



CORRIGENDUM

1. Attention is invited to the Open Tender ref no. CIAB/7(44)2017-Works for the Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali. The tender opening date has been revised and extended as:

EXTENSION OF TENDER OPENING DATE	
Published as:	Revised as:
Bid Submission Ending at: 29.03.2022 at 15:00 Hrs.	Bid Submission Ending at: 12.04.2022 at 15:00 Hrs.
Bids Opening: 30.03.2022 at 15:30 Hrs.	Bids Opening: 13.04.2022 at 15:30 Hrs.

2. The other requirements and terms & conditions of the tender are remaining same. The Chief Executive Officer, CIAB reserves the right to accept or reject any offer without assigning any reason.

(Administrative Officer)

CENTER OF INNOVATIVE & APPLIED BIOPROCESSING

(Dept. of Biotechnology)
Knowledge City, Sector-81, Mohali. (Pb)
Website: www.ciab.res.in

Notice Inviting Tender (NIT)

CIAB/7(44)/2017- Works

Name of Work: - Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali.

Sealed item rate tender online e-tender is invited on behalf of the Chief Executive Officer, Centre of Innovative & Applied Bioprocessing (CIAB), Mohali for the work of “- **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali.**” as per terms and conditions provided in the tender document.

The tender document may be directly from the official website of CIAB, Mohali i.e. www.ciab.res.in or E-Central Public Procurement portal (<https://eprocure.gov.in/eprocure/appin>). **Both the bids i.e., the Technical & Financial bids, must be submitted on or before 29th March 2022 (up to 3.00 PM), along with the appropriate EMD as per below mentioned schedule:**

1.	Issue/download of Tender documents	From 09 th March 2022
2.	Last date and time for submission of sealed Tender	29 th March 2022 (up to 3.00 PM)
3.	Date & time of opening of technical bid	30 th March 2022 at 3.30 PM
4.	Earnest Money Deposit	Bid Security Declaration
5.	Time for Completion of Work	02 years from period specified in tender document

NOTE: Only online e-tenders shall be accepted. The bids are to be submitted on E Central Public Procurement portal (<https://eprocure.gov.in/eprocure/app>). Bids received by offline mode/FAX/email will be summarily rejected

The Chief Executive Officer, CIAB reserves the right to accept/reject any tender in part or full without assigning any reason.

Administrative Officer

CENTER OF INNOVATIVE & APPLIED BIOPROCESSING

(Dept. of Biotechnology)

Knowledge City, Sector-81, Mohali. (Pb)

Website: www.ciab.res.in

TENDER NOTICE

Tender No. CIAB/7(44)2017- Works

1.0 Sealed item rate tenders are invited on behalf of the Chief Executive Officer, CIAB from agencies who have executed similar works with Central govt/State govt. /Autonomous bodies, University, Institutes of Central/State Govt./PWDs/MES/HUDA/PUDA/CPWD/PSUs for the work of - **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali.**

1.1 The work is estimated to cost **Rs. 12,73,897/-** (INR Twelve Lacs Seventy-Three Thousand Eight Hundred Ninety-Seven rupees only inclusive of taxes & labour cess etc.). This estimate, however, is given merely as a rough guide.

1.2 The following basic technical eligibility criterion is mandatory for bidders. Failure to submit shall mean to disqualification: -

1.2.1 Bidder having experience (successfully completed) **in similar works** during the last 07 years in Government sector as described above. (Ending last day of the month previous to the one in which applications are invited) as per following criteria: -

Three similar completed works, costing not less than the amount equal to 40% of the estimated cost put to tender.

OR

Two similar completed works, costing not less than the amount equal to 60% of the estimated cost put to tender.

OR

One similar completed work of aggregate cost not less than the amount equal to 80% of the estimated cost put to tender.

1.2.2. **Average annual financial turnover should be at least 50% of the estimated cost put to tender during the immediate last three consecutive financial years.** Copies of duly attested statement (for last 03years) by Chartered Accountant should be provided.

1.2.3 **The bidder should have Employees Provident Fund, ESIC enlistment.** No self-certification/undertaking by bidders shall be entertained.

1.2.4 **The bidder should not have incurred any loss (profit after tax should be positive) in more than two years during available last five consecutive balance sheet, duly audited and certified by the Chartered Accountant.**

1.2.5 **Solvency of the amount equal to 40% of the Estimated Cost put to tender.**

For the purpose of this clause 'Similar work' means the work of **in Installation, Operation and Annual maintenance of Sewerage treatment plant, Effluent treatment plant as mentioned in criteria no 1.0.**

Department reserves the right to ask contractor for detailed schedule of quantities (BOQ) authenticated by concerned Government department to ascertain the scope of work done, in case, there is any doubt. Contractor shall fully co-ordinate in providing such documents/details.

Note: -The Tenderer shall produce definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, CIAB of having satisfactorily completed similar works of magnitude specified above. Completion Certificates to be enclosed.

2. Agreement shall be drawn with the successful tenderer on prescribed format by the Competent Authority. Tenderer shall quote his rates as per various terms and conditions laid down in the tender document.

3.The time allowed for carrying out the work will be 02 years after 23.08.2022 as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents. **In case of non-satisfactory work, CIAB reserves the right to not extend the contract for 2nd year.** Further CIAB, it may be extended for a further period of 01 year or lesser based on the requirement of CIAB. During the extended period of contract (if any), the increment in minimum wages of the deputed staff (if any) stipulated by the Govt. of India shall be payable to the contractor proportionately

NOTE: - The scanned documents should be clear and readable. In case, the documents are found non-readable or in-complete (half scanned/without signatures/stamp etc.), the same shall not be considered for evaluation. Bidders to do compliance accordingly. Bidders are advised to upload only relevant documents pertaining to cited work to avoid wastage of stationary, resources of department.

3. The site for the work is available.

5.(i)Tender documents will be directly download from the official website of CIAB OR or Central public procurement portal (eprocure.gov.in).

(ii)Tender forms, NIT and all the Tender documents consisting of plans, specifications, the schedule of quantities of the works to be done and the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary documents can be seen in the office of CIAB, Mohali on all working days between 10:00am to 5:00pm.

(iii) Tenders shall be accompanied with Bid Security Declaration in accordance with Procurement Policy Division, Department of Expenditure, Ministry of Finance, Govt. of India Office Memorandum dated 12th November 2020 as per Annexure of this Bid document on their letter head

(v) **Submission of Tender-** The technical bid documents shall should be uploaded in the Cover- 1 & 2 as detailed below:

1. Envelope -1 marked as Technical Bid containing the following-

- a) Scanned Copy of Bid Security Declaration in the prescribed format (i.e., DD/cash receipt, as the case may be).
- b) Scanned Copy of Documents related to eligibility criteria i.e., Completion certificates/proofs of the similar works completed.
- c) Scanned Copy of Tender Acceptance Letter.

- d) Scanned Copy of Average annual financial turnover statement for last 03 consecutive years duly attested by Chartered Accountant and profit and loss statement.
- e) Scanned Copy of EPF, ESIC enlistment/registration.
- f) Scanned Copy of Solvency Certificate

2. Envelope-2 marked as Financial/Price Bid containing the following-

This shall contain the price for the execution of the works specified in the Volume-2 of the tender document in Excel format

Note: -

- a) Documents to be uploaded in pdf format only (except price bid, which should be in excel format only).**
- b) Bid Security Declaration should have sent to the address- Centre of Innovative and Applied Bioprocessing Sector-81, knowledge City, PO- Manauli, SAS Nagar Mohali 140306, Punjab by post/speed post/courier/by hand before bid opening date & time.**

6. a) The contractor whose tender is accepted will be required to furnish performance guarantee of **3% (Three Percent)** of the tendered amount in accordance with Procurement Policy Division, Department of Expenditure, Ministry of Finance, Govt. of India, Office Memorandum dated 12th November 2020 within the period specified in Schedule 'F'. This guarantee shall be in the form of cash (in case guarantee amount is less than Rs. 5000/-) or Deposit at Call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F'. including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor.

Upon submission of performance bank guarantee, the EMD submitted by contractor shall be returned.

b) Upon award of work, contractor shall within **07 days sign the indemnity bond** (performa prescribed at the end of tender document) for supply of minor materials and against violation of labour laws, other State/Central Acts/norms as amended from time to time, accidents, damages etc thus indemnifying CIAB from negligence, loss of life/property, disputes, claims, violation arising out of the work due to contractor/his partner/workers/sub-contractors etc. CIAB shall have authority to take suitable action against contractor both financially as well as legally depending upon the violation by contractor/his partner/workers/sub-contractors etc.

8. The description of the work is as follows:

Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali, Tenderers are advised to inspect and examine the site, external development area of campus and satisfy themselves before submitting their tenders as to the type of system (so far as is practicable), the form, wastage of material and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed.

The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and local conditions and other factors having a bearing on the execution of the work.

9. The Competent Authority does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any

of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

10. Canvassing whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.

11. The tender for the works shall remain open for acceptance for a period of **One Hundred Eighty Days (180) days** from the receipt of bid in case tenders are invited on 2 envelop system (strike out as the case may be) if any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the Institute shall, without prejudice to any other right or remedy, be at liberty to forfeit 100% of the said earnest money, as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.

12. This Notice Inviting Tender shall form a part of the contract document. The successful tenderer/contractor, on acceptance of his tender by the Accepting/Competent Authority shall within 15 days sign the contract agreement consisting of: -

a) The Notice Inviting Tender, all the documents including financial bid, additional conditions, specifications and drawings, if any, forming the tender as issued/downloaded at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

b) Tender form.

14. No price preference to any corporate society/Registered society, Govt. Public Sector undertakings / bodies shall be given and tenders shall be exclusively dealt with on merit.

15. The contractor shall comply with the provisions of the Apprentices Act 1961, minimum wages Act 1948, Workmen's compensation Act 1923, contract labour (Regulation and Abolition Act 1970), payment of wages Act 1938, Employer's liability Act 1938, Maternity Benefits Act 1961, Employee's State Insurance Act, 1948, Employees Provident Fund Act, 1952 and the Industrial Disputes Act 1947, ESI Act as applicable and the rules and regulations issued there under and by the local Administration/ Authorities from time to time as well all provisions of law applicable to workmen. Failure to do so shall amount to breach of the contract and the Engineer-in-Charge may at his discretion terminate the contract. The Contractor shall also be liable for any pecuniary liability arising on account of violation by him of any of the said Acts and shall indemnify the Institute on that account. Institute will not be liable for any act or omission on the part of the contractor in so far as any violation of any of the aforementioned acts.

16. Each tenderer shall submit only one tender; either by him or as partners in a joint venture. A tenderer who submits or participates in more than one tender will be disqualified.

17. Unless otherwise stated, the contract shall be for the whole work as described in the "Schedule of items/quantities of Works" and the drawings. The contractor shall be bound to complete the whole work as described in the schedule of items of works and the drawings, including additional items, if any, as per drawings and instructions. The certificate of completion to be recorded by the Engineer-in-Charge shall be mandatory and will be conclusive proof of completion of work.

18. Interpretations, corrections and changes to the Tenders Documents shall be made by Addendum, if required.

19. Each Tenderer shall ascertain prior to submitting his Tender that he has received all Addenda issued and he shall so acknowledge their receipt in his Tender.

20. The provisions in the Tender documents shall govern over the contents of the above paragraphs if in contradiction or variation.

23. All pages of the Tender should be page numbered.

24. It is the responsibility of tenderer to go through the tender document to ensure furnishing all required documents in addition to above, if any.
25. The authorized signatory of the tenderer must sign the tender duly stamped at appropriate places and initial all the remaining pages of the tender.
26. A tenderer, which does not fulfill any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.
27. Tender sent by fax/telex/electronically shall be ignored.
28. CIAB reserves the right to increase or decrease the scope of work.
29. The statutory deductions such as TDS, from RA bills, labour cess, WCT, etc shall be deducted at source as per prevailing percentage/rates as amended from time to time by Central/Sate Govt.
30. The contractor shall give a list of both gazetted and non-gazetted CIAB employees related to him (if any).
31. Bids of de-barred bidders from previous tenders shall be summarily rejected and are not allowed to participate

TENDER ACCEPTANCE LETTER

To

**The Chief Executive Officer
CIAB, Mohali, Punjab, India**

Dear Sir,

I/We have read and examined the following Tender Documents relating to the work of Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali.

- General Conditions
- Instructions to bidders
- General Information
- Specific condition of contract
- Terms and Conditions of Contract Agreement
- Technical specification and Bill of Quantities
- Price Bid

I/We hereby offer to execute the work complete in all respects specified in the underwritten Memorandum within the time specified therein at the rates specified in the bill of Quantities and in accordance, with the specifications, designs, drawings and instructions in writing referred to in the conditions of tender.

I/We hereby certify that I/We had read the entire terms and conditions of the tender documents (including all documents like annexure(s), schedule(s), etc.) which form part of the contract agreement and I/We shall abide hereby by the terms/conditions/clauses contained therein. The corrigendum(s) issued from time to time by your department/organization too have also been taken into consideration, while submitting the acceptance letter. I/We hereby unconditionally accept the tender conditions of above-mentioned tender document(s) in its totality/entirety. In case any provision of this tender is found violated, then your department/organization shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the full said earnest money deposit absolutely.

Tenderer's Signature and Seal

Postal Address

DATED:

Witness:

Address:

Occupation:

CONDITIONS OF CONTRACT

Definitions

- I. The **Contract** means the documents forming the tender and acceptance thereof and the formal agreement executed between Center of Innovative & Applied Bioprocessing (CIAB) and the Contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
- II. In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them: -
- (i) The expression **works** or **work** shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
- (ii) The **Site** shall mean the land/or other places on, into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
- (iii) The **Contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
- (iv) The Owner/Competent Authority/Institute **means** the Chief Executive Officer, CIAB
- (v) The **Engineer-in-charge** means the Assistant Engineer (Civil) who shall supervise and be in charge of the work on behalf of the Competent Authority.
- (vi) **Accepting Authority** shall mean the authority Chief Executive Officer, CIAB
- (vii) **Excepted Risk** are risks due to riots (other than those on account of contractor's Employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by owner of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to owner's faulty design of works.
- (viii) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour as per market at the site where the work is to be executed plus the percentage, all overheads and profits.
- (ix) **Schedule(s)** referred to in these conditions shall mean the relevant schedule(s) annexed to the tender papers or the standard Schedule of Rates of the government mentioned with the amendments thereto issued up to the date of receipt of the tender.
- (X) **Tendered value** means the value of the entire work as stipulated in the letter of award as quoted by bidders.
- (xi) **Date of commencement of work:** The date of commencement of work shall be the date of start or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender document.
- III. Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.

- IV. Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.
- V. The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications, Schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract.
- VI. The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Quantities shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.
- VII. The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.
- VIII. The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.
- IX. In the case of discrepancy between the schedule of Quantities, the Specifications and/ or the Drawings, the following order of preference shall be observed: -
- (i) Description of Schedule of Quantities.
 - (ii) Particular Specification and Special Condition, if any.
 - (iii) Drawings.
 - (iv) CPWD Specifications and General Conditions of Contract.
 - (v) Indian Standard Specifications of B.I.S.
- X. If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.
- XI. Any error in description, quantity or rate in Schedule of Quantities or any omission therefrom shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.

CLAUSES OF CONTRACT

CLAUSE 1

(i) The contractor shall submit an irrevocable Performance Guarantee of **3% (Five percent)** of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period specified from the date of issue of letter of acceptance. This period can be further extended by the Competent Authority up to a maximum period as specified in schedule 'F' on written request of the contractor stating the reason for delays in procuring the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This guarantee shall be in the form of Cash (in case guarantee amount is less than Rs. 5,000/-) or Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay Order of any scheduled bank (in case guarantee amount is less than Rs. 1, 00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the form annexed hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.

(ii) The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.

(iii) The Engineer-in-Charge shall not make a claim under the performance guarantee except for amounts to which the owner is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

(a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.

(b) Failure by the contractor to owner any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-Charge.

(iv) In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Competent Authority.

(v) On substantial Completion of any work which has been completed to such an extent that the intended purpose of the work is met and ready to use, then a provisional Completion certificate shall be recorded by the Engineer-in-Charge. The provisional certificate shall have appended with a list of outstanding balance item of work that need to be completed in accordance with the provisions of the contract. This provisional completion certificate shall be recorded by the concerned Engineer-In-charge with the approval of Superintending Engineer /Project Manager / Chief Engineer/Chief Project Manager, if required. After recording of the provisional Completion Certificate for the work by the competent authority, the 80 % of performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving Maintenance of building and services /any other work after construction of same building and services/ other work, then 40% of performance guarantee shall be returned to the contractor, without any interest after recording the provisional Completion certificate.

CLAUSE 2

Compensation for Delay

If the contractor fails to maintain the required progress or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the Government on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the authority specified in schedule 'F' (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified in Clause 5 or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified.

(i) Compensation @ point five percent (0.5%) per week of delay for delay of work/ major breakdown of the system to be computed on day basis provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given.

CLAUSE 3

When Contract can be Determined

Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

(i) If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.

(ii) If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.

(iii) If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.

(iv) If the contractor persistently neglects to carry out his obligations under the contract and/ or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.

(v) If the contractor shall offer or give or agree to give to any person in Government service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for Government.

(vi) If the contractor shall enter into a contract with Government in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge.

(vii) If the contractor had secured the contract with Government as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement.

(viii) If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any

application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.

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

(x) If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.

(xi) If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer -in-Charge.

When the contractor has made himself liable for action under any of the cases aforesaid, the Competent Authority shall have powers:

(a) To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Security Deposit already recovered and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the Government

(b) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work.

In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

CLAUSE 3A

In case, the work cannot be started due to reasons not within the control of the contractor within 1/8th of the stipulated time for completion of work or one month whichever is higher, either party may close the contract. In case contractor wants to close the contract, he shall give notice to the department stating the failure on the part of department. In such eventuality, the Performance Guarantee of the contractor shall be refunded within following time limits:

(i) If the Tendered value of work is up to Rs. 45 lac: 15 days.

(ii) If the Tendered value of work is more than Rs. 45 lac and up to Rs. 2.5 Crore: 21 days.

(iii) If the Tendered value of work exceeds Rs. 2.5 Crore: 30 days.

CLAUSE 4

Contractor liable to pay Compensation even if action not taken under Clause 3

In any case in which any of the powers conferred upon the Competent Authority by Clause-3 thereof, shall have become exercisable and the same are not exercised, the non-exercise hereof shall not constitute a waiver of any of the conditions hereof and such powers shall Notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole

discretion of the Engineer-in- Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work/or any part thereof, paying or allowing for the same in account at the contract rates, or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.

CLAUSE 5

Time and Extension for Delay

The time allowed for execution of the Works as specified in the Schedule 'F' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in schedule 'F' or from the date of handing over of the site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance guarantee absolutely.

If the work(s) be delayed by: -

- (i) Force majeure, or
- (ii) Abnormally bad weather, rains or
- (iii) Serious loss or damage by fire, or
- (iv) Civil commotion, local commotion of workmen, strike or lockout, affecting any of the Trades employed on the work.
- (v) Delay on the part of other contractors or tradesmen engaged by owner in executing work not forming part of the Contract, or
- (vi) Non-availability of stores material, which are the responsibility of owner to supply or
- (vii) Non-availability or break down of tools and Plant to be supplied or supplied by Government or
- (viii) Any other cause which, is beyond the Contractor's control.

Then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the authority as indicated in

Schedule 'F' but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

The contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed in sub clause 5.2.

CLAUSE 10A

Materials to be provided by the Contractor

The contractor shall, at his own expense, provide all materials, required for the works other than those which are stipulated to be supplied by the owner. The contractor shall, at his own expense and without delay, supply to the Engineer-in- Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in- Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in

writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.

The Contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer in-Charge or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the Contractor. The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped at least with the testing equipment as specified in schedule F.

CLAUSE 10 D

Dismantled Material Govt. Property

The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work, etc. as Government's property and such materials shall be disposed off to the best advantage of Government according to the instructions in writing issued by the Engineer in-Charge.

CLAUSE 11

Work to be executed in Accordance with Specifications, Drawings, Orders etc.

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the standard specifications of Central Public Works Department or in any Bureau of Indian Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract. The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

CLAUSE 12:

Deviations/ Variations Extent and Pricing

The Engineer-in-Charge shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

12.1 The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered be extended, if requested by the contractor, as follows:

- (i) In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus
- (ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

12.2

Deviation, Extra Items and Pricing

In the case of extra item(s) (items that are completely new, and are in addition to the items contained in the contract), the contractor may within fifteen days of receipt of order or occurrence of the item(s) submit market rate claim rates, supported by proper analysis which shall include invoices, vouchers etc. and Manufacturer's specification for the work failing which the rate approved later by the Engineer- in charge shall be binding and the Engineer-in-Charge shall within prescribed time limit of the receipt of the claims supported by analysis , after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined, failing which it will be deemed to have been approved. In the case of substituted items (items that are taken up with partial substitution or in lieu of items of work in the contract), the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the following para.

- (a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).
- (b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

Deviation, deviated Quantities, Pricing

In the case of contract items, substituted items, contract cum substituted items, which exceed the limits laid down in schedule F, the contractor may within fifteen days of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities, the Engineer-in-Charge shall within prescribed time limit of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates (as per invoice, vouchers from the manufacturers or suppliers submitted by the agency and duly verified by Engineer in Charge or his representative) and the contractor shall be paid in accordance with the rates so determined. The prescribed time limit for finalizing rates for Extra Item(s), Substitute Item(s) and Deviated Quantities of contract items is within 45 days after submission of proposal by the contractor without observation of the Engineer-in-Charge. If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the

12.3 The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Schedule F, and the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of fifteen days having regard to the market rates.

12.4 For the purpose of operation of Schedule "F", the following works shall be treated as works relating to foundation unless & otherwise defined in the contract:

- (i) For Buildings: All works up to 1.2 metres above ground level or up to floor 1 level whichever is lower.
- (ii) For abutments, piers and well staining: All works up to 1.2 m above the bed level.
- (iii) For retaining walls, wing walls, compound walls, chimneys, overhead reservoirs/ tanks and other elevated structures: All works up to 1.2 metres above the ground level.
- (iv) For reservoirs/tanks (other than overhead reservoirs/tanks) : All works up to 1.2 metres above the ground level.
- (v) For basement: All works up to 1.2 m above ground level or up to floor 1 level whichever is lower.
- (vi) For Roads, all items of excavation and filling including treatment of sub base.

12.5 Any operation incidental to or necessarily has to be in contemplation of tenderer while quoting tender, or necessary for proper execution of the item included in the Schedule of quantities or in the schedule of rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations.

CLAUSE 13

Foreclosure of contract due to Abandonment or Reduction in Scope of Work

If at any time after acceptance of the tender or during the progress of work, the purpose or object for which the work is being done changes due to any supervening cause and as a result of which the work has to be abandoned or reduced in scope the Engineer-in-Charge shall give notice in writing to that effect to the contractor stating the decision as well as the cause for such decision and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

Clause 14

Carrying out part work at risk & cost of contractor

If contractor:

(i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after a notice in writing of 7 days in this respect from the Engineer-in-Charge; or

(ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Engineer-in-Charge; or Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge.

(iii) The Engineer- in-Charge without invoking action under clause 3 may, without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to Government, by a notice in writing to take the part work / part incomplete work of any item(s) out of his hands and shall have powers to:

(a) Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or

(b) Carry out the part work / part incomplete work of any item(s) by any means at the risk and cost of the contractor.

The Engineer-in-Charge shall determine the amount, if any, is recoverable from the contractor for completion of the part work/ part incomplete work of any item(s) taken out of his hands and execute at the risk and cost of the contractor, the liability of contractor on account of loss or damage suffered by Government because of action under this clause shall not exceed 10% of the tendered value of the work.

In determining the amount, credit shall be given to the contractor with the value of work done in all respect in the same manner and at the same rate as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the contractor.

The certificate of the Engineer-in-Charge as to the value of work done shall be final and conclusive against the contractor provided always that action under this clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the department are less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

Any excess expenditure incurred or to be incurred by Government in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by Government as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to Government in law or per as agreement be recovered from any money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract.

In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

CLAUSE 15

Suspension of Work

(i) The contractor shall, on receipt of the order in writing of the Competent Authority, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

(a) on account of any default on the part of the contractor or;

(b) for proper execution of the works or part thereof for reasons other than the default of the contractor; or

(c) for safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer in- Charge.

(ii) If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:

(a) the contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;

(b) If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in-Charge may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within fifteen days of the expiry of the period of 30 days.

(iii) If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in subpara above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer in-Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by owner or where it affects whole of the works, as an abandonment of the works by owner, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by owner, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months.

CLAUSE 16

Action in case Work not done as per Specifications

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-In-charge, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself. If it shall appear to the Engineer-in-charge, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in the case of work costing Rs. 10 Lac and below except road work) of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause 2 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the authority specified in schedule 'F' may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Competent Authority to be conveyed in writing in respect of the same will be final and binding on the contractor.

Clause 18 B

Ensuring Payment and Amenities to Workers if Contractor fails

In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, Government is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the C.P.W.D. Contractor's Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by C.P.W.D. Contractors, Government will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of the Government under subsection(2) of Section 20, and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, Government shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Government to the contractor whether under this contract or otherwise Government shall not be bound to contest any claim made against it under sub-section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the Government full security for all costs for which Government might become liable in contesting such claim.

CLAUSE 19

Labour Laws to be complied by the Contractor

The contractor shall obtain a valid licence under the Contract Labour (R&A) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work, if required as per labour law. The contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) Act, 1986.

The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996. Any failure to fulfil these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

CLAUSE 19A

No labour below the age of fourteen years shall be employed on the work.

CLAUSE 19 B

Payment of wages:

(i) The contractor shall pay to labour employed by him either directly or through subcontractors, wages not less than fair wages as defined in the C.P.W.D Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

(ii) The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wage to labour indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work, as if the labour had been immediately employed by him.

(iii) In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Central Public Works Department contractor's Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorized made, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

(iv) (a) The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfilment of the conditions of the contract for the benefit of the workers, non-payment of wages

or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of the Regulations.

(b) Under the provision of Minimum Wages (Central) Rules, 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned.

(v) The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made thereunder from time to time.

(vi) The contractor shall indemnify CIAB against payments to be made under and for the observance of the laws aforesaid and any other law, Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors.

(vii) The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.

(viii) Whatever is the minimum wage for the time being, or if the wage payable is higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise.

(ix) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

CLAUSE 20

Minimum Wages Act to be complied with

The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, and Contract Labour (Regulation and Abolition) Act, 1970, amended from time to time and rules framed thereunder and other labour laws affecting contract labour that may be brought into force from time to time.

CLAUSE 21

Work not to be sublet. Action in case of insolvency

The contract shall not be assigned or sublet without the written approval of the Engineer-in - Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor, or any of his servants or agent to any public officer or person in the employ of Government in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer in- Charge on behalf of the President of India shall have power to adopt the course specified in

Clause 3 hereof in the interest of Government and in the event of such course being adopted, the consequences specified in the said Clause 3 shall ensue.

CLAUSE 24

Life Cost Cycle

The contractor shall be responsible for safety, quality and soundness of the buildings including structural elements beyond maintenance period. The contractor shall have obligation to rectify such defects minimum up to 5 (five) years from the date of completion of work. The defects have to be rectified within a reasonable time not exceeding three months after issue of notice by Engineer- in- Charge.

CLAUSE 25

Settlement of Disputes & Arbitration

Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter: (i) If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge or if the Engineer in Charge considers any act or decision of the contractor on any matter in connection with or arising out of the contract or 51 carrying out of the work, to be unacceptable and is disputed, such party shall promptly within 15 days of the arising of the disputes request the Chief Engineer/ CPM, or where there is no Chief Engineer/CPM, request the Additional Director General/Special Director General ,who shall refer the disputes to Dispute Redressal Committee (DRC) within 15 days along with a list of disputes with amounts claimed if any in respect of each such dispute. The Dispute Redressal Committee (DRC) give its decision within a period of 60 days extendable by 30 days by consent of both the parties from the receipt of reference from CE/CPM/ADG/SDG. The constitution of Dispute Redressal Committee (DRC) shall be as indicated in Schedule 'F'. Provided that no party shall be represented before the Dispute Redressal Committee by an advocate/legal counsel etc. The DRC will submit its decision to the concerned ADG/SDG for acceptance. ADG/ SDG in a time limit of 30 days from receipt of DRC decision will convey acceptance or other wise on the said decision .If the Dispute Redressal Committee (DRC) fails to give its decision within the aforesaid period or the ADG/SDG fails to give his decision in the aforesaid time limit or any party is dissatisfied with the decision of Dispute Redressal Committee (DRC)/ ADG/ SDG theneither party may within a period of 30 days from the receipt of the decision of Dispute Redressal Committee (DRC)/ ADG/SDG or on expiry of aforesaid the time limits available to DRC/ ADG/SDG ,may give notice to the Chief Engineer/CPM, CPWD, in charge of the work or if there be no Chief Engineer/ CPM,, the Additional Director General /Special Director General concerned or if there be no Additional Director General/ Special Director General, the Director General, CPWD for appointment of arbitrator on prescribed proforma as per Appendix XVII under intimation to the other party. It is a term of contract that each party invoking arbitration must exhaust the aforesaid mechanism of settlement of claims/disputes prior to invoking arbitration. The CE/ADG/ SDG /DG shall in such case appoint the sole arbitrator or one of the three arbitrators as the case may be within 30 days of receipt of such a request and refer such disputes to arbitration. Wherever the Arbitral Tribunal consists of three Arbitrators, the contractor shall appoint one arbitrator within 30 days of making request for arbitration or of receipt of request by Engineer-in-charge to CE/ADG/ SDG /DG for appointment of arbitrator, as the case may be, and two appointed arbitrators shall appoint the third arbitrator who shall act as the Presiding Arbitrator. In the event of a. A party fails to appoint the second Arbitrator, or b. The two appointed Arbitrators fail to appoint the Presiding Arbitrator, then the Director General, CPWD shall appoint the second or Presiding Arbitrator as the case may be. (ii) Dispute or difference shall be referred for adjudication through 52 arbitration by a Tribunal having sole arbitrator where claimed amount is Rs. 20 Crore or less. Where claimed Value is more than Rs. 20 Crore, Tribunal shall consist of three Arbitrators as above. The requirements of the Arbitration and Conciliation Act, 1996 (26 of 1996) and any further statutory modification or reenactment thereof and the rules made there under and for the time being in force shall be applicable. It is a term of this contract thatthe party invoking arbitration shall give a list of disputes with amounts claimed, if any, in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the decision of the ADG/ SDG on the finding / recommendation of DRC. It is also a term of this contract that any member of the Arbitration Tribunal shall be a Graduate Engineer with experience in handling public works engineering contracts, and further he shall have earlier worked at a level not lower than Chief Engineer/ equivalent (i.e. Joint Secretary level of Government of India). This shall be treated as a mandatory qualification to be appointed as arbitrator. Parties, before or at the time of appointment of Arbitral Tribunal may agree in writing for fast track arbitration as per the Arbitration and Conciliation Act, 1996 (26 of 1996) as amended in 2015. Subject to provision in the Arbitration and Conciliation Act, 1996 (26 of 1996) as amended in 2015 whereby the counter claims if any can be directly filed before the arbitrator without any requirement of reference by the appointing authority.The arbitrator shall adjudicate on only such disputes as are referred to him by the appointing authority and give separate award against each dispute and claim referred to him and in all cases where the total amount of the claims by any party exceeds Rs. 1,00,000/-, the arbitrator shall give reasons for the award. It is also a term of the contract that fees payable to arbitral tribunal shall be as approved by DG, CPWD, OM issued vide

no.2/2006/SE(TLC)/CSQ /137 dated 19-11-2019 (or its latest amendment as approved by DG, CPWD). This fee shall be shared equally by parties. The place of arbitration shall be as mentioned in Schedule F. In case there is no mention of place of arbitration, the arbitral tribunal shall determine the place of arbitration. The venue of the arbitration shall be such place as may be fixed by the Arbitral Tribunal in consultation with both the parties. Failing any such agreement, then the Arbitral Tribunal shall decide the venue.

CLAUSE 27

Lumpsum Provisions in Tender

When the estimate on which a tender is made includes lump sum in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge payable of measurement, the Engineer-in-Charge may at his discretion pay the lump -sum amount entered in the estimate, and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of the clause.

CLAUSE 28

Action where no Specifications are specified

In the case of any class of work for which there is no such specifications as referred to in Clause 11, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers' specifications, if not available then as per state/ District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

CLAUSE 29

Withholding and lien in respect of sum due from Contractor

(i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in Charge or the Government shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any deposited by the contractor and for the purpose aforesaid, the Engineer-in-Charge or the Government shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the Engineer-in-Charge or the Government shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge of the Government or any contracting person 54 through the Engineer-in-Charge pending finalization of adjudication of any such claim. It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or Government will be kept withheld or retained as such by the Engineer-in-Charge or Government till the claim arising out of or under the contract is determined by the arbitrator (if the contract is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the Government shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company as the case may be, whether in his individual capacity or otherwise. (ii) Government shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract, etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for Government to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible; and if

it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by Government to the contractor, without any interest thereon whatsoever. Provided that the Government shall not be entitled to recover any sum overpaid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Superintending Engineer or Executive Engineer on the one hand and the contractor on the other under any term of the contract permitting payment for work after assessment by the Superintending Engineer or the Executive Engineer

CLAUSE 31

Hire of Plant & Machinery

The contractor shall arrange at his own expense all tools, plant, machinery and equipment (hereinafter referred to as T&P) required for execution of the work.

CLAUSE 32

Employment of Technical Staff and employees

Contractors Superintendence, Supervision, Technical Staff & Employees (i) The contractor shall provide all necessary superintendence during execution of the work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract. The contractor shall immediately after receiving letter of acceptance of the tender and before commencement of the work, intimate in writing to the Engineer-in-Charge, the name(s), qualifications, experience, age, address(s) and other particulars along with certificates, of the principal technical representative to be in charge of the work and other technical representative(s) who will be supervising the work. Minimum requirement of such technical representative(s) and their qualifications and experience shall not be lower than specified in Schedule 'F'. Even of the contractor (or partner(s) in case of firm/ company)is himself / herself an Engineers, it is necessary on the part of the contractor to Employ principal technical representative / technical representative (s) as per stipulation in Schedule 'F' The Engineer-in-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise of such a representative(s) to the contractor. Any such approval may at any time be withdrawn and in case of such withdrawal, the contractor shall appoint another such representative(s) according to the provisions of this clause. Decision of the tender accepting authority shall be final and binding on the contractor in this respect. Such a principal technical representative and other technical representative(s) shall be appointed by the contractor soon after receipt of the approval from Engineer-incharge and shall be available at site before start of work. All the provisions applicable to the principal technical representative under the Clause will also be applicable to other technical representative(s) The principal technical representative and other technical representative(s) shall be present at the site of work for supervision at all times when any construction activity is in progress and also present himself/themselves, as required, to the Engineer-in-Charge and/or his designated representative to take instructions. Instructions given to the principal technical representative or other technical representative(s) shall be deemed to have the same force as if these have been given to the contractor. The principal technical representative and other technical representative(s) shall be actually 57 available at site fully during all stages of execution of work, during recording/checking/test checking of measurements of works and whenever so required by the Engineer-in-Charge and shall also note down instructions conveyed by the Engineer-in-Charge or his designated representative(s) in the site order book and shall affix his/their signature in token of noting down the instructions and in token of acceptance of measurements/checked measurements/ test checked measurements. The representative(s) shall not look after any other work. Substitutes, duly approved by Engineer-in-Charge of the work in similar manner as aforesaid shall be provided in event of absence of any of the representative(s) by more than two days. If the Engineer-in-Charge, whose decision in this respect is final and binding on the contractor, is convinced that no such technical representative(s) is/are effectively appointed or is/are effectively attending or fulfilling the provision of this clause, a recovery (non refundable) shall be effected from the contractor as specified in Schedule 'F' and the decision of the Engineer-In-Charge as recorded in the site order book and measurement recorded checked/test checked in Measurement Books shall be final and binding on the contractor. Further if the contractor fails to appoint suitable technical Principal technical representative and/or other technical representative(s) and if such appointed persons are not effectively present or are absent by more than two days without duly approved substitute or do not discharge their responsibilities satisfactorily, the Engineer-in-Charge shall have full powers to suspend the execution of the work until such date as suitable other technical representative(s) is/are appointed and the contractor shall be held responsible for the delay so caused to the work. The contractor shall

submit a certificate of employment of the technical representative(s) (in the form of copy of Form-16 or CPF deduction issued to the Engineers employed by him) along with every on account bill final bill and shall produce evidence if at any time so required by the Engineer-in-Charge. (ii) The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work. The contractor shall provide and employ skilled, semiskilled and unskilled labour as is necessary for proper and timely execution of the work. The Engineer-in-Charge shall be at liberty to object to and require the contractor to remove from the works any person who in his opinion misconducts himself, or is incompetent or negligent in the performance of his duties or whose employment is otherwise considered by the Engineer-in-Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer-in-Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.

CLAUSE 33

Levy/Taxes payable by Contractor

- (i) GST, Building and other Construction Workers Welfare Cess or any other tax, levy or Cess in respect of input for or output by this contract shall be payable by the contractor and Government shall not entertain any claim whatsoever in this respect except as provided under Clause 34.
- (ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red bajri, stone, kankar, etc. from local authorities. If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of India and does not any time become payable by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor

CLAUSE 35

Termination of Contract on death of contractor

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Engineer-In-charge on behalf of the Chief Executive Officer, CIAB shall have the option of terminating the contract without compensation to the contractor.

CLAUSE 36

If relative working in department, then the contractor not allowed to tender

The contractor shall not be permitted to tender for works if officials responsible for award and execution of contracts. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Officer in CIAB. Any breach of this condition by the contractor would render him debarred from tendering.

NOTE: By the term "near relatives" is meant wife, husband, parents and grandparents, children and grandchildren, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

CLAUSE 37

No Gazetted Engineer to work as Contractor within one year of retirement

No engineer of gazetted rank or other gazetted officer employed in CIAB engineering division or administrative duties shall work as a contractor or employee of a contractor for a period of one year after his retirement from CIAB service without the previous permission of Competent Authority at CIAB in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Competent Authority at CIAB as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

CLAUSE 40

Apprentices Act provisions to be complied with

The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the owner may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

Clause 41

Release of Security deposit after labour clearance

Release of Security Deposit of the work shall not be refunded till the contractor produces a clearance deposit after labour certificate from the Labour Officer. As soon as the work is virtually complete the contractor shall apply for the clearance certificate to the Labour Officer under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the Labour Officer to intimate if any complaint is pending against the contractor in respect of the work. If no complaint is pending, on record till after 3 months after completion of the work and/or no communication is received from the Labour Officer to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate and the Security Deposit will be released if otherwise due.

OTHER CONDITIONS

- 1. The safety precautions/provisions as per CPWD Safety Code mentioned in CPWD General Condition of Contract 2020 may be required to execute the work by contractor free of cost.**
- 2. Model Rules for the Protection of Health and Sanitary Arrangements for Workers to be followed by Contractor as per CPWD General Condition of Contract 2020.**
- 3. Contractor Should be follow C.P.W.D. Contractor's Labour Regulations as per CPWD General Condition of Contract 2020.**
- 4. List of acts and omissions for which fine can be imposed to be implemented on site as per CPWD General Condition of Contract 2020.**

SPECIAL CONDITIONS OF CONTRACT

1. The existing STP, Plant is capable of treating 20 KLD sewage, effluent per day for CIAB respectively under normal conditions. Technical details of the Plant and the process layout with characteristics are enclosed. Contractor should provide the details of workers and they should be ITI with 05 years' experience for operation of STP plant with reputed agency.
2. During the holidays, National off days, at least the bare minimum manpower may be deployed. It is contractor's responsibility to operate, maintain facilities. Plant should not be left un-attended in any case by contractor.
3. Operation and maintenance is to be carried out for all the activities of the plant maintaining pumps, blowers, pneumatic valves, dosing systems etc. as listed. Any inventory which is installed but not mentioned in the list shall also be covered in Operation and maintenance. Daily log details have to be maintained for all equipment of the plant and their performance including energy, feed and permeate water qualities as instructed by CIAB Engineer in charge. All equipment & valves may have to be operated / controlled manually also.
4. The scope of work shall include **monthly testing of treated water for STPs, ETPs wrt conformation of pollution control norms specified by regional Pollution Control Board or Ministry of Environment & Forest as applicable**. The monthly tests like PH, BOD, COD, TDS, TSS, E.coli, Oil & Grease, etc. are to be got done through NABL accredited laboratory only with prior permission of Engineer-in-Charge. The tests are to be conducted generally by 15th day of each month and test report is to be submitted by 3rd week to Engineer- In- Charge.
5. The cost of above monthly tests shall be deemed to be included in rate quoted by bidder and nothing extra is payable.
6. Statutory approvals such as NOCs from bodies such as Punjab Pollution Control Board/Ministry of Environment & Forest/ Public Health Dept., GMADA/Irrigation Dept./NGT or any other Govt authority etc. from time to time including liasioning with them, testing, if required by them. No extra shall be paid to bidder on account of above.
7. If the system is not operated for more than a shift of 8 hours due to break-down on account of other than Power Supply, non-availability of effluent/sewage, consumable to be provided by CIAB, etc., recovery will be **made on pro rata basis as per the approved and awarded rate for respective from the date of break down to the date of putting back the system to perform effectively**. The work is to be executed on all CIAB working days including public holidays and Sundays.
8. **Carryout daily preventive maintenance of the equipment like greasing, oiling, cleaning of pumps, blower's valves, electric panels, pump cleaning etc. as per the instructions. Attend and rectify all major breakdowns. Any kind of spare parts required for comprehensive maintenance required shall be provided by contractor.**
9. The comprehensive annual maintenance contract shall comprise of the entire inventory installed in both the plants. **Any fault/defect in part of pumps, blowers, filters, diffusers, electrical panel, dosing system, membranes, filters, ACF, DCF, UV system, hydro pneumatics system including PLC etc. shall either be repaired or replaced by contractor at own cost. Any other material/ inventory not mentioned above shall also be deemed to be included in the quoted rates.**
10. **Department didn't issue any consumables like Jaggery, DAP, Urea, sodium hypochlorite (5ppm), Bio-culture, belts, lime, alum, poly etc. All the material/consumables shall be provided by bidders.** No extra cost shall be provided to bidders for such materials required for operation & performance maintenance of the equipment/plant.
11. Scope of work shall include **cleaning of screen, oil/grease pits, tanks etc. all for proper functioning of plant shall be done at least once a month.**
12. Operator shall report to Engineer-in-charge about performance and healthiness of the plant every day and any major issue shall be immediately brought to the notice.
13. The contractor shall depute alternate Operator if Operator is on leave / absent / compensatory off.
14. Required Power and water for the Operation of the system will be provided by CIAB free of charges.
15. Possible field tests have to be conducted on daily and routine basis. All test records and results should be maintained and produced to CIAB for its verification. PH meter should be available on site for daily testing

16. The contractor should maintain all monitoring records w.r.t operation and maintenance, Laboratory analysis, etc.
17. The Contractor should associate for collecting samples by statutory bodies like Central Pollution Control Board, Punjab Pollution Control Board etc and others if necessary. The contractor/bidder shall liaison with State Pollution Control Board/Ministry of Environment & Forest for all purposes as required w.r.t the plant within the quoted rates.
18. **The contractor shall ensure payment of Minimum wages, Bonus as per act 1965, earned leaves as per Factory act 1948 to the workmen employed by him at the rate at which shall not less than the minimum wage applicable under Law from time to time. The minimum wages applicable shall be as per Central Government rates for category/city of B Area as increased from time to time by Government during the contract period. Currently the minimum wages exclusive of EPF/ESI contributions for skilled & un-skilled manpower applicable to us are: - Rs 724/day, & Rs 546/day. The increase, if any in future shall also be paid by contractor and its cost shall be deemed to be included in the quote for next 02 years. Proof of leave, bonus, minimum wages, etc. to be submit to this office with valid records and confirmation of worker.**
19. **Successful bidder shall take labour license from Labour commissioner office as required under labour laws, as per applicability. Bidder is responsible in case of violation.**
20. PF & ESI Act should cover the workmen as applicable. The cost towards contribution for EPF/ESI shall be borne fully by contractor. The cost should also include the time to time increase in minimum wages & EPF/ESI contributions. Nothing extra is payable by CIAB.
21. The contractor should submit the list and quantity of consumables and spares used every month for the verification by CIAB.
22. Also, bidder shall provide all the tools at site for operation, maintenance of plant during the whole project duration. No tools shall be provided by CIAB.
23. Replacing of defective spares is in the scope of contractor under Comprehensive Annual Maintenance Contract.
24. **The workers should be provided with personal protective equipment's such as Gloves, Goggles, safety shoes, Gum boots, face masks, waste cloths, soaps, etc. by the Contractor within the quoted rates. All the manpower deployed should be provided with proper uniform 02 sets & 01 no's dangri for maintenance work by contractor. In case, of violation, penalty @ Rs 500/day shall be levied on contractor**
25. The contractor should follow all procedures pertaining to safety and EMS in day to day running of the plant.
26. All the tools and plants etc as required for proper operation and maintenance of facility shall be arranged by contractor at its own cost.
27. The contractor should keep a First Aid Box with list of Aids and should be refilled as and when required.
28. **During this period the contractor should take whole responsibility of the Plant operation including treatment efficiency. Any deviation from the specific performance requirement of any equipment or quality of treated effluent as per norms, the contractor shall immediately take steps to rectify the deficiency without any extra cost to the Authority.**
29. **The payment shall be released to contractor on monthly basis and shall be released within 21 working days' time from receipt of hard copy of bill. Contractor shall submit an undertaking with each bill that requisite payments of staff deployed at plant has been made along with their EPF/ESI contributions.**
30. Contractor shall indemnify CIAB from any violation for labour bye laws as amended from time to time.
31. Any kind of civil work such as water proofing of walls, flooring and electrical work such as repair/replacement of external electrical cabling from Sub-station to Main Panel of STP/ETP, replacement of fused general electrical tube lights, switches/sockets shall not be in the scope of contractor. Same shall be taken up by CIAB. However, internal cabling/wiring in the panels/pumps etc. installed in STP-ETP, cleaning of all machinery, tanks etc. shall be responsibility of contractor and cost towards same shall be deemed to include in the quote.
32. Electricity & water required shall be provided free of cost to bidder for operation of plants.

33. CIAB shall be at liberty to terminate the contract by issuing a month's notice to the contractor without assigning any reason what so ever. As regards unsatisfactory performance or noncompliance with any of the terms and conditions of the contract by the contractor, CIAB shall have the right to terminate the contract forthwith without notice & rearrange the balance work through other agencies at the risk and cost of the contractor & under such circumstances, the security deposit paid by the contractor shall stand forfeited

PROFORMA OF SCHEDULES

SCHEDULE 'A'

Schedule of quantities in Vol-II.

SCHEDULE 'E'

Reference to General Conditions of contract.

Name of work:

Estimated cost of work: Rs.

- (i) Earnest money: Bid Security Declaration
- (ii) Performance Guarantee: 3% of tendered value.

SCHEDULE 'F'

GENERAL RULES & DIRECTIONS

Officer inviting tender: **-CEO, CIAB**

Definitions:

2(v) Engineer-in-Charge: - **Assistant Engineer - Civil**

2(viii) Accepting Authority: - **Chief Executive Officer, CIAB**

2(x) Percentage on cost of materials and labour to cover all overheads and profits: - **15%**

2(xi) Standard Schedules of Rates: - **CPWD DSR 2018 along with Market rates for non-scheduled items**

Clause 1

(i) Time allowed for submission of Performance Guarantee, programme chart (Time and progress) and applicable labour licenses, registration with EPFO, ESIC and BOCW welfare board or proof of applying thereof from the date of issue of letter of acceptance: - **07 days**

(ii) Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above: - **07 days**

Clause 2

Authority for fixing compensation under clause 2: - **Chief Executive Officer, CIAB**

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start of work: - **07 days**

Time allowed for execution of work: - **02 years after 23.08.2022**

Authority to decide:

(i) Extension of time: - **CEO, CIAB**

(ii) Rescheduling of mile stones: - **CEO, CIAB**

(iii) Shifting of date of start in case of delay in handing over of site: - **CEO, CIAB.**

Clause 8A

Authority to decide compensation on account if contractor fails to submit completion plans; - **CEO, CIAB**

Clause 11

Specifications to be followed for execution of work: -**Technical Specifications mentioned in Vol.-II of tender document.**

Clause 12

Authority to decide deviation upto 1.5 times of tendered amount: - **CEO, CIAB**

12.2 & 12.3

Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for building work: - **as per CPWD Works Manual 2019 with up-to-date amendments**

Clause 16

Competent Authority for deciding reduced rates: - **CEO, CIAB**

Clause 32 (i)

Requirement of Technical Representative(s) and recovery Rate-----CPWD MANUAL 2019

Or

as amended from time to time

Form of Contract

THIS CONTRACT is made on day of 2022

BETWEEN

Center of Innovative & Applied Bioprocessing (CIAB) which is a society registered under the Societies Registration Act, XXI of 1860 and having its Office at Knowledge City, Sector-81, Mohali (hereinafter called Owner, which expression shall where the context so admits include its successors and permitted assigns) of the one part,

AND

CONTRACTOR, having its registered office at (Hereinafter referred to as CONTRACTOR) which expression shall, include its successors and permitted assigns, of the other part.

WHEREAS OWNER intends to have certain Services for - **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali.** (Hereinafter referred to as PROJECT),

AND WHEREAS said CONTRACTOR is in the business of providing inter-alia management, construction works and possesses experience, expertise and knowledge in this regard,

AND WHEREAS OWNER has selected CONTRACTOR to undertake the said services hereinafter referred to and specified in this CONTRACT as “- **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali** ”.

AND WHEREAS said CONTRACTOR agrees to perform such WORKS, SERVICES as the terms and conditions for the performance of the said WORKS, SERVICES as detailed herein.

NOW THEREFORE, in consideration of the premises and the covenants set forth in this CONTRACT, OWNER & CONTRACTOR mutually agree and confirm the agreement detailed herein and witnessed as follows:

Clause -1: CONTRACT DOCUMENT

The following documents shall constitute the CONTRACT in addition to Form of Contract

1. Tender Document with terms & conditions, technical eligibility criteria.
2. Financial bid submitted by contractor.
3. All correspondence / Minutes of meetings/Negotiation etc. between CIAB & CONTRACTOR after the issue of NIT document till the award of work.
4. Award letter

Clause-2 EFFECTIVE DATE OF CONTRACT

This CONTRACT shall be deemed to have come into force with effect from 7th day of issue of letter of Award by CIAB

Clause-3 SERVICES TO BE PERFORMED

CONTRACTOR shall perform the SERVICES as herein specified upon the general terms and conditions and within time frame specified in the CONTRACT.

Clause-4 REMUNERATION AND CONTRACT PRICE

OWNER shall, in considerations of the SERVICES performed pay to CONTRACTOR remuneration based on work done by contractor at site.

Clause-5 CONTRACT PERIOD

On signing by OWNER and CONTRACTOR this CONTRACT shall be deemed to have come into force from the effective date of CONTRACT i.e. from 7th day of issue of letter of award by CIAB and shall remain in force for 24 months beyond the completion of work at site. In the event of increase in the contract time period, nothing extra will be payable to CONTRACTOR beyond the quoted rates.

Clause-6 ENTIRE CONTRACT

The Contract documents hereof embody the entire CONTRACT between the PARTIES hereto, and the PARTIES declare that in entering this CONTRACT they do not rely upon any previous representation, whether express or implied and whether oral or written, or any inducement, understanding or agreement of any kind not included within the Contract documents, and unless herein incorporated all prior negotiations, representations, and/or agreements and understandings relating to the subject matter are hereby treated as null and void.

Clause-7 JURISDICTION & APPLICABLE LAW

Notwithstanding any other Court or Courts having jurisdiction to decide the question(s) forming the subject matter of the reference, any/all actions and proceeding arising out of or relative to the CONTRACT (including any arbitration in terms thereof) shall lie only in the Court of Competent Civil Jurisdiction in this behalf at Mohali and only the said Court(s) shall have jurisdiction to entertain and try any such action(s) and/or proceeding(s) to the exclusion of all other Courts. CIAB may make any byelaw(s), rules or regulation and carry out any amendment at any stage, in the rules or procedure necessary for the accomplishment of the purpose.

The laws of India for the time being in force shall govern this CONTRACT.

Clause-8 NOTICES

1. Any notice, consent, document or other communication required or permitted to be given under this contract shall be deemed to have been validly served if it is in writing and is signed by an authorized officer of the party giving the notice, and delivered or sent by registered post or by speed mail or courier to the address of the parties set out

below or such other address as may be notified as the appropriate address from time to time for the purpose of this contract.

CIAB: Chief Executive Officer, CIAB or his nominee
Knowledge City, Sector-81, Mohali

CONTRACTOR:

.....
.....

2. Date of notice of instruction shall be the day on which said notice or instruction is received.

3. Any PARTY may change its notice address at any time by so advising the other PARTY thereof in writing.

IN WITNESS WHEREOF the PARTIES hereto have duly executed this CONTRACT in two originals at the place, and date as follows:

**For and on behalf of
CIAB**

**For and on behalf of
CONTRACTOR**

Name

Name

Designation

Designation

Place

Place

Date

Date

Witness

Witness

1.

2.

INDEMNITY BOND (A- MINOR MINERALS) (ON NON – JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)

NAME OF THE WORK: _____

Know all men by these presents that I/We _____ (Name of the Contractor with address) do hereby execute Indemnity Bond in favour of Center of Innovative & Applied Bioprocessing (CIAB) having their office at Knowledge City, Sector-81, Mohali and for the project of – **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali.** under consideration.

On this _____ day of _____

This Deed witnesseth as follows

I/We _____ (Name of the Contractor) hereby do indemnity and save harmless CIAB having its office at Knowledge City, Sector-81, Mohali for the project of **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali,** from any claims by the State /Central Government Department responsible for collection of royalty for minor minerals like earth, red bajri, stone, kankar etc., on non-payment of royalty as due for the minor minerals used in the execution of the contract, in terms of provisions of the relevant State/central Act and Rules made thereon.

IN WITNESS WHEREOF THE _____

HAS SET HIS/HER HANDS ON THIS DAY OF _____
SIGNED AND DELIVERED BY THE AFORESAID
IN THE PRESENCE OF WITNESSES

- 1) _____
- 2) _____

INDEMNITY BOND (B- VIOLATION OF LAWS, NORMS, ACCIDENTS, DAMAGES ETC)

(On Non-Judicial Stamp Paper of appropriate value)

Name of the work _____

KNOW all men by these presents that I/We _____ (Name of Contractor with address) do hereby execute Indemnity Bond in favour of Center of Innovative & Applied Bioprocessing having their office at Knowledge City, Sector-81, Mohali and for the project of **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali.** Mohali under consideration.

On this day of2021

THIS DEED WITNESSETH AS FOLLOWS:

I/We, (Name of Contractor) hereby do indemnify and save harmless CIAB having their office at Knowledge City, Sector-81, Mohali from the following: -

1. Any third-party claims, civil or criminal complaints/liabilities/material/life loss during site mishaps and other accidents such as snake bites etc or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed civil works by me/us.
2. Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me/us or any sub-Contractor/s if any, servants or agents.
3. Any claims by an employee of mine/ours or of sub-Contractors if any, under the workman compensation act and employers' Liability act, 1939 or any other law rules and regulations in force for the time being and any acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of execution of the Contract work and/or arising out of and in the course of employment of any workman/employee.
4. Any act or omission of mine/ours or sub-Contractor/s if any, our/their servants or agent which may involve any loss, damage, liability, civil or criminal action.

IN WITNESS WHEREOF THE HAS SET HIS/THEIR HANDS ON THIS DAY OF SIGNED AND DELIVERED BY THE AFORESAID IN THE PRESENCE OF WITNESSES:

- 1.
- 2.

BID SECURITY DECLARATION
(To be submitted by bidder on their letter head)

I (Name of contractor/bidder with address) do hereby certify that I am genuinely submitting the bid against CIAB Tender Enquiry No. CIAB/7(44)/2017-Works for the **Comprehensive Annual Maintenance (CMC) and operation of 20 KLD SBR Technology- Sewage Treatment Plant cum Effluent Treatment Plant for CIAB at Sector-81, Mohali** I do hereby undertake that if I withdraw or modify the Bid during the period of Bid validity, or if I will be awarded the contract and If I fail to sign the contract, or to submit a performance security before the deadline defined in the Tender document, this work contract may be terminated at the discretion of Competent Authority, CIAB and I will be suspended for the period of 03 years from being eligible to submit Bids for contracts with the CIAB in future.

Date:

**Name and Signature of Authorized
representative of contractor along with stamp**

SEWAGE TREATMENT PLANT (CIAB)

The proposed STP is designed to treat domestic/office sewage with following Characteristics: Operating Hours-20

Process type: Continuous operation Sequential Batch Reactor

Nature of Effluent: Office Sewage

Daily Average Flow: 20 KLD

SN.	parameters	Raw sewage	Treated water (After ACF)	Treated water (After UF)
1	pH	7.5	7.0 - 7.5	7.0 - 7.5
2	BOD	<250 PPM	<15 PPM	<5 PPM
3	COD	<450 PPM	<100 PPM	<60 PPM
4	TSS	<300 PPM	<10 PPM	<5 PPM
5	Oil and Grease	<10 PPM	<10 PPM	<1 PPM
6	TDS	<2100 PPM	<2100 PPM	<2100 PPM

SBR (Sequential Batch Reactor) Technology is the proven process for treatment of Municipal and Industrial wastewater. The SBR process utilizes a fill-and-draw reactor with complete mixing during the batch reaction step (after filling) and where the subsequent steps of Aeration and Clarification occurs in the same tank. The system offers great flexibility in comparison with other Activated Sludge Systems.

All SBR systems have five steps in common, which are carried out in sequence as follows:

- Fill
- React
- Settle (sedimentation/clarification)
- Draw (decant)
- Idle

Silent features of SBR Technology:

- Small Footprint
- Simple Design.
- Maintains consistent Effluent quality due to batch settling method.
- Suitable for variable Organic and Hydraulic load.
- Biological Nutrient removal

A higher degree of operational flexibility with respect to effluent quality and Dissolved Oxygen (DO) controlled aeration system.

- Complete quiescent settling for improved Total Suspended Solids (TSS) removal.
- No separate clarifiers.
- Proven treatment process capacity upgrades and phasing do not require modification or interruption of current treatment process.
- Significantly smaller footprint requires less site work on yard plumbing.
- Power consumption is typically less than that of a conventional plant with substantial power savings at lower flows (i.e., greater turndown capability)

PROCESS DESCRIPTION

The process considered in the scheme for treatment is as under:

PRE-TREATMENT:

Sewage shall be collected in Equalization (Collection) tank after passing through a Bar Screen and Oil & Grease Trap chamber. In Fine Screen, floating matter and any large particles are trapped in the Screen. Removal of floating/coarse matter is essential otherwise it can choke piping/pumps etc. and hinder the normal operation of the treatment plant. The screens are made of stainless steel.

Oil and Grease Trap is designed to remove free floating Oil & Grease by the process of floatation and for the removal of Bio-degradation of oil or to be periodically manually removed.

Equalization Tank is provided equalize the irregular flow generation of sewage, homogenize the sewage & neutral the pH. To maintain homogenous conditions and avoid any settling and septicity of sewage aeration is provided through air grid in the Equalization Tank.

BIOLOGICAL TREATMENT

Sewage from Equalization Tank shall be pumped to process reactor.

The main pollutants in the raw sewage are represented in the form of Bio-Chemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). The bacterial ability to synthesize the organic matter to harmless end products like Carbon Di-Oxide (CO₂) and water molecules is utilized to treat the raw sewage.

The bio-reactions are carried out in controlled environment in the bio-reactor. The bio-reactor comprises of a tank, fitted with aeration grid with fine bubble air diffusers. The bacterial activity needs dissolved oxygen, to synthesize the organic matter. This is supplied by passing air in form of fine bubbles. The air is passed at the bottom of the tank, so that complete volume of tank is utilized. Oxygen dissolves in liquid, which can now be used by the bacteria.

SBR (Sequential Batch Reactor) Technology is the proven process for treatment of Municipal and Industrial Wastewater. The SBR process utilizes a fill-and-draw reactor with complete mixing during the batch reaction step (after filling) and where the subsequent steps of aeration and clarification occurs in the same tank. In its most basic form, the SBR system is simply a set of tanks that operate on a fill-and-draw basis. The tanks may be an earthen or oxidation ditch, a rectangular basin, or any other concrete/ metal type structure. Each tank in the SBR system is filled during a discrete period of time and then operated as a batch reactor. After desired treatment, the mixed liquor is allowed to settle and the clarified supernatant is drawn from the tank. The essential difference between the SBR and the conventional continuous flow activated sludge system is that SBR carries out functions such as Equalization, Aeration and Sedimentation in a time rather in a space sequence.

SLUDGE HANDLING

The excess sludge of SBR basins is collected into sludge holding tank where the sludge shall be aerated and thickened and conveyed to Basket Centrifuge unit for de-watering purpose. Cake from the centrifuge is disposed off or can be used as wet manure. Effluent (Centrate) from the Centrifuge would be transfer to Equalization Tank.

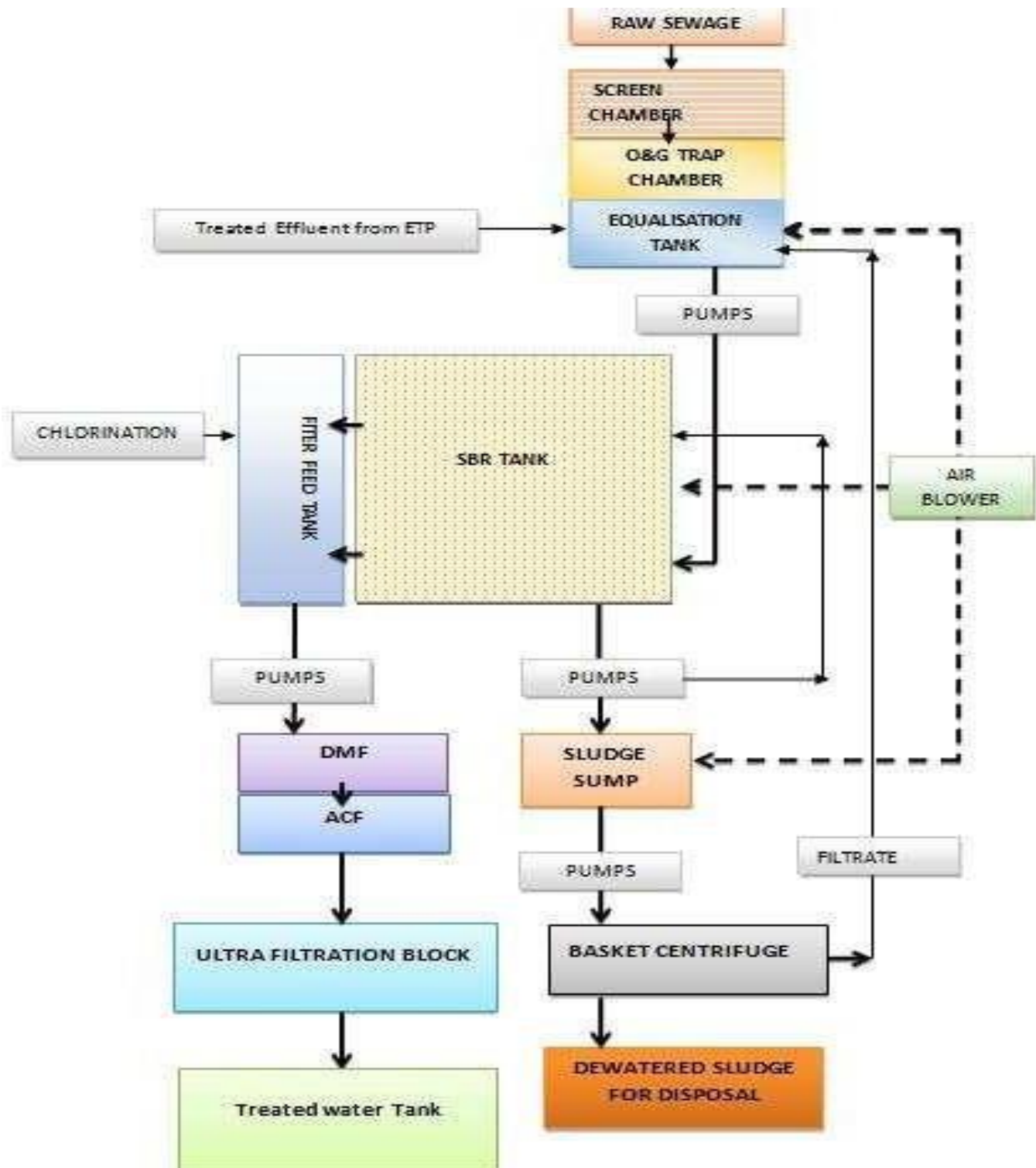
CHLORINATION & POLISHING

The Effluent from the SBR basins will be collected in Chlorine Contact Tank. The supernatant thus collected will get disinfected in Chlorine Contact Tank by adding suitable dose of chlorine and finally it is discharged in to nearby body.

From outlet of Chlorine Contact Tank, Treated Sewage is pumped to Tertiary Treatment unit comprising of Dual Media Filter and Activated Carbon Filter to achieve the desired results and finally to the Ultrafiltration system to make it fit for reuse in Horticulture & Flushing. Ultrafiltration (UF) is a variety of membrane filtration in which forces like pressure or concentration gradients lead to a separation through

a semipermeable membrane. Suspended solids and solutes of high molecular weight are retained in the so-called retentate, while water and low molecular weight solutes pass through the membrane in the permeate (filtrate). Ultrafiltration membranes are defined by the molecular weight cut-off (MWCO) of the membrane used. Ultrafiltration is applied in cross-flow or dead-end mode.

Treated Sewage is collected in Treated Water Tank for further pumping to the reuse end; same tank shall provide water for back washing of filter also.



TECHNICAL DETAILS/SPECIFICATION

Unit: BAR SCREEN

Screen type		Fine Perforated Corrugated Screen
Quantity	01 Nos.	Clear spacing
Width	0.3 m	6 mm
Depth	0.8 m	Designed velocity
MOC		0.3 m/s
		Screen
		25 X 10 mm
		MOC epoxy Painted

Unit: OIL & GREASE TRAP

Process		Grit removal by settling and trapping of floating Oil & Grease at baffle wall
Length	1.5 m	Quantity
Width	0.7 m	1.0
Depth	0.5 m	Construction
		RCC
		Cleaning
		Manually

UNIT : EQUALIZATION TANK

Construction	RCC	Air Supply	Through Air Grid
Length	4.5 m	Aeration	Perforated Air Grid
Width	1.5 m	Location for grid	Bottom of tank to cover entire surface
Depth		1.5 m	
Quantity		01 No.	

EQUIPMENT : RAW SEWAGE PUMPS

Quantity	2 Nos. (1W+1S)	Type	Centrifugal self-priming
Flow rate	8 m ³ /hr	MOC	Cast Iron
Head	Suitable	Drive	Coupled to motor

UNIT: SBR TANK

MOC	RCC	No. of Chambers	1
length	3.0 m	Aeration	Fine bubble Diffuser
Width	1.5 m	Decanter flow	4 m ³ /batch
Depth	2.7 m	Decanter MOC	UPVC
Air Grid	Bubble diffuser	Type	fine

EQUIPMENT: AIR BLOWER

Air Flow	60 m ³ /hr	Quantity	2 Nos. (1W+1S)
MOC	Cast Iron	Type	Twin type Positive displacement

EQUIPMENT: SLUDGE RE-CIRCULATION PUMP

Quantity	2 Nos.	Flow	8 m ³ /hr
Type	Centrifugal	Head	15 m
MOC	CI	RPM	2900

EQUIPMENT: FILTER FEED PUMPS

Quantity	2 Nos. (1W+1S)	Flow	1 m ³ /hr
Type	CentrifugalMonoblo	Head	26 m
MOC		Cl	

EQUIPMENT: DUAL MEDIA FILTER

Quantity	01 No.	Dia	13 inch
Flow Rate	1 m ³ /hr	MOC	FRP

EQUIPMENT : ACTIVATED CARBON FILTER

Quantity	01 No.	Dia	13 inch
Flow Rate	1 m ³ /hr	MOC	FRP

UNIT: ULTRAFILTRATION FEED TANK

Length	1.3 m	Construction	RCC
Width	1.0 m	Quantity	01 No.
Depth		1.6 m	

UNIT: ULTRAFILTRATION

Flow	2 m ³ /hr	Feed Pump	2 (1W+1S)
Instrumentation	1	Quantity	
		UF membrane	1

UNIT: TREATED WATER TANK

Length	1.3 m	Construction	RCC
Width	2.4 m	Quantity	01 No.
Depth		1.6 m	

EQUIPMENT : BASKET CENTRIFUGE

QUANTITY	1 No.	Type	Motor Pulley driven
Capacity	0.5 m ³ /hr	MOC	MS body, SS-304 Basket

EQUIPMENT : CENTRIFUGE FEED PUMPS

Quantity	2 Nos (1W+1S)	Type	Centrifugal
Capacity	0.5 m ³ /hr @ 1.0kg/cm ² , 10 M head	MOC	Casing & Rotor- Cast Iron

UNIT : SLUDGE HOLDING TANK

Length	1.3 m	Quantity	01 No.
Width	1.0 m	Construction	RCC

EQUIPMENT : PLANT ROOM SUMP PUMP

Quantity	2 Nos.	Type	Non clogging type submersible
Flow rate	13 m ³ /hr	MOC	Cast Iron
Head	10 m	Drive	Coupled to motor

EQUIPMENT: MEASURING INSTRUMENTS

Pressure	Pressure Gauge	Pressure sensing	By diaphragm
Type	Bourdon's tube/Glycerin filled	Dia. of dial	100 mm

Location		Outlet of Pumps & Blower
Water Level	Level Control Switch	AIR Rotameter 01
Type	Liquid Bouncy	Location SBR air inlet
Location		With pumps in respective tanks

ELECTRICAL LOAD

SR NO	DESCRIPTION	DUTY	CAPACITY	WORKING LOAD (HP)	CONNECTED LOAD (HP)
1	SEWAGE LIFTING PUMP	1W+1S	8 m ³ /hr at 10 m head	1	2
2	SLUDGE RECIRCULATION PUMP	1W+1S	3.6 m ³ /hr at 10 m head	1	2
3	AIR BLOWER	1W+1S	60m ³ / hr @ 6000 mmWC each	5	10
4	FITTER FEED PUMP	1W+1S	1 m ³ /hr at 26 m head	1.02	2.04
5	UF PUMP	1W+1S	1 m ³ /hr at 26 m head	1.02	2.04
6	PLANT ROOM SUMP PUMP	1W+1S	13 m ³ /hr at 15 m head	1	2
7	CENTRIFUGE FP	1W+1S	0.5 m ³ /hr@ 10m head	1	2
8	DOSING PUMP	1W	0-2lph	0.05	0.05
9	CENTRIFUGE SYSTEM	1W	0.5 m ³ /hr	2	2
TOTAL		13.09		24.13	

EFFLUENT TREATMENT PLANT- CIAB

Treatment process	Physicochemical treatment
Wastewater flow	5 KLD
Type of Effluent	Laboratory Effluent

PHYSICO-CHEMICAL PROCESS

The type of treatment selected depends on the size of particles present in the wastewater. In practice, treatment efficiency also depends on particle size. Solids of the size that are visible to the naked eye can be separated either by settling under the influence of gravity. However, very fine particles of a colloidal nature (called colloids, size $< 1 \mu\text{m}$) which have high stability are significant pollutants. It is not possible to separate these solids by filtration because they pass through any filter. However, separation by Physico-Chemical Treatments is possible.

Physico-chemical treatment of wastewater focuses primarily on the separation of colloidal particles. This is achieved through the addition of chemicals (called Coagulants and Flocculants). These change the physical state of the colloids allowing them to remain in an indefinitely stable form and therefore form into particles or flocks with settling properties.

Stages of the Physico-Chemical Process Coagulation

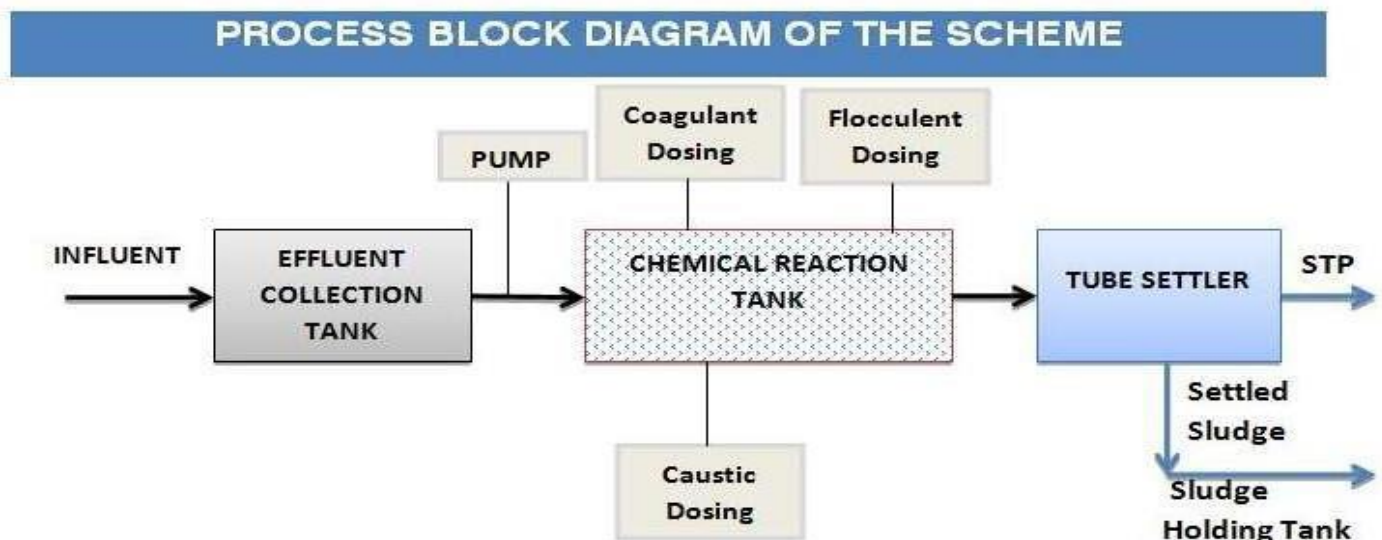
Coagulation refers to destabilization or neutralization of the negative charges contained in the wastewater by the addition of a coagulant applied during rapid mixing. The quantity of coagulant applied during coagulation depends on the quality of water (domestic or industrial).

Flocculation

In this stage, previously formed flocks group together, increasing in volume and density, allowing them to be sedimented. During the flocculation stage, chemicals referred to as flocculants are applied (assisted flocculation). These products allow flocks to come together and adhere, increasing their size and density.

Sedimentation or clarification

This is the stage of flock removal by solid - liquid separation. For this, low, medium and high rate settlers are commonly used. The rate is determined by the speed at which water and sludge are



UNIT: EFFLUENT COLLECTION TANK

Length	1.5 m	Construction	RCC
Width	1.0 m	Quantity	01 No.
Depth		1.5 m	

EQUIPMENT: RAW EFFLUENT PUMPM

Quantity	2 no. (1W+1S)	Type	Centrifugal self-Priming
Flow Head	0.625 m ₃ /h	MOC	Cast Iron
		Suitable	

UNIT :CHEMICAL REACTION TANK

Volume	0.5 m ³	Air mixing	Through Air grid
MOC	MS-FRP (inside)	Quantity	01 No.
PE Dosing system	HDPE tank of 100 Lt. PE dosing Pump		0-6 LPH, 1 no.
ALUM Dosing system	HDPE tank of 100 Lt. ALUM dosing Pump		0-6 LPH, 1 no.
CAUSTIC Dosing System	HDPE tank , 1 of 100 Lt. CAUSTIC Dosing Pump		0-6 LPH, 1no.

UNIT : PRIMARY SETTLING TANK

Settling Area	1 m ²	Type	Tube Type
Settling media	Square Tube type	Modules	PVC
MOC of tank		MS-FRP (inside)	

TENTATIVE ELECTRICAL LOAD

SR NO	DECIPTION	DUTY	CAPACITY	WORKING LOAD (HP)	CONNECTED LOAD (HP)
1	RAW EFFLUENT PUMP	1W+1S	0.625 m ³ /hr at 1 suitable m head		2
2	PE DOSING PUMP	1W	0-6 LPH	0.05	0.05
3	ALUM DOSING PUMP	1W	0-6 LPH	0.05	0.05
4	CAUSTIC DOSING PUMP	1W	0-6 LPH	0.05	0.05
TOTAL		1.15		2.15	