, carpenters, officers, visitors shall be aware of safety rules and regulations of the company.
- b. All persons including Contractors, Engineers, Supervisors, Women and visitors must use safety helmet on site.
- c. Workers working above ground level by 6' feet and above must use safety belt.
- d. Nothing should be dropped down from height unless special precaution has taken.
- e. All workers working on site should use safety shoes.
- f. Workers working for hacking operation or where there is risk for his eyes from flying object/particles must use safety glasses.
- g. Warning sign boards to be displayed wherever it is required.
- h. All open walls, open staircases, pit, sumps, opening in floors etc. where there is danger of falling of person should be barricaded with strong support.
- i. High quality housekeeping should be maintained at site.
- j. All electrical instruments, connections, points, cables, should be checked for electrical shockproof before use.

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- k. All electrical appliances should have socket/plugs with it. No loose connection should be used.
- l. Child labours below 18 years of age should not be allowed to work.
- m. Wooden logs with protruding nails must be removed from site immediately and such material should be stacked at safe place.
- n. All vehicles coming on site like Trucks, JCB, Cranes etc. should have helper/cleaner with driver and vehicles should have reverse horn as far as possible.
- o. All vehicle drivers / operators must have authorized driving license with him.
- p. Woman worker should not be allowed to come on site to work with their children.
- q. No children should come on site for any reason at any time.
- r. Proper and adequate light arrangement shall be provided on site during night time.
- s. All ladders used on site shall be defect free and of sound material.
- t. All scaffolding material should be properly kept at safe place. Defective, bend, twisted, excessive rusty scaffolds shall not be taken for use.
- u. All staging, scaffolding shall be erected with taking due care for safety of man working on it. Proper and adequate support shall be provided to it.
- v. Scaffolding above three stage shall be provided with additional support, to avoid fall of total scaffolding.
- w. Defective hand tools shall not be used on site.
- x. While working with hand tools at height care shall be taken that no hand tool shall fall down in any case. To avoid this accidental fall of tools, such tools should be tied with nylon thread with operators waist or belt.
- y. Fire Extinguishers or alternative arrangement should be provided on site where there are chances of fire.
- z. Workers working with cement concrete slurry should use rubber hand gloves and rubber shoes.
- aa. During dusty work and handing cement bags worker should use nose mask.
- bb. Use safety nets to avoid the direct fall of material from height on the head of persons working under.

C. Steps to be taken after accident takes place on site regarding 'Police Panchnama'

- 1) Injured person to be shifted to Municipal Hospital only.
 - a)
 - b)

(For accidents in)

- 2) The accident location and its surrounding area should be kept as it is till the 'Police Panchanama' and other formalities are completed by the Police Department.
- 3) Name of eye witnesses if any to be noted and they should be present for recording of their statement by police officer or investigation officer. Eye witnesses should not leave site till the Police Panchanama not get over.
- 4) Supervisor and contractor should also present on the spot for further action.
- 5) Co-operate with Police Department to do their duty.
- 6) Information of accident should also be given to closest relative of injured person immediately.

Information of accident should also be given to control room at with the available details and also to the Security Officers at

D. CRITICAL SAFETY MEASURES AT CONSTRUCTION SITE

- 1) All lifting appliances are thoroughly examined by a competent person once at least in every twelve months and where the competent person making such examination forms the opinion that the lifting

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- appliance cannot continue to function safely. He shall forthwith give notice in writing of his opinion to the ACTREC/Employer of the lifting appliance.
- 2) This includes all lifting gears, cranes, hoist, lifting tackles like hooks, shackles, pulley blocks, wire ropes etc. A separate register shall be maintained for periodical check up.
 - 3) All lifting tackles such as chain, pulley block, hook, shackles, ropes etc. should be checked thoroughly before taking for use.
 - 4) All drivers, crane operators, JCB hoist etc. should have medical fitness certificate and RTO authorised license with them.
 - 5) A trained signal man shall be provided with Tower Crane and other heavy Cranes on site.
 - 6) A proper First Aid Box with necessary medicines should be provided on each site office.
 - 7) An accident report book shall be maintained on each site office and person shall be deputed for maintaining it.
 - 8) A trained First Aid person shall be available on site office during the working hours on site.
 - 9) A car or an ambulance shall be readily available on site in case of emergency to carry injured person for hospitalization.
 - 10) An important telephone numbers shall be displayed on notice board prominently of site office. It shall contain nearest Fire Station, General Hospital, Eye Hospital, Police Station, Contractor and Sub-Contractors phone numbers (Residence / Mobile).
 - 11) All Contractor, Site Engineers, Supervisors, Car Driver should know the shortest distance road for Hospitals and proper location of hospitals.
 - 12) All workers working on site should be provided with specific identity cards which shall be kept with him/her during working on site.
 - 13) A separate notice board shall be provided on each site office indicating name of Sub-Contractors and workers attending duty every day.
 - 14) All Security personnel, Site Engineer, Supervisors, and Contractors should be trained for handling emergency situation such as fire, major accident, collapse of structure etc.
 - 15) Work permit system should be adopted where there is likely danger of fire, risk of life of worker or working on height / roof, excavation etc.
 - 16) All material used for scaffolding, ladders, safety equipments used on site shall be of high standard and with ISI marked only.
 - 17) Achieving 'Zero Accident' target is collective responsibility. Hence all of us should work on site with observing company's safety norms all the time.

From :- Safety Officer		Date:		
Location:* - Critical / immediate action		Time:		
Chief Engineer :Y -Action to be taken		Sub-Contractor:		
Site Engineer: N - Not Applicable		Other Contractor :		
Sr. No.	Points observed	Remark of Safety Officer	Commitment of responsible person	Remarks

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1	Use of 3 core cable			
2	Proper earthing			
3	Cable insulation			
4	Proper joints			
5	Loose connection			
6	Proper Plug / Socket			
7	Rubber hand gloves			
8	Rubber sole shoes			
9	Welder's goggle			
10	Portable light 24 Volts			
11	Fire Extinguisher			
12	Welding machine with on/off switch			
13	Welding Cables			
	Specific Remark :			Sign by :

F. General

- 1.0 Do not take undue risks while at work.
- 1.1 Before use, inspect hand tools, power tools for defects
- 1.2 Store and transport gas cylinders with their valve caps pointed vertically upward.
Ensure that cylinders are transported in trolleys properly secured.
- 1.3 Never work with defective appliances like broken plugs, Switches and wires etc.
- 1.4 Always wear Safety Helmets at construction site.
- 1.5 Concentrate on your job, look out for cautionary signs and always comply with instructions.
- 1.6 Don't smoke wherever it's prohibited.
- 1.7 Don't stand below suspended loads or lean against stacked materials.
- 1.8 Loose clothing should be avoided while working on or around machinery.
- 1.9 Don't enter any vessel or any closed space without permission.

i. Working at Height.

- 2.1 For carrying work at height exceeding 6ft. or over and near openings in floors, etc. the following precautions are to be taken.
- 2.2 Written permission of Department Manager is to be obtained before carrying out work of Adequate Safety precautions like safety belts, crawling ladder etc. are to be taken.

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- 2.3 All Workmen engaged on overhead work shall be experienced in such work.
- 2.4 Wherever possible, timber staging or platform shall be erected with planks of minimum thickness 2” and minimum width 12”. When the nature of the work demand staging of a greater width than on plank, additional planks shall be added and lashed securely together.
- 2.5 Staging shall be provided with simple safety rails or ropes, throughout its length, at waist height and on each open side.
- 2.6 Staging supports shall be standard timber (or) steel scaffolding safety secured and supported on firm level footings or slung from overhead beams. The supports shall be situated at maximum distance of 6ft apart and the staging shall be secured to each support.
- 2.7 All workers shall wear safety belts around their waists and secure, their lifelines to strong scaffolding or structural members, when working at height.
- 2.8 Wherever it is not possible to put up staging and/ or use safety belts, safety nets or sheets shall be slung beneath the place of work.
- 2.9 When working over open process vessels or tanks, safety belts or safety nets shall always be used whether irrespective of staging and scaffolding is provided also.
- 2.10 Safe access to all point of work shall be provided in the form of suitable ladders, stairway etc.
- 2.11 When working at heights, area below is to be suitably fenced off to avoid injuries to passerby warning signs also to be put up.
- 2.12 The tools and other accessories used during the work at height should be brought down after its completion as later on they may fall on persons passing by.
- 2.13 Don't wear loose clothes, lung is while working at height.
- 2.14. Don't throw Tools / Other material from height.

j. LIFTING / ERECTION OF HEAVY EQUIPMENT.

- 3.1 Produce a Test Certificate approved by certifying authorities for all of lifting gear and hoists (Slings, chains, Hooks, Chain Pulley, Winches, Hoists, Cranes etc) before being allowed to start work.
- 3.2 First Prepare a lifting plan with sketch and capacities of all lifting gears to be used along with the load to be lifted and obtain approval, before start of work.
- 3.3 No equipment should be kept suspended at height on lifting tackle without proper support and fasteners.

k. ELECTRICAL

- 4.1 All hand lamps used shall be rated for 24 V (or less)
- 4.2 All portable tools are to be connected through control box with Earth leakages circuit breaker.
- 4.3 Ensure proper earthing's of all electrical equipment used. Suitable earthing pits must

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be made if required.

- 4.4 Insulation Electrical wiring cannot always be depended upon to give protection from shock. Examine cables from defects before using.
- 4.5 Don't ever insert free ends of wire into sockets and hold the min place with matchsticks.
- 4.6 Inspect before use portable electrical tool.
- 4.7 Use DPC or CO₂ fire extinguisher on electrical fires.
- 4.8 Always use insulated fuse holders and right capacity wires.
- 4.9 Use 3 core cables. The additional core is for earthing and safety.
- 4.10 Keep the cords out of walk ways.
- 4.11 Keep your feet on a dry surface.
- 4.12 Don't guess whether a circuit is alive or not.
- 4.13 Don't leave electrical wires and fittings where people can be trapped or struck by it.
- 4.14 All mains junction boxes and fuses shall be covered again strain.

I. WELDING

5.1 As far as possible DC Generator sets are to be used instead of AC Transformer sets. AC Transformer sets are banned for welding job inside vessels. (Both open and close top type) AC Transformer Type welding sets, are to be oil immersed type and of standard design and make.

5.2 All welding set cables and holders certified by Electrical Section before starting work. Those certificates shall have to be renewed every month (or) after major repair on the set. A copy of certificate shall be displayed in respective welding sets.

5.3 Only cables in good condition of adequate rating and insulated holders are to be used. The length of supply cable to welding set shall not exceed 25 ft. and the welding set shall be properly earthed. A separate 8-gauge GI earthing should be provided from welding machine to system earth.

5.4 Before starting any welding job at site for the first-time authorized person of Electrical Department to be contacted, to check supply connection and safety of the set.

5.5 Welding set while working should be kept in clear and covered area.

5.6 The current drawn by the welding set should never exceed 20 amps.

5.7 A charged fire extinguisher of DCP type is to be carried with each welding set.

5.8 The welder should take into use a building structure, pipeline, railway track etc. as are turn path of the current. A separate turn cable, should run from the set to the work piece.

5.9 All the welding sets shall be provided with a fuse desolator mounted on the set or its carriage, fuses of proper rating should be used.

5.10 Fabricating welding job shall be done in the sheds / Fabrication yard shall be provided for this purpose as far as possible.

5.11 Warn others in the area below when doing overhead welding.

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5.12 When doing welding inside tanks and vessels precautions to be taken against welding fumes by providing proper ventilator.

5.13 The area where welding is carried out should be inspected after the completion of the work and as certain that it is safe.

5.14 Remove the welding rods from the holder before placing the holder down. Don't throw the welding rod bits haphazardly. Collect it in a container.

5.15 Please stop the welding machine when it is not required.

m. FIRE REGULATIONS

6.1 Before carrying out any work (Gas Cutting, Welding etc.) the contractor is to contact concerned department Manager/ Foreman to ascertain at the area is safe for working.

6.2 Fire prevention charts which have been displayed in each department and various location, should be strictly followed in case of fire.

6.3 No combustible materials to be stored on or near by source of heat (i.e .Hot Pipes, Welding, Gas Cutting operation, boilers, Furnaces, etc.) and before leaving the place of work sure that nothing is left which could start a fire.

6.4 Special attention is to be paid to collection and disposal of all soaked cotton waste or rags. On no account these are to be dropped in to corners, pushed below equipment or left hanging on pipes.

6.5 Gas cylinder should be used in a safe manner. They should not be roped from heights. Acetylene cylinders should be kept in upright position. Oxygen cylinders should not be kept near inflammable materials like oil etc.

6.6 Tarpaulins are not to be used in the vicinity of welding / gas cutting jobs.

6.7 Welding sets should be kept away from falling sparks.

6.8 No gas except Oxygen and DA are permitted for gas cutting operation.

6.9 Connection hoses for gas cylinders to be in good condition and properly clamped.

6.10 Under no circumstances they should be tied using wire.

6.11 Use two-wheel trolleys for handling cylinders.

6.12 Keep away the cylinders from sources of heat and sun.

6.13 Use hand gloves and goggles during gas cutting operations.

6.14 Don't use matted flame near combustible material.

6.15 Don't leave waste (Jute / Cotton waste) in the site after the job is over.

n. FIRE INSTRUCTION.

A IF YOU DISCOVER A FIRE inform security officer and site engineer immediately.

o. SCAFFOLDS

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7.1 In the construction of temporary scaffoldings, planks of 2” thickness must be used to provide secure footings.

7.2 Scaffold material should be free from knots, cracks and carefully inspected for soundness.

7.3 Any scaffold standing more than five feet above the ground must be equipped with hand rails unless surrounding (or) adjacent tipping serves as a handrail.

7.4 Lock the wheels of the movable type scaffolds.

7.5 Remove scaffolding when job is completed.

7.6 The load carrying capacity of the scaffold must be ascertained and total load in the scaffold should not exceed their safe limit.

p. STAGING

8.1 Tie each end of swing stages to the permanent structure.

8.2 Be certain that the staging will support the required weight.

8.3 Keep stages in a horizontal position as nearly as possible.

8.4 Swing stages shall be lowered to the ground when work is completed for the day.

q. LADDER.

9.1 Inspect ladder before use. Ladders should be free from dirt and great.

9.2 Secure at top position at correct angle and with firm footing.

9.3 Do not ascend or descend on Ladders with material or tools in one hand. Always face the ladder.

9.4 Place the foot of the Ladder on the ground so that the distance from the base of the ladder to line dropped vertically from the top support is approximately one fourth the length of Ladder measured from the top support to the bottom support.

9.5 Step ladder and extension ladders should be locked properly after their extension.

r. HOUSEKEEPING

10.1 Maintain clear and orderly work area. Move excess tools and materials from work area to avoid stumbling hazards.

10.2 Keep walk ways clear.

10.3 Place and secure material and equipment, so that it will not fall or roll.

10.4 The job is not finished until all scrap and surplus materials are picked up and arrangements are made for proper disposal. When your work /assignment is over, pickup, clean up and return all usable materials to proper location.

s. WORKING INSIDE THE VESSEL

(Pressurized (or) otherwise) Tanks, Pans, Silos etc. Safety Precautions to be taken for such job as mentioned in the “Work Order “which must be very strictly observed.

The contractor must ensure that use of protective appliances and safety equipment’s by workmen wherever the use of such equipment’s must have certified having ISI mark.

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SECTION V: - OPERATION AND MAINTAINANCE

CONDITIONS OF CONTRACT FOR OPERATION & MAINTENANCE

1. Scope of Services

- a. During the Operation and maintenance period the soundness, longevity, performance and defects will be under scrutiny and observation & any defects noticed will be repaired, replaced and brought to perfect running condition by the contractor at his own cost as per the direction of the Engineer-in-charge.
- b. To maintain the Intake system, water tanks, electromechanical system including its allied installed items, valves including distribution system and maintenance of all gates and control panels.
- c. Scope of Operation and maintenance may increase after 3rd year to after making 600KLD plant completely operational. The contractor has to assume the risk of such event and quote accordingly for financial bid after 3rd year of O&M. No extra payment for the same will be provided to the contractor.
- d. Supply and installation of all the spare parts, consumables etc. required for smooth operation of STP plant.
- e. To provide all services necessary to maintain the project efficiently, maximize the availability of the project, optimize the useful life of the project etc. to maintain the system efficiently.
- f. To provide requisite numbers of qualified (and if required licensed) personnel to perform the services. To carryout maintenance of the total water conductor system including distribution

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pipeline and carryout repair and preventive maintenance in accordance with the recommendations of the employer.

- g. To carry out any maintenance or repairs or rectification work in case of any problem or emergency that may arise while the system is in operation during the maintenance period of five years whichever is more as directed by the employer.
- h. To provide technical and other assistance to the employer, for managing operational and maintenance problems.
- i. Sewage treatment plant based on MBBR technology very less maintenance is required. To run the plant
- j. with full efficiency following things need to be taken care of
- k. Bar screen cleaning three times in a day, it's very important protect the pump impeller and life of pumps.
- l. Cleaning of pump in 15 days to avoid the media/ debris fixing in the pump.
- m. Sludge recirculation from tube settling tank to aeration tank, to maintain the F/M ratio and avoid the septicity at the bottom of tube settler tank due to sludge deposition.
- n. Oil and greasing to the blower after every two months.
- o. Backwash and rinse to the pressure filter and Activated Carbon Filter for 10 -15 minutes daily.
- p. Maintain air supply in aeration tank always for 24x7.
- q. Maintain DO level 2 mg/l.
- r. Maintain MLSS in aeration tank 5000 mg/l.
- s. Maintain outlet parameter of STP as per standards.
- t. Avoid frequent stoppage of STP.
- u. If raw sewage parameter changes as per design parameter of plant then changes need to be done in treatment process.
- v. Cleaning (Drain out) of filter feed tank every 15 days to avoid solid deposition in Pressure and activated carbon filter.
- w. To maintain effective functioning of all Hydro-Mechanical and Electro- Mechanical works.
- x. Pump operators to be deployed in 3 shifts and always one pump operator to be provided at any given time.

2.0 Maintenance Personnel

The Contractor shall deploy **experienced personnel** for maintenance of the STP. The deployment schedule indicating the number of the Managers, Supervisors, Pump Operators, Helpers/Fitters, Mechanics, Electrician & other support staff etc. for O&M of project, responsibility assigned to each of them shall be furnished along with the bid.

Additional staff required for smooth and efficient operation of the system is to be deployed by the contractor as per requirement for which no extra payment will be admissible.

All Contractor's personnel employed at the plant at any time during the period covered by the present Contract will be provided by him. The **Employer is not liable for personnel** in any way and cannot be held responsible in the event of litigation of any sort between the Contractor and members of plant personnel or their representatives.

All decisions related to staff numbers and qualifications should be approved by the Employer. The Contractor undertakes to comply with applicable legislation and the code of labour law on matters of health, hygiene and safety, and shall assume responsibility for works required in the event of any change in applicable regulations.

3.0 Right to perform upon contractor's default

If anytime, the Contractor fails to perform and such failure is likely to cause injury to any person or damage to the project, the Employer may, but shall have no obligation to, perform any such obligation

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of the contractor. The cost to the Employer of affecting such performance would be deducted from the payment due to the Contractor.

No separate payment shall be made for operation and maintenance services during the maintenance period of five years and shall be deemed to be included in the quoted contract price.

4.0 Acceptance tests on completion of maintenance period

Upon completion of prescribed Maintenance period, the acceptance tests shall be carried out before the project is taken over by the Employer. These acceptance tests shall be identical to the test conducted during commissioning of the project. The Contractor shall also make available the proof that maintenance of total system was carried out during operation & maintenance period in accordance with the maintenance schedule & O&M manual.

9.0 ASSIGNMENT

The Contractor will not be entitled to sub-contract any part of his obligation to any third party without prior approval of the Employer.

10.0 LIABILITY

The Contractor will not under any circumstances be liable for costs or loss of profit that the Employer may incur as a result of the unavailability of the plant on account of force majeure.

12.0 MAINTENANCE

The Contractor shall be responsible for corrective maintenance of civil, hydraulic, mechanical, electrical and computing equipment as well as miscellaneous equipment as described in clause below. The Contractor shall be responsible for carrying out regular servicing and lubrication of rotary machines, complying with maintenance instructions as defined in the Operation and Maintenance manual, and ensuring that electro-mechanical equipment and motors operate correctly at all times. The Contractor shall ensure that measurement systems operate correctly at all times. The Contractor is responsible for the maintenance of the landscaped areas inside the Employer plant fences.

13.0 PERFORMANCE STANDARDS

The Contractor will operate and maintain in a state of continuous operational readiness all plant and systems to meet the flow requirements. It shall remain the Contractor's responsibility to ensure that plant systems are at all times able to operate to the maximum capacity of the installed duty plant. All plant and plant installation shall be operated within their designed limits. The Contractor shall operate the plant strictly within these operating ranges and shall manage the operation of the plant to achieve optimum performance as far as possible.

14.0 CONSUMABLES AND UTILITIES SERVICES - SPARE PARTS –STORES

14.1 Consumables and Utilities Services

Unless stipulated otherwise elsewhere in the document, for the duration of the O & M period, the Contractor will be responsible for the supply and control of lubricants, spare parts and consumable materials excluding electrical power, necessary for the continuous operation of the works. The Contractor will manage the consumables and utilities services to ensure their most economic consumption and to minimize wastage. The quantities of all the unutilised spare parts and consumable materials will be fully handed-over to the Employer at the end of the O&M period.

14.2 Spare Parts and Stores

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The contractor is to furnish the list of spare parts for use during O&M period of the system along with the bid. The list shall be approved by the Engineer-in-Charge before commencement of O & M period and this shall be binding on both the parties. The stores inventory, the issuing and recording of spare parts will be the responsibility of the Contractor and shall be verified by the Engineer-in-charge quarterly. The Contractor is also responsible for providing spare parts and material required for the operation and maintenance during the operation period, and shall bear the cost for the same, including the cost of storing and safeguarding. The Contractor will make all necessary arrangements to ensure the continuous supply of spare parts and material for the works and the rate of supply of these materials shall be in such quantities and amounts as would ensure uninterrupted operation. Any spare parts used during the O&M period shall be replaced by purchasing new spare parts and total set of spare parts shall be handed over to the Engineer-in- Charge after completion of 5 years maintenance period /O & M period if any.

15. Miscellaneous Equipment

15.1.1 Workshop Equipment

All the necessary and required workshop equipment for the proposed project shall be supplied by the Contractor under this Contract. Bidder shall give a comprehensive list of the same.

15.1.2 Housing Complexes

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

16.0 INSPECTION

16.1 General Provisions

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

16.2 Measurement and Analysis

The Employer has the right to perform any analysis or inspection he deems necessary. Before any inspection, the Employer shall give a prior written notice of three days to the Contractor and shall cover the costs of such action. The water quantity shall be measured by flow meters installed at the plant, acceptable to the Employer. The flow meters shall be inspected and certified upon their workability by the Employer and the Contractor. Thereafter, the said meters shall be tested and their accuracy verified once in every six (6) months by the Employer and the Contractor. After each inspection, the flow meters shall both be sealed in the presence of representatives of Employer and the Contractor in a manner that is adequate to prevent the tampering of said meters by any person. The Contractor shall be responsible for the security and protection of flow meters at the designated point. If there is any malfunctioning of the meters, it should be replaced at the Contractor's cost.

16.3 Plant Complex Visits

At the end of each month, or at the initiative of the Employer, a visit shall be organized so that both parties can check the condition of the installations at the plant complexes. A report shall be drawn up to record the opinions of both parties. The Employer reserves the right to call in equipment manufacturers or specialized technicians for these visits. These visits shall provide an opportunity for examining maintenance programs and operating procedures and improvements requiring additional investments.

16.4 Documents to be provided by the Contractor

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16.4.1 Operation Log Book

The Contractor shall keep a permanent record of plant operation (logbook). This log book shall be kept at the site and shall be presented on request to representatives or agents approved by the Employer. On a daily basis, the following information shall be recorded in the log book:

- a. Reading from the different meters, indicators and recorders (including but not limited to consumption of energy, volume and quality of water conveyed, operating times of the different items of equipment)
- b. Computer documents and tapes produced by monitoring and surveillance equipment which shall be attached to the log book,
- c. Report of visits by persons other than those of the Employer and the Contractor to the Facility.

The Contractor shall also indicate any significant modifications to the setup characteristics of the installation, shut-downs, anomalies or incidents that have occurred with respect to operation.

16.4.2 Monthly Report

The monthly report shall include but not be limited to:

- i. Volume of water conveyed.
- ii. Quality of water
- iii. All the problem areas in the facility
- iv. The status and progress of the training programs,
- v. Electricity consumed

FINANCIAL PROVISIONS

16.5 Method of Payment

The Employer will pay the Contractor for the O&M Price on a monthly basis subjected to his delivering the stipulated water quality and quantity. **The payment for operation and maintenance shall be based on the year wise Breakup.** The O&M price for the work is to be fixed on the prorata basis for monthly payment.

Invoicing

The Contractor shall prepare and submit to the Employer an invoice at the end of every month of O & M with all documents supporting its calculations for the preceding month. The invoice shall be submitted between 1st & 5th day of the month.

The Employer shall **have seven (7)** calendar days from receipt of such invoice to notify in writing to the Contractor its acceptance thereof or the grounds for disputing such invoice. The Employer shall pay to the Contractor all accepted amounts.

19.0 TERMINATION OR FORE CLOSURE OF CONTRACT

19.1 The department may terminate the contract in event of poor performance of the contractor after sufficient notice given and failure of the contractor to take corrective measures to improve the O&M condition to desired level by giving 15 days' notice

19.2 The department reserves the right to foreclose the contract before its schedule period without assigning any reason by giving 30 days' notice. The contractor shall have no claim for balance period and shall peacefully handover the project to department as instructed by Engineer-in-Charge.

19.3 Payment will be made on prorata basis after adjustment of any dues or penalty or L.D as applicable arising out of the contract.

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Annexure 1

(To be submitted along with technical bid.)

MANUFACTURER'S AUTHORISATION FORM

Director,
TMC- ACTREC
Kharghar, Navi Mumbai 410210

Dear Sir,

Ref: Your TE document No _____ dated _____

We, _____ who are proven and reputable manufacturers of _____ (*name and description of the goods offered in the tender*) having factories at _____, hereby authorise Messrs _____ (*name and address of the agent*) to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We also state that we are not participating directly in this tender for the following reason(s):
_____ (*please provide reason here*).

We further confirm that no supplier or firm or individual other than Messrs _____ (*name and address of the above agent*) is authorised to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We also hereby extend our full warranty, CMC as applicable of the General Conditions of Contract, read with modification, if any, in the Special Conditions of Contract for the goods and services offered for supply by the above firm against this TE document.

We also confirm that the price quoted by our agent shall not exceed the price which we would have quoted directly"

Sincerely Yours

[*Signature with date, name and designation*]

For and on behalf of Messrs _____

Note: *This letter of authorisation should be on the letter head of the manufacturing firm and should be signed by a person competent and having the power of attorney to legally bind the manufacturer.*

Annexure 2

(To be submitted along with technical bid.)

Quality Statement

- 1) Tender Reference No.:
- 2) Name and address of the Tenderer:
- 3) Name of the Original Equipment Manufacturer (OEM)
- 4) Contact Details of OEM
 - a) Full address
 - b) Telephone/Mobile number
 - c) Fax number
 - d) E mail ID
- 5) Location of Manufacturing Units:
- 6) Manufacturing process details:
- 7) Total annual turn-over (value in Rupees)
- 8) Quality control arrangement details
 - a) for incoming materials and bought-out components
 - b) for process control
 - c) for final product evaluation
- 9) Test certificate held
 - a) type test
 - b) BIS/ISO certification
 - c) Others specify
- 10) Details of service center in India

Signature and seal of the Tenderer

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Annexure 3

(To be submitted along with technical bid.)

PERFORMANCE STATEMENT

(For the period of last five years)

Tender Reference No. : _____

Date of opening : _____

Time : _____

Name and address of the Tenderer : _____

Name and address of the Manufacturer : _____

Order placed by (full address of Purchaser/Consignee)	Order number and date	Description and quantity of ordered goods and services	Value of order (Rs.)	Date of completion of Contract		Remarks indicating reasons for delay if any	Have the goods been functioning Satisfactorily (attach documentary proof)**
				As per contract	Actual		
1	2	3	4	5	6	7	8

We hereby certify that if at any time, information furnished by us is proved to be false or incorrect, we are liable for any action as deemed fit by the purchaser in addition to forfeiture of the earnest money.

Signature and seal of the Tenderer

**** The documentary proof will be a certificate on the letter head of the Client with cross reference of order no. and date in the certificate. It should be supported with a proof for receipt of payment/LC document/ TDS certificate.**

The purchaser at their discretion can seek verification from the referees.

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Annexure 4

BANK GUARANTEE FORM FOR PERFORMANCE SECURITY/ CMC SECURITY

Director,
TMC- ACTREC
Kharghar, Navi Mumbai 410210

WHEREAS _____ (Name and address of the supplier) (Hereinafter called "the supplier") has undertaken, in pursuance of contract no _____ dated _____ to supply (description of goods and services) (herein after called "the contract").

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a nationalized/ commercial bank recognised by you for the sum specified therein as security for compliance with its obligations in accordance with the contract; AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of _____ (Amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to 12 months from the date of Notification of Award i.e. up to ----- (indicate date)

.....
(Signature with date of the authorised officer of the Bank)

Name and designation of the officer

.....

.....

.....

Seal, name & address of the Bank and address of the Branch

Annexure 5

**PROFORMA OF GUARANTEE FOR SUPPLY OF SPARES DURING POST
WARRANTY PERIOD**

To,

Director,
Tata Memorial Centre- ACTREC
Kharghar Navi Mumbai 410210

Sub: Tender No.....

Dear Sir,

We the tenderer having bid in the above mentioned tender hereby guarantee the supply of all necessary spares demanded for the routine and emergency maintenance of being supplied by us to for a period of not less than 5 years after the warranty period of 1 year and 10 years spares thereafter in case asked for by the purchaser.

We further clarify that for the first year after completion and handing over i.e. warranty period of 1 year, we are covered by the warranty clause as mentioned. For the remaining period of 5 Years and thereafter for the life time, a detailed list of spares will be supplied to the purchaser for the purpose of enabling him to decide spares needed for routine and emergency maintenance.

If awarded the contract we will provide the list of spares and indicative costs frozen for the 5 years after the warranty period in INR.

Authorized Signatory
For & on behalf of M/s....

Annexure 6

Proforma of Final Acceptance Certificate by the Consignee

No _____

Date _____

To

M/s _____

Subject: Certificate of commissioning of equipment/plant.

This is to certify that the equipment(s)/plant(s) as detailed below has/have been received in good conditions along with all the standard and special accessories and a set of spares in accordance with the contract/technical specifications. The same has been installed and commissioned.

(a) Contract No _____ dated _____

(b) Description of the equipment(s)/works: _____

(c) Equipment(s)/ plant(s) nos.: _____

(d) Quantity: _____

(e) Bill of Loading/Air Way Bill/Railway
Receipt/ Goods Consignment Note no _____ dated _____

(f) Name of the vessel/Transporters: _____

(g) Name of the Consignee: _____

(h) Date of commissioning and proving test: _____

Details of accessories/spares not yet supplied and recoveries to be made on that account.

Sl. No.	Description of Item	Quantity	Amount to be recovered

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The proving test has been done to our entire satisfaction and operators have been trained to operate the equipment(s)/plant(s).

- **The supplier has fulfilled its contractual obligations satisfactorily**

Or

- **The supplier has failed to fulfil its contractual obligations with regard to the following:**
 - He has not adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to 'Technical Specifications'.
 - He has not supervised the commissioning of the equipment(s)/plant(s) in time, i.e. within the period specified in the contract from date of intimation by the Purchaser/Consignee in respect of the installation of the equipment(s)/plant(s).
 - The supplier as specified in the contract has not done training of personnel.

The amount of recovery on account of non-supply of accessories and spares is given under Clause 2.34 of special condition of contract.

The amount of recovery on account of failure of the supplier to meet his contractual obligations is as per the liquidated damages clause as specified in the tender.

(Signature)

(Name)

(Designation with stamp)

Explanatory notes for filling up the certificate:

- i) He has adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to 'Technical Specification'.
- ii) He has supervised the commissioning of the equipment(s)/plant(s) in time, i.e. within the time specified in the contract from date of intimation by the Purchaser/Consignee in respect of the installation of the equipment(s)/plant(s).
- iii) Training of personnel has been done by the supplier as specified in the contract.
- iv) In the event of documents/drawings having not been supplied or installation and commissioning of the equipment(s)/plant(s) having been delayed on account of the supplier, the extent of delay should always be mentioned in clear terms.

Annexure 7

(To be submitted along with technical bid.)

**PROFORMA OF GUARANTEE FOR OPERATION AND COMPREHENSIVE
MAINTANENCE CONTRACT**

To,

Director,
Tata Memorial Centre- ACTREC
Kharghar Navi Mumbai 410210

Sub: Tender No.....

Dear Sir,

We the tenderer having bid in the above mentioned tender hereby agree for Operation and Comprehensive Maintenance which will be as quoted/negotiated with no escalation for 5 years after warranty. ACTREC reserves the right to exercise the option of AMC/CMC as per perceived needs.

Authorized Signatory
For & on behalf of M/s....