

ORIGINAL COPY

TENDERER'S COPY

=====

TENDER

CIVIL TENDER SCHEDULE NO: 08/13-14

FOR

“Modification in existing sewage disposal system as per the Pollution Control Board recommendation with a Sewage Treatment Plant of 100 KL PD Capacity including its Design, Supply, Construction, Erection and Commissioning for BHEL IVP at Goindwal Sahib , Punjab”

**PART I
VOLUME II-CONDITIONS OF CONTRACT****BHARAT HEAVY ELECTRICALS LIMITED**

(A Govt. Of India Undertaking)

INDUSTRIAL VALVES PLANT,**433, INDUSTRIAL COMPLEX****GOINDWAL SAHIB,****DISTT. TARN –TARAN,****PUNJAB, PIN-143422**

CONTRACTOR

ACCEPTING OFFICER (BHEL)



ISO 9001, ISO 14001
OHSAS 18001 certified

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. Of India Undertaking)

INDUSTRIAL VALVES PLANT

Plot No. 433, INDUSTRIAL COMPLEX,
GOINDWAL SAHIB, Distt. TARN-TARAN,
PUNJAB- PIN-143422; (INDIA)

Phone: 01859-224621, 224653

Fax 01859-222061

Email: ts@bhelivp.in, rks@bhelivp.in

CIVIL TENDER SCHEDULE NO: 08/13-14

IMPORTANT NOTE

PURCHASER OF THIS TENDER DOCUMENT IS ADVISED TO CHECK AND ENSURE COMPLETION OF ALL PAGES OF TENDER DOCUMENT AND REPORT ANY DISCREPANCY TIMELY FOR CORRECTIVE ACTION, IF ANY, TO THE ISSUING AUTHORITY BEFORE THE BIDS ARE SUBMITTED. ORIGINAL COPY OF TENDER DOCUMENT COMPLETE IN ALL RESPECTS MUST BE SUBMITTED BACK AS PART OF THE BID WITHOUT WHICH THE SAME IS LIABLE TO BE REJECTED BY BHEL.

THIS TENDER SPECIFICATION ISSUED TO:

M/S-----

CONTRACTOR

ACCEPTING OFFICER (BHEL)

CIVIL
TENDER
SCHEDULE No.
8/13-14

Volume II OF Part 1 Techno commercial Bid

Bharat Heavy Electricals Limited
Industrial Valves Plant
Goindwal, Punjab



CONTENTS

S/N	DESCRIPTION	Page No.
1	General Conditions of Contract (GCC)	5-31
2	Special Conditions of Contract (SCC)	32-50
3	ANNEXURE 1 ; List of Consortium Banks	51
4	Technical Conditions of Contract , References and Drawings (TCC)	52-78

**GENERAL CONDITIONS OF CONTRACT FOR LUMP SUM, ITEM RATES AND
PERCENTAGE CONTRACT**

CONTENTS

S/ No Description

CHAPTER - I

(page no 07)

1 DEFINITIONS

CHAPTER – II

(page no 08)

SCOPE OF CONTRACT

2 HEADING TO THE CONTRACT

3 CONTRACT DOCUMENTS

4 WORKS TO BE CARRIED OUT

5 PROVISIONAL ITEMS

6 DEVIATIONS

7 TIME

8 STORES & MATERIALS

9 DELAY & EXTENSION OF TIME

10 PATENT RIGHTS

11 OCTROI AND OTHER DUTIES

12 ROYALTIES

13 PLANT & EQUIPMENT

14 ASSIGNMENT OR TRANSFER OF CONTRACT

a) SUB-CONTRACT

15 COMPLIANCE TO REGULATIONS AND BYE-LAWS

CHAPTER – III

(page no 12)

PERFORMANCE OF THE CONTRACT

16 SECURITY DEPOSIT

17 ORDERS UNDER THE CONTRACT

18 ADMISSION TO SITE

19 CONTRACTOR'S SUPERVISION

20 LABOUR

21 WATER

22 TEMPORARY WORKSHOPS, STORES ETC.

23 STORES & MATERIALS ON SITE

CONTRACTOR

ACCEPTING OFFICER (BHEL)

- 24 TOOLS AND PLANTS ON SITE
- 25 STATEMENT OF HIRE CHARGES
- 26 PRECAUTIONS AGAINST RISKS
- 27 NOTICE & FEES
- 28 SETTING OUT OF THE WORKS & PROTECTION & MAINTAINING SIGNALS AND WORKS
- 29 SITE DRAINAGE
- 30 EXCAVATIONS, RELICS ETC.
- 31 FOUNDATIONS
- 32 COVERING-IN WORKS
- 33 APPROVAL OF WORKS BY STAGES
- 34 EXECUTION OF WORKS
- 35 DAY WORKS
- 36 INSPECTION OF THE WORKS
- 37 RESPONSIBILITY FOR BUILDING
- 38 INSURANCE OF WORKS
- 39 DAMAGE AND LOSS TO PRIVATE PROPERTY & INJURY TO WOKMEN
- 40 COMPLETION
- 41 COMPENSATION FOR DELAY
- 42 LAWS GOVERNING THE CONTRACT
- 43 CANCELLATION OF CONTRACT FOR CORRUPT ACT
- 44 CANCELLATION OF CONTRACT FOR INSOLVENCY, ASSIGNMENT OR SUB LETTING OF CONTRACT
- 45 CANCELLATION OF CONTRACT FOR DEFAULT
- 46 TERMINATION OF CONTRACT FOR DEATH
- 47 SPECIAL POWERS OF DETERMINATION
- 48 FAIR WAGE

CHAPTER – IV
VALUATION AND PAYMENT

(page no 26)

- 49 RECORDS & MEASUREMENTS
- 50 VALUATION OF DEVIATIONS
- 51 REIMBURSEMENT/ REFUND ON VARIATION IN PRICE
- 52 ADVANCES ON ACCOUNT
- 53 FINAL BILL
- 54 PAYMENT OF BILLS
- 55 RECOVERY FROM CONTRACTOR
- 56 POST TECHNICAL AUDIT OF WORKS AND BILLS
- 57 REFUND OF SECURITY DEPOSIT
- 58 ARBITRATION

CONTRACTOR

ACCEPTING OFFICER (BHEL)

	CHAPTER- I DEFINITIONS
1.	In these General Conditions of Contract, the following terms shall have the meaning hereby assigned to them except where the context otherwise requires:-
	The “CONTRACT” means the documents forming the tender and acceptance thereof, together with all documents referred to therein including General and Special Conditions of Contract, Schedules „A“, „B“, „C“, „D“, „E“, and / or General Summary attached to the form of tender, the Bharat Heavy Electricals Limited, Schedule of Rates as amended and in force the Specifications and the Drawings. All these documents as applicable taken together shall be deemed to form one Contract and shall be complementary to one another.
	The “TENDER DOCUMENTS” means the form of Tender the applicable Schedules „A“, „B“, „C“, „D“, „E“, and / or General Summary, General and Special Conditions of Contract and the Specification and / or Drawings as given to Contractors on payment for the purpose of preparing their tenders.
	The “WORK” means the work described in the tender documents in individual work orders and/or accompanying Drawings and Specifications as may be issued from time to time to the Contractor by the Engineer-in-charge within the powers conferred upon them, including all modified or additional works and obligations to be carried out either at the site or at any Factory Workshop or other place as required for the performance of the Contract.
	The “SITE” means the lands and/or other places on, in into or through which the work is to be executed under the Contract or any adjacent land, path or street which may be allotted to or used for the purpose of carrying out the contract.
	The “CONTRACTOR” means the individual, firm or Company, whether incorporated or not undertaking the work and shall include the legal personal representatives of such individuals or the persons composing the firm or Company, or the successors of the firm or Company and the permitted assigns of such individual or firm or Company.
	The “Engineer-in-charge” means the BHEL Engineer who is in charge for the works referred.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

CHAPTER II

SCOPE OF CONTRACT

2. **Heading to the Contract:**

The heading to these conditions shall not affect the interpretation thereof.

3. **Contract Documents**

- The Accepting Officer shall furnish to the Contractor on demand “FREE OF COST” three copies of signed drawings and one copy of the signed agreement comprising of general and special specification of work during the progress of work, Schedule ‘A’, ‘B’, ‘C’, ‘D’, ‘E’ but excluding the general conditions of contract and drawings and three copies of all further drawings issued during the progress of the work.
- However, for any additional copies of the agreement or drawings required by the Contractor the same will be supplied on payment at the specified cost.
- The Contractor shall keep one copy of all the Drawings and the Specifications at the site and the Engineer-in-charge or his representative shall have access to them at all reasonable times.
- None of these documents shall be used by the contractor for any purpose other than that of this contract.
- The Contractor shall take necessary steps to ensure that all persons employed on any work in connection with this contract have noticed that the Indian official Secrets Act 1923 (XIX of 1923) applies to them and shall continue so to apply even after the execution of such works under the contract.

4. **Works to be Carried Out**

- The Contract shall, except as provided under Schedules ‘B’ and ‘C’ include all labor, materials, tools, plants equipment and transport which may be required in preparation for, and in the entire execution and full completion of the work. Schedule ‘A’ shall be deemed to have been prepared in accordance with good practice and recognized principles and unless otherwise stated, the descriptions given therein shall be held to include waste on materials carriage and cartage, lead, return of empties, hoisting, setting, fitting in position and all other labour necessary in and for the entire execution and full completion aforesaid. Any error in description or quantity in schedule ‘A’ or any omission there from shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the work comprised therein according to the Drawings and Specifications, or from any of his obligations under the Contract. The insertion of the name of any firm of Suppliers in the Tender Documents is for the purpose of obtaining a particular class or quality of materials or workmanship but the articles or materials specified may be obtained from any other firm subject to prior written approval of the Engineer – in – charge.
- In the case of a discrepancy between Schedule ‘A’ the specification and / or the Drawing, the Accepting Officer shall be the sole deciding authority as to which shall prevail and his decision shall be final and conclusive. If neither Drawings nor Specifications contain any mention of minor details of construction, which in the opinion of the Accepting Officer whose decision shall be final and conclusive, are reasonable and obviously and fairly intended for the satisfactory completion of the work, such details shall be provided by the Contractor without any extra cost as if they were specially mentioned and shall be deemed to be included in the contract.

- The contractor will be deemed to have satisfied himself as to the nature of the site, local facilities of access and all matters affecting the execution and completion of the work. No extra charges consequent on any mis-understanding in these respects or otherwise will be allowed.

5. Provisional Items

- The full amount of provisional lump sums and the value annexed to each provisional item inserted in the tender documents shall be deducted from the contract sum and the value of work ordered and executed thereunder shall be ascertained by measurement or valuation as for deviations.
- No work under these items is to be begun without instructions in writing from the Engineer-in-charge.
- The extent of quantities or items described as “Provisional” shall not be held to guarantee or limit the amount and description of the work to be executed by the contractor either in respect of the items concerned or the work as a whole.
- No addition or deduction shall be made by the Contractor to the amount of the provisional lump sums as included in the tender documents.

6. Deviations

- The contractor shall not make any alteration in addition to or omission from the work as described in the tender documents except in pursuance of the written instructions of the Engineer-in-charge. No such deviation from the work described in the tender documents shall be valid unless the same has been specifically confirmed and accepted by the Accepting Officer in writing and incorporated in the contract.
- The Accepting Officer may deviate either by way of addition or deduction, from the work so described, provided that the contract sum be not thereby varied on the whole by more than the percentage set out in the tender documents. The value of all addition and deductions will be added to, or deducted from the contract sum. Whenever the Accepting Officer intends to exercise such a right, his intention shall specify the deviations which are to be made, the lumpsum assessment or the proposed basis of payment, the extra time allowed, if any, and the date for completion of the entire contract.
- Any objection by the Contractor to any matter concerning the order shall be notified by him in writing to the Engineer-in-charge within Seven days from the date of such order, but under no circumstances shall the work be stopped (unless so ordered by the Engineer-in-charge) owing to differences or controversy that may arise from such an objection. In the absence of such a notification of objection by the contractor, he will be deemed to have accepted the order and the conditions stated therein. In the event of the contractor failing to agree with the Engineer-in-charge regarding the terms of the proposed deviation, the objection shall be referred to the Project Manager whose decision shall be final conclusive and binding on the Contractor.

7. Time

- Time is the essence of the contract and is specified in the tender document or in each individual Work Order.
- As soon as possible after the contract is let or any substantial Work Order is placed and before work under is to begin, the Engineer-in-charge and the Contractor shall agree to a Time and

Progress Chart. The Chart shall be prepared in direct relation to the time stated in the Tender Documents or the Work Order for the completion of the individual items there of and/the contract or order as a whole. It shall indicate the forecast of the dates for the commencement of the various trade processes or sequences of the work, and shall be amended as may be required by agreement between the Engineer-in-charge and the Contractor within the limitation of the time imposed in the Tender Documents or Order

- In the absence of any specific Time and Progress chart to be agreed to between the Contractor and the Engineer-in-charge, the contractor shall ensure and maintain uninterrupted progress of the work such that the entire work shall be completed within the time imposed in the Tender Documents or Order and that the proportion of work completed upto any time in relation to the entire work to be under the Contractor Order shall not be less than the proportion that the time elapsed bears to the total time of completion provided in the Tender Documents or Order.
- The contractor shall suspend the execution of the work, or any part or parts thereof whenever called upon in writing by the Engineer-in-charge to do so, and shall not resume work thereon until so directed in writing by the Engineer -in-charge. The Contractor will be allowed an extension of time for completion not less than the period of suspension. However, no other claim in this respect for compensation or otherwise however will be admitted. Provided the cause for suspension is not attributable to any default on the contractor's part to proceed with or fulfill the contractual obligations. This may also be extended to allow for alteration of work made by the deviation order.

8. Stores and Materials

- The Contractor shall, at his own cost and expense, provide all materials required for the works, other than those listed in Schedule „B“, which are to be supplied by Bharat Heavy Electricals Limited. All materials to be supplied by the Contractor shall be of the best kind as described in the specifications and 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 with the specifications.
- The contractor shall, at his own expense and without delay, supply samples of materials proposed to be used in the execution of the work for approval of the Engineer-in-charge, who may reject the materials not corresponding either in quality or character to the approved samples.
- In the case of stores provided under Schedule „B“ the Contractor shall bear the cost of loading, transporting to site, unloading, storing under cover as required assembling and jointing the several parts together as necessary and incorporating or fixing these stores materials in the work, including all preparatory work of whatever description as may be required, and of closing, preparing, loading and returning empty cases or containers to the place of issue without any extra charges.

9. Delay and Extension of Time

- if, in the opinion of Engineer-in-charge the work is delayed:
 - i) by reason of abnormally bad weather, OR
 - ii) by reason of serious loss or damage by fire, OR
 - iii) by reason of Civil commotion, local combination of workmen strike or lockout, affecting any of the trades employed on the work OR.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

iv) by delay on the part of the agency or tradesman engaged by BHEL in executing work not forming part of this contract, OR

v) by reason of any other cause which in the absolute discretion of the Engineer-in-charge is (when he is the Accepting Officer of the Contract) beyond the Contractor's reasonable control, than in such case the Accepting Officer on the recommendation of the Engineer-in-charge (or higher authority) may make fair and reasonable extension in the completion dates of the individual items of work or the contract as a whole. Such extension which will be communicated to the Contractor by the Engineer-in-charge in writing shall be final and binding on the Contractor. No other claim in this respect for compensation or otherwise howsoever is admissible. Upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-charge but shall nevertheless use constantly his best endeavor to prevent or make good the delay and shall do all that may reasonably be required to the satisfaction of the Engineer-in-charge to proceed with the work.

10. Patent Rights:

- The Contractor shall fully indemnify B.H.E.L or the agent, servant, or employee of B.H.E.L against any action, claim or proceeding relating to infringement or the use of any patent or design or any alleged patent or design rights, and shall pay any royalties which may be payable in respect of any article / or part thereof included in the contract.
- In the event of any claims being made or action brought against B.H.E.L or any agent, or servant or employee of BHEL in respect of matters aforesaid the Contractor shall immediately be notified thereof for taking necessary action provided that payment of indemnity shall not apply when such infringement has taken place in complying with the specific directions issued by the BHEL but the Contractor shall pay any royalties payable in respect of any such use.

11. Octroi and Other Duties:

- All charges on account of Octroi, Terminal or Sales Tax and/or other duties on material obtained for the work (excluding materials provided by B.H.E.L on payment) shall be borne by the contractor.

12. Royalties:

- Royalties fixed from time to time as per prevalent local rules will be recovered for materials, which the Contractor may be allowed to remove from quarries situated on land which is in charge of the B.H.E.L authorities.

13. Plant and Equipment:

- The Contractor, shall at his own expense, supply all tools, plant and equipment (here-in-after referred to as T & P) required for the execution of the contract other than those listed in Schedule „C“ which subject to their availability may be hired by B.H.E.L., to the Contractor or issued free for use in the execution of the work as specified in Tender Documents.

14. Assignment or Transfer of Contract:

- The Contractor shall not, without the prior written approval of the Accepting Officer, assign or transfer the Contract or any part thereof, or any share, or interest therein to any other person. No sum of money which may become payable under the Contract shall be payable to any person other than the

Contractor unless the prior written approval of the Accepting Officer to the assignment or transfer of such money is given.

- (a) Sub Contract:

The Contractor shall not sub-let any portion of the Contract without the prior written approval of the Accepting Officer.

15. Compliance to Regulations and Bye Laws

- The Contractor shall conform to the provision of any statute relating to the work and regulations and bye-laws of any local authority and of any water and lighting Companies or Undertakings with whose system the work is proposed to be connected. He shall, before making any variation from the drawings or the specifications that may be necessitated for such connections give the Engineer-in-charge notice, specifying the variation proposed to be made and the reasons there for and shall not carry out any such variation until he has received instructions from the Engineer-in-charge in respect thereof. The contractor shall be bound to give all notice required by Statute Regulations or Byelaws as aforesaid and to pay all fees, and taxes payable to any authority in respect thereof.

CHAPTER III

PERFORMANCE OF THE CONTRACT

16. Security Deposit

16.1 Security Deposit should be collected from The Contractor. The rate of Security Deposit will be as below; For a contract value :

- Up to Rs. 10 lakh 10%
- Above Rs. 10 lakh up to Rs.50 lakh 1 lakh + 7.5% of the amount ExceedingRs.10 Lakh
- Above Rs. 50 lakh 4 lakh + 5 % of the amount exceeding Rs.50 Lakh
- i) Cash (as permissible under the Income Tax Act)
- ii) Pay Order, Demand Draft in favor of BHEL.
- iii) Local cheques of scheduled banks in the name of BHEL subject to realization.
- iv) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favor of BHEL and discharged on the back).
- v) Bank Guarantee from any Scheduled Bank/ any banker as per the list of consortium of Banks approved by BHEL. The List of consortium bank is attached herewith in Annexure 1. The bank Guarantee format should have the approval of BHEL.
- vi) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.
- vii) Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be collected before start of the work and the

balance 50% may be recovered from the running bills.

- viii) EMD of The Contractor shall be converted and adjusted against the security deposit.
- ix) The security deposit shall not carry any interest.
- Acceptance of Security Deposit against Sl. No. (iv) and (vi) above will be subject to hypothecation or endorsement on the documents in favour of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.
- All compensation or other sums of money payable by the Contractor to BHEL, under the terms of this Contract or under any other contract with BHEL, may be deducted from the Security Deposit or realized by the sale of the Securities or from the interest arising there from or from any sums which may be due or may become due to the Contractor payable by BHEL, on any account whatsoever against this Contract or any other Contract with BHEL, and in the event of his Security Deposit being reduced by reason of such deductions or sale as aforesaid, the Contractor shall, within seven days thereafter, make good in cash or in securities endorsed as aforesaid, any sum or sums by which the Security Deposit has been so reduced.
- 50% of the Security Deposit / may be refunded on completion of the work after payment of the final bill and the balance 50% of the Security Deposit is refundable only after the expiry of the maintenance period from the date of completion of work as stipulated in the Contract concerned.

17. Order under the contract

- All orders, notices etc., to be given under the contract shall be in writing typescript or printed and if sent by registered post to the address given in the tender of the contractor, shall be deemed to have been served on the date when in the ordinary course they would have been delivered to him.
- The contractor shall carry out without delay all orders given to him.

18. Admission to site

- The Contractor shall not enter on (other than for inspection purposes) or take possession of the site unless permitted to do so by the Engineer-in-charge. The portions of the Site to be occupied by the Contractor will be clearly defined and marked on the site plan, and the Contractor will on no account be allowed to extend his operations beyond these areas.
- The Contractor shall provide, if necessary or required at the Site, temporary access there to and shall alter, modify and maintain the same as required from time to time. He shall take out and clear away the access route when no longer required and restoring the area to its original condition.
- The Engineer-in-charge shall have power to execute other works (whether or not connected with the work in the contract agreement) on the site contemporaneously with the execution of the original work and Contractor shall give reasonable facilities for this purpose.
- B.H.E.L reserves the right of taking over, at any time, any portion of the site which they may require and the Contractor shall at his own expense clear such portion forthwith. No photographs of the Site or of the work or any part there of shall be taken, published or otherwise circulated without the prior approval of the Engineer-in-charge.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

- No such approval shall however exempt the contractor from complying with any statutory provisions in regard to the taking and publication of such photographs.
- B.H.E.L Officials connected with the Contract shall have the right of entry to the Site at all times.
- Engineer - in charge shall have the power to exclude from the site any person whose admission there to may, in his opinion be undesirable for any reason whatsoever.

19. Contractor's Supervision

- The Contractor either shall himself supervise the execution of the Contract or shall appoint a competent Agent approved by the Engineer-in-charge to act in his stead. The contractor shall employ an Engineer/Agent having at least a „Degree of Bachelor of Civil Engineering“ from a recognized University/on any work with a Contract value exceeding rupees two lakhs, and having at least a Diploma in civil Engineering from a recognized college, on work with a contract value exceeding Rs. 50,000/- but not exceeding rupees two lakhs.
- The Employment of an Engineer/Agent as aforesaid shall not be necessary if the Contractor himself in possession of a recognized technical qualification and is in opinion of the Engineer- in-charge capable of receiving instructions of the Engineer-in-charge and of executing the work to the satisfaction of the Engineer-in-charge. If the Contractor fails to appoint a suitable Engineer/ Agent as aforesaid, the Engineer-in-charge shall have full powers to suspend the execution of work and stop payment of any advances that may have become due until such date as a suitable Engineer/Agent is appointed and the contractor shall be held responsible for the delay caused to the work and no extension of time on this account shall be given to him as stipulated in condition (9) above.
- Orders given to the Contractor's Agent/Engineer shall be considered to have the same force as if they had been given to the Contractor himself.
- The contractor or his Agent shall be in attendance at the site during all working hours and shall superintend the execution of work with such additional assistance in each trade as the Engineer-in - charge may consider necessary.
- The contractor or his accredited agent shall attend when required and without making any claim for doing so, either the Office of the Engineer-in-charge or the work site to receive instructions.
- The Engineer-in-charge shall have full powers, and without assigning any reason to require the Contractor immediately to cease to employ in connection with the Contract any Agent, servant or employee whose continued employment is, in his opinion undesirable
- The Contractor shall not be allowed any compensation on this account.

20. LABOUR

- The Contractor shall employ laborer in sufficient numbers either directly or through sub-contractors to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the Contract and to the satisfaction of the Engineer-in-charge. The Contractor shall not employ in connection with the works any person who has not completed his fifteen years of age.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

- The Contractor shall furnish to the Engineer-in-charge at the intervals specified by him, a distribution return of the number and description by trades of the work people employed on the works. The Contractor shall also submit on the 4th and 19th of every month to the Engineer-in-charge a true statement showing in respect of the second half of the preceding month and the 1st half of the current month (i) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them and (ii) The number of female workers who have been allowed maternity benefit as provided in the Maternity Benefit Act, 1961 or Rules made thereunder and the amount paid to them.
- The Contractor shall pay to labor employed by him either directly or through sub-contractors wages not less than fair wages as defined in the Contractor's Labour Regulations.
- The contractor shall in respect of labor employed by him either directly or through sub – contractors comply with or cause to be complied with Contractor's Labour Regulations in regard to all matters provided therein.
- The Contractor shall comply with the provisions of the Payment of Wages Act 1936, Minimum Wages Act 1948, Employers liability Act 1938, Workmen's Compensation Act 1923, Industrial Disputes Act 1947, Maternity Benefit Act 1961 and Mines Act 1952, Contract Labour Regulation and Abolition Act 1970 or any modifications there of or any other law relating thereto and rules made thereunder from time to time.
- The contractor shall be liable to pay his contribution and the employees' contribution to the State Insurance Scheme in respect of all labor employed by him for the execution of the contract, in accordance with the provision of "The Employees' State Insurance Act, 1948" as amended from time to time. In case the contractor fails to submit full details of his account of labor employed and the contribution payable, the Engineer-in-charge shall recover from the running bills of contractor an amount of contribution as assessed by him. The amount so recovered shall be adjusted against the actual contribution payable for Employees' State Insurance.
- The Engineer-in-charge shall on a report having been made by an Inspecting Officer as defined in the Contractor's labor Regulations have the power to deduct from the moneys due to the Contractor any sum required or estimated to be required for making good the loss suffered by the worker or worker by reason of non-fulfillment of the Conditions of the Contract for the benefit of workers, non-payment of wages or of deductions made from his or their wages which are not justified by the terms of the Contract or non-observance of the said Contractor's Labour Regulations.
- The Contractor shall indemnify the B.H.E.L against any payments to be made under and for observance of the Regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractors.
- In the event of the Contractor committing a default or breach of any of the provisions of the aforesaid Contractor's Labour Regulations, as amended from time to time or furnishing any information or submitting or filling any form / Register/Slip under the provisions of these Regulations which is materially incorrect then on the report of the Inspecting Officers as defined in the Contractor's Labour Regulation, the Contractor shall without prejudice to any other liability pay to the B.H.E.L a sum not exceeding Rs. 50/- as liquidated damages for every default breach or furnishing, making submitting, filling materially incorrect statement as may be fixed by the Engineer-in-charge and in the event of the Contractor's default continuing in this respect, the liquidated damages may be enhanced to Rs. 50/- per day for each day of default subject to a maximum percent of the estimated cost of works put to tender.

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

- The Engineer in charge shall deduct such amount from bills or security deposit of the Contractor and credit the same to the Welfare Fund constituted under Regulations. The decision of the Engineer-in-charge in this respect shall be final and binding.
- **Model Rules for Labour Welfare**
- The Contractor shall at his own expense comply with or cause to be complied with Model Rules for Labour welfare as appended to these Conditions or rules framed by Government from time to time for the protection of health and for making sanitary arrangements for workers employed directly/or indirectly on the works. In case the Contractor fails to make arrangements as aforesaid, the Engineer-in-charge shall be entitled to do so and recover the cost thereof from the Contractor.
- **Safety Code**
- The Contractor shall at his own expense arrange for the safety provisions as appended to these conditions or as required by the Engineer – in – charge, in respect of all labor directly or indirectly employed for performance of the works and shall provide all facilities in connection therewith. In case the Contractor fails to make arrangements and provide necessary facilities as aforesaid, the Engineer-in-charge shall be entitled to do so and recover the cost thereof from the Contractor.
- Failure to comply with model Rules for Labour Welfare, Safety Code, or the provisions relating to report on accidents and to grant of maternity benefits to female workers shall make the Contractor liable to pay to the B.H.E.L as liquidated damages an amount not exceeding Rs. 50/- for each default or materially incorrect statement. The decision of the Engineer-in-charge in such matters based on reports from the Inspecting Officers as defined in the Contractor's Labour Regulation as appended to these conditions shall be final and binding and deductions for recovery of such liquidated damages may be made from any amount payable to the Contractor.

21. WATER

- The Contractor shall allow in his Tender and provide at his cost all water required for the work or his employees on the work, together with all pipes and fittings or other means that may be necessary or required to ensure a proper and ample supply of water for all purposes connected with the work.
- Water will be supplied from the BHEL supply system, or other sources at one point fixed by the Engineer-in-charge on the site of work at free of cost. The Contractor shall make necessary arrangement for lifting pumping, carrying or conveying the water as required at his own cost.

22. Temporary Workshops, Stores Etc.

- The Contractor shall, during the progress of the work provide, erect and maintain at his own expense all necessary temporary workshops, stores, offices, etc., required for the proper and efficient execution of the work. The planning, siting and Construction of these buildings shall have the approval of the Engineer-in-charge and the Contractor shall at all times keep them tidy and in a clean and sanitary condition to the entire satisfaction of the Engineer-in-charge.
- On completion of the work all such temporary buildings shall be cleared away and the site restored and left in a clean and tidy condition to the entire satisfaction of the Engineer-in-charge.

23. Stores and Materials on Site

- All stores and materials required for the work are to be deposited by the Contractor only in places to be indicated by the Engineer-in-charge.
- Where in accordance with the contract stipulations certain Stores & Materials (for incorporation in the work) are to be issued to the Contractor by the BHEL as detailed under Schedule "B" such items will be so issued only to the extent required for the actual completion of the work as stipulated in the contract. The decision of the Engineer-in-charge regarding the quantities to be issued as above shall be final and binding on the contractor. For any excess quantities consumed on the work up to 5% over the theoretical consumption will be charged at issue rates and excess consumption beyond this limit, their cost will be recovered from the Contractor at punitive rates which will be 100% (Hundred Percent) more than the issue rates of the BHEL as specified in the Instructions to the Tenderers.
- In regard to the materials and stores which may be issued to the Contractor by BHEL the Contractor shall give the Engineer-in-charge reasonable notice in writing of his requirements of such stores and materials and on the approval of his demand being notified to him, he shall make immediate arrangements for drawing the same. Such stores and materials shall be transported by the Contractor at his own expense direct from the place of issue to the site of the work, unless prior written approval is obtained from the Engineer-in-charge to take them to a Store or Workshop elsewhere.
- The Contractor shall have to build a weather proof shed for the storage of cement required for 15 days consumption of the work.
- BHEL Officers connected with the Contract shall have the power at any time to inspect and examine any stores or materials intended to be used in or on the work, whether on the site or at any factory or workshop or other place where such stores or materials are being fabricated or manufactured or at any place where the same are lying and the contractor shall give necessary facilities for such inspection and examination.
- The Engineer-in-charge shall be entitled to have tests made of any stores or materials supplied by the Contractor who shall provide at his own expense all facilities which the Engineer-in-charge may require for this purpose. If at the discretion of the Engineer-in-charge an independent expert is employed to make any such tests his charges shall be borne by the Contractor only if the test discloses that the said stores or materials are not in accordance with the provisions of the Contract.
- Should the Engineer-in-charge consider at any time during the construction or re-construction, on prior to the expiry of the "MAINTENANCE PERIOD" that the stores or materials provided by the Contractor are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract (in respect whereof the decision of the Engineer-in-charge shall be final and conclusive) the Contractor, shall on demand, in writing from the Engineer-in-charge specifying the Stores or materials complained of, notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith remove the stores or materials so specified and provide other proper and suitable stores or materials at his own expense; to the entire satisfaction of the Engineer-in-charge and in the event of his failing to do so within a period to be specified by the Engineer-in-charge in his demand aforesaid the Engineer-in-charge may replace within others the stores or materials complained of at the risk and expense in all respects of the Contractor. The liability of the contractor under this condition shall not extend beyond the maintenance period aforesaid except as regards stores or materials which the Engineer-in-charge shall have previously given notice to the contractor to replace. (*MAINTENANCE PERIOD for any work under this Organization will be SIX MONTHS FROM THE DATE OF ACTUAL COMPLETION of the particular work and handing over to B.H.E.L) or as specified in Special conditions of contract.

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

- All stores and materials brought to the Site shall become and remain the property of B.H.E.L and shall not be removed from the site without prior written approval of the Engineer-in-charge. However, when the work is finally completed, the Contractor shall at his own expense forthwith remove from the site all surplus stores or materials originally supplied by him and upon such removal; the same shall revert in and become the property of Contractor. All B.H.E.L Stores and materials issued to Contractor for in-corporation or fixing in the work and which, making due allowance for reasonable wear and tear/or waste, have not on completion of the work been so incorporated or fixed, shall be returned by the Contractor at his own expense to the place of issue.
- Credit for surplus stores and/ or materials returned by the contractor to B.H.E.L will be given to him at a price based on the prevailing market rate but not exceeding that at which the said stores and materials were originally issued to him but due consideration shall be given to the allowance claimed by B.H.E.L in respect or any depreciation or damage suffered by the stores and/or materials whilst in the custody of the Contractor regarding which the decision of Engineer-in-charge shall be final and conclusive.
- If, in the opinion of the Engineer-in-charge (which shall be final and conclusive) any stores, supplied by B.H.E.L have either during currency of the work or after completion of the work whilst under the custody of the Contractor, become damaged to such an extent that they cannot be usefully utilized, either in the same work or in other works, the Engineer-in-charge shall not accept the stores and in the event of his rejection the contractor shall be charged for the said Stores at a rate as fixed by the Accepting Officer. The Contractor shall not be entitled to any claim whatsoever on this account.

24. Tools and Plants on site:

- All tools, plants and equipment brought to the site shall become the property of B.H.E.L and shall not be removed from the site without the prior written approval of the Engineer-in-charge when the work is finally completed or the Contract is determined for reasons other than the default of the Contractor he shall forthwith remove from the site all tools, plants, equipment etc., (other than those as may have been provided by B.H.E.L) and upon such removal, the same shall in, and become the property of the Contractor.

25. Statement of Hire Charges:

- A monthly detailed statement of the hire charge incurred in respect of B.H.E.L tools, plants, equipment etc., shall be given to the Contractor by the Engineer-in-charge.

26. Precaution Against risks:

- The Contractor shall be responsible for providing at his own expense, for all precautions to prevent loss or damage from any and all risks and to minimize the amount of any such loss or damage and for the necessary steps to be taken for the said purpose until the works have been handed over complete in all respect of the Engineer-in-charge.
- The Contractor shall provide all watchmen necessary for the protection of the site, the work, the materials, tools, plants, equipment's and anything else lying on the Site during the progress of the work. He shall be solely responsible for and shall take all reasonable and proper steps for protecting, securing, lighting and watching, all places on or about the work and the Site which may be dangerous to any person whomsoever.

27. Notices and Fees:

- The Contractor shall give all notices required by any Statutory provision or by the regulations and/or bylaws of any local Authority and/or of any Public Service, Company or Authority affected by the work or with whose system the same are or will be connected. The Contractor shall pay and indemnify B.H.E.L against any fees and charges payable under such Acts. Regulation and/or byelaws in respect of the work and shall make and supply all drawings and plans required in connection with any such notice.

28. Setting out of the Works and Protective and Maintaining Signals and Works:

- The Engineer-in-charge shall supply dimensioned drawings, levels and other information necessary to enable the contractor to set out the work. The Contractor shall at his own expense set accurately according to the drawings and figured dimension thereon, all the work comprised in the contract and any extras or additions there-to and shall be solely responsible for their being so set out and executed. All bench marks, pegs, signals on the surface, alignment stones, milestones and all similar marks whether put in by B.H.E.L Authorities for the purpose of checking the Contractor's work or in the nature of permanent survey marks will during the tenure of the contract, be under the care of the Contractor who shall, at his own expense, take, all proper and reasonable precautions and care to preserve and maintain them in their true position. In the event of these marks being disturbed or obliterated by accident or due to any other cause whatsoever, the same may, if deemed necessary, be replaced by the Engineer-in-charge at the Contractor's expense and the cost thereof deducted from any money then or thereafter becoming due to the Contractor.
- Where requested by the Contractor, the level marks, center line and chainage pegs corresponding to those shown on the Drawing will be pointed out to the Contractor on the ground but all bench marks or chainage pegs additional to those shown on the Drawing will be set out by BHEL authorities.

29. Site Drainage:

- All water that may accumulate on the site during the progress of the work or in trenches and excavations shall be removed to the entire satisfaction of the Engineer-in-charge and at Contractor's expense.

30. Excavations, Relics Etc.

- Material of any kind obtained from excavation on the site shall remain the property of BHEL and shall be disposed off as Engineer-in-Charge directs.
- All gold, silver, oil and other minerals of any description and all precious stones, coins, treasures, relics, antiques and other similar items which may be found in or upon the site shall be the property of Bharat Heavy Electricals Limited and the Contractor shall duly preserve the same to the satisfaction of the BHEL and shall from time to time deliver the same to such person or persons as the B.H.E.L may appoint to receive the same.

31. Foundations

- The Contractor shall not lay any foundations until the excavations for the same have been examined and approved in writing by the Engineer-in-charge.

32. Covering-in Work

- The Contractor shall give reasonable notice in writing to the Engineer-in-charge whenever any work is to be permanently covered up or concealed, whether by earth or other means so that it can finally be inspected or measured if necessary. In default of so doing, the Contractor shall, if required by the Engineer-in-charge uncover such work at his own expense.

33. Approval of works by Stages:

- All work embracing more than one process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice in writing to the Engineer-in-charge when each stage is ready. In default of such notice being received, the Engineer-in-charge shall be entitled to approve the quality and extent thereof at any time he may choose and in the event of any dispute, the decision of the Engineer-in-charge thereon shall be final and conclusive.

34. Execution of the Work.

- The work shall be executed in a workman-like manner and to the satisfaction in all respects of the Engineer-in-charge.
- The Engineer-in-charge will communicate or confirm his instructions to the Contractor in respect of the execution of the Work in a "Work Site Order Book" maintained at his office and the Contractor shall visit this office daily and shall confirm receipt of such instructions by signing the relevant entries in this book. Such entries will rank as order or notices in writing within the intent and meaning of these conditions.

35. Day Work:

- No day-work shall be performed without the prior written instructions of the Accepting Officer.
- The Contractor shall give to the Engineer-in-charge reasonable notice of the start of any work ordered to be executed by day-work and shall deliver to the Engineer-in-charge within two days of the end of each pay week a return in duplicate giving full detailed accounts of labor and materials for that pay-week. One copy of each of these returns, if found correct, will be certified by the Engineer-in-charge and returned to the contractor and must be produced at the time of adjustment of accounts.
- An invoice in duplicate signed by the Contractor or his agent shall be sent with each delivery of materials for day-work and the Contractor will be furnished with a receipt signed by the Engineer-in-charge specifying the description, quantities weight or measurement (as the case may be) of the articles approved, reference will be made in this receipt in the return aforesaid and the Contractor's Bill.
- In the case of Lump sum Contracts, the rates to be charged and the percentage addition for profit and establishment charges, etc., will be agreed upon between the Accepting Officer and the Contractor prior to the execution of the work.

36. Inspection of the work.

- B.H.E.L Officers concerned with the Contract shall have power at any time to inspect and examine any part of the work and the Contractor shall give such facilities as may be required to be given for such inspection and examination Should Engineer-in-charge consider, at any time during the expiry of the maintenance period, that any work has been executed with unsound, imperfect or unskilled workmanship or of a quality inferior to that contracted for or not otherwise in accordance with the contract (in respect) whereof the decision of the Engineer-in-charge shall be final and conclusive the Contractor shall on demand in writing from the Engineer-in-charge specifying the fault notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify or remove and reconstruct the work so specified in whole or in part as the case may be required at his own expense to the entire satisfaction of the Engineer-in-charge and in the event of his failing to do so within a period to be specified by the Engineer-in-charge in his demand as aforesaid, the Engineer- in-charge may carry out the work by other means at the risk and expense in all respects of the Contractor. However, the liability of the Contractor under this condition shall not extend beyond the maintenance period except as regards workmanship which the Engineer-in- charge shall have previously given notice to the Contractor to rectify.
- 37. Responsibility for Building:**
- In the event of any building or part of any building being handed over to the Contractor for the execution of work thereto under the provisions of the Contract, he shall give a written receipt for all fixtures, glass etc. and he shall be required to make good at his own expense all damages resulting from any cause whatsoever while in his charge and on completion of the work to deliver the said building or part thereof in a clean state complete in every particular to the entire satisfaction of the Engineer-in-charge.
- 38. Insurance**
- The contractor shall within one month after the date of the acceptance of the contract, insure the work against loss or damage to the contract works, temporary work and materials erected in performance of the contract on “all risks” basis from the time of arrival on site until taken over by BHEL on completion of the contract.
 - The cover shall also include wherever necessary the risks of testing including breakdown or explosion of plant and machinery undergoing testing, trial and commissioning operations. The insurance shall also specifically cover removal of debris cost. The sum insured shall represent the estimated full value of the contract works inclusive of value of free supply materials by BHEL, transport charges, customs dues, express freight, overtime charges, cost of Construction, value of constructional plants and machinery, removal of debris and escalation of costs where the contract includes a maintenance period, the insurance cover shall specifically include the contractors’ liabilities during the maintenance period. The insurance shall also be extended to cover third party personal injury and property damage for a sum to be specified by BHEL. The insurance shall be effected in the name of BHEL and the contractor shall submit to BHEL a draft of the insurance policy for approval. The policy when issued will be lodged with BHEL together with receipts of premium for such insurance and the contractor shall maintain such policies in force until the obligations of the contractor are fully discharged.
 - If the contractor fails to comply with the terms of this condition the Accepting officer may insure the work and may deduct the amount of premiums from any money that may become payable to the contractor or may at his discretion refuse payment of any advances to the contractor until the contractor shall have complied with the terms of this condition. This provision does not, however, absolve the contractor of his responsibility for taking up the insurance. The contractor is, therefore, primarily responsible for taking up the insurance in time.

39. Damage and loss to private property and injury to workmen

- The contractor shall at his own expense reinstate and make good to the satisfaction of the Engineer-in-charge and pay compensation for any injury, loss or damage occasioned to any property or rights whatever including property and rights of B.H.E.L, (or agents, servants or employees of B.H.E.L) the injury loss or damage arising out of or in any way in connection with the execution or purported execution of the contract and further the contractor shall indemnify B.H.E.L, against all claims enforceable against B.H.E.L, or any agent, servant, or employee of B.H.E.L a private person, in respect of any such injury (including injury resulting in death loss or damage to any person) whosoever or property, including all claims which may arise under the workmen's Compensation Act or otherwise, or which would be enforceable against B.H.E.L.

40. Completion

- The works shall be completed to the entire satisfaction of the Engineer-in-charge and in accordance with the Contractor's forecast of Time and Progress where operative, and all unused stores and materials, tools, plants, equipment's, temporary buildings and things shall be removed and the site and work cleared of rubbish and all waste materials and delivered up clean and tidy to the satisfaction of the Engineer-in-charge at the Contractor's expense and/or before the Scheduled date of completion.
- The B.H.E.L shall have power to take over from the Contractor from time to time each sections of the work as have been completed to the satisfaction of the Engineer-in-charge.
- In case the Contractor fails to remove any of his properties, assets or fails to clear the rubbish and waste materials within 30 days of the completion of the contract, it is lawful for the contractee, that is BHEL to take such action as it deems fit to clear dispose of such properties, assets or such waste materials and charge the contractor any expenses incurred thereon.
- The Engineer-in-charge shall certify to the Contractor the date on which the work is completed and the state thereof.
- The Engineer-in-charge shall also certify to the Contractor the state of the work at the end of maintenance period, where applicable.

41. Compensation for Delay:

- If the contractor fails to maintain the required progress in terms of condition 7 or to complete the work and clear the site on or before the contracted or extended period of completion, he shall, without prejudice to any other right or remedy of the B.H.E.L on account of such breach, pay as agreed compensation an amount calculated as stipulated below or such smaller amount as may be fixed by the BHEL on the contract value of the work for every week that the progress remains below that specified in condition 7 or that the work remains incomplete.
- This will also apply to items or group of items for which separate period of completion has been specified.
- For this purpose the term „Contract Value“ shall be the value at contract rates of the work as ordered. LD at the rate of ½ percent per week OF Contract Value Subject to Maximum of 10 % of Contract Value.
In case of Any Amendment /Revision, LD shall be linked to amended /Revised Order value.
- The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the B.H.E.L.

42. Laws Governing the Contract:

This contract shall be governed by the Indian Laws for the time being in force.

43. Cancellation of Contract for Corrupt Acts:

- The Accepting Officer, whose decision shall be final and conclusive, shall, without prejudice to any other right or remedy which shall have accrued or shall accrue thereafter to Bharat Heavy Electricals Limited, cancel the contract in any of the following cases and the Contractor shall be liable to make payment to B.H.E.L for any loss or damage resulting from any such cancellation for default.
- If the Contractor shall:
 - a) Offer or give or agree to give to any person in BHEL service any gift or consideration of any kind as an inducement or reward for doing or for bearing to do or for having done or forborne to do a day act in relation to the obtaining or execution of this or any other contract for BHEL service OR
 - b) Enter into a contract with B.H.E.L in connection with which commission has been paid or agreed to be paid by him or with his knowledge, unless the particulars of any such commission and the terms of payment thereof have previously been disclosed in writing to the Accepting Officer, OR
 - c)
 - d) Obtain a contract with B.H.E.L as a result of ring tendering or by non bonafide methods of competitive tendering without first disclosing the fact in writing to the Accepting Officer.

44. Cancellation of Contract for Insolvency, Assignment or Transfer or Sub- Letting of Contract:

- The Accepting Officer, without prejudice to any other right or remedy which shall accrue thereafter to B.H.E.L shall cancel the contract in any of the following cases: If the Contractor,
 - a) Being an individual, or if a firm any partner thereof shall at any time be adjudged bankrupt or have a receiving order or orders for administration of his Estate made against him or shall take any proceedings, for liquidation or composition under any Bankruptcy Act for the time being in force or make any conveyance or assignment of his effects of composition or arrangement for the benefit of his creditor or purport to do so, or if any application be made under any Bankruptcy Act for the time being in force for the sequestration of his Estate or if a trust deed be granted by him on behalf of his creditors,

OR
 - b) Being a Company, shall pass a resolution or the Court shall make an order for the liquidation of its affairs, or a Receiver or Manager on behalf of the debentures holders shall be appointed or circumstances shall arise which entitle the court or debentures holders to appoint a Receiver or Manager OR.
 - c) Assigns, transfers, sub-lets or attempts to assign, transfer or sub-let any portion of the work without the prior written approval of the Accepting Officer. OR
 - d) Shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.
- Whenever the Accepting Officer exercises his authority to cancel the Contract under this condition, he

may complete the work by any means at the Contractor's risk and expense provided always that in the event of cost of the completion (as certified by Engineer-in-charge which is final and conclusive) being less than the contract cost, the advantage shall accrue to the BHEL and that if the cost of completion exceeds the money due to the Contractor under the contract, the Contractor shall either pay the excess amount ordered by the Engineer-in-charge or the same shall be recovered from the Contractor by other means.

- Engineer-in-charge will have powers to take possessions of the site and any materials, constructional plant, implements, stores, etc, thereon and or carryout the work by any means at the risk and cost of the contractor.
- In case the BHEL completes the work under the provisions of this condition the cost of such completion to be taken into account in determining the excess cost to be charged to the contractor under this Condition shall consist of the cost of materials purchased and/or labour provided by the BHEL with an addition of such percentage to cover superintendence and establishment charges as may be decided by the Project Manager/Project Engineer whose decision shall be final and conclusive.
- If the contractor fails to pay the excess sum within a period of 30 days, the Engineer-in-charge shall have the right to sell any or all of the contractor's unused materials, constructional plant implements, temporary buildings, etc., and apply the proceeds of sale thereof towards the satisfaction of any sum due from the contractor under the contract and if thereafter be any balance outstanding from the contractor, it shall be recovered in accordance with the provisions of the contract.

45. Cancellation of contract in part or in full for contractor "default:

- If the Contractor:
 - (a) makes default in commencing the work within a reasonable time from the date of handing over of the site and continue in that state after a reasonable notice from Engineer-in-charge, OR
 - (b) in the opinion of the Engineer-in-charge at any time, whether before or after the date or extended date for completion, makes default in proceeding with the work, with due diligence and continue in that state after a notice of seven days from Engineer-in-charge, (or)
 - (c) fails to comply with any of the terms and conditions of the contract or after 7 days' notice in writing with orders properly issued there under, (OR)
 - (d) Fails to complete the work order and items of work individual dates for completion and clear the site on or before the date of completion or fails to achieve the progress as set out under clauses 7 of these General Conditions of Contract.
- The Accepting Officer may, without prejudice to any other right or remedy which shall have accrued or shall accrue thereafter to B.H.E.L cancel the contract as a whole or in part thereof or only such work order or items of work in default from the contract. Whenever the Accepting Officer exercises his authority to cancel the contract as a whole or in part under this conditions he may complete the work at the Contractor's risk and cost, provided always that in the event of the cost of completion (as certified by Engineer-in-charge which is final and conclusive) being less than the contract cost the advantage shall accrue to the B.H.E.L if the cost of completion exceeds, the money due to the contractor under this contract, the contractor shall either pay the excess amount ordered by Project Manager or the same shall be recovered from the contractor by other means. Engineer-in-charge will have power to take possession of the site and any materials, constructional plant, implements, Stores, etc., thereon.

- In case the B.H.E.L completes the work or any part thereof under the provisions of this conditions the cost of such completion to be taken in to account in determining the excess cost to be charged to the contractor under this conditions shall consists of the cost of materials purchased and/or labour provided by the B.H.E.L with an addition of such percentage to cover superintendence and establishment charges as may be decided by the Project Manager/Engineer whose decision shall be final and conclusive.
 - If the contractor fails to pay the excess sum within a period of 30 days, the Engineer-in-charge shall have the right to sell any or all of the contractor's unused materials, constructional plant implements, temporary buildings, etc, and apply the proceeds of sale thereof towards the satisfaction of any sum due from the contractor under the contract and if thereafter be any balance outstanding from the contractor it shall be recovered in accordance with the provision of the contract.
- 46. Termination of Contract for Death**
- Without prejudice to any of the rights or remedies under this contract if the contractor dies, the accepting Officer shall have the opinion of terminating the contract without compensation to the contractor.
- 47. Special Powers of Determination**
- If at any time after the acceptance of the tender B.H.E.L shall for any reason whatsoever not require the whole or any part of the work, to be carried out the project Manager/Engineer shall give notice in writing of the fact to the Contractor who shall have no claim to any payment of compensation or otherwise howsoever on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not derive in consequence of the foreclosing of the work.
 - He shall be paid at Contract rates, for the full amount of the work executed including such additional works, e.g. clearing of site, etc., as may be rendered necessary by the said fore closing. He shall also be allowed a reasonable payment (as decided by the Accepting Officer) for any expenses sustained on account of labor and materials collected but which could not be utilized on the work, as verified by the Engineer-in-charge. Neither shall the Contractor have any claim for compensation on account of any alterations having been made in the original specifications, drawings, designs and instructions, involving any curtailment of the work as originally contemplated.
- 48. Fair Wage**
- a) The contractor shall pay not less than the "Fair Wage" to laborers engaged by him on the work. "Fair Wage" means wage whether for time or piece work notified at the time of inviting tenders for the work and where such wages have not been notified the wages prescribed by the Project Manager/Engineer for the stations at which the work is done.
 - b) The Contractor shall notwithstanding the provision of any contract to the contrary, cause to be paid a "Fair Wage" to laborers indirectly engaged on the work, including any labor engaged by the Sub- Contractors in connection with the said work, as if the laborers had been directly employed by him.
 - c) In respect of laborers directly or indirectly employed on the work for the performance of the Contractors part of this Agreement, the Contractor shall comply with or cause to be complied with B.H.E.L Contractor's Labour Regulations (appended here to as Annexure „A" to these conditions) in regard to payment of wages, wage period deduction from wages, recovery of wages not paid and deductions unauthorized made, maintenance of wage book, wage-slips publication of scale of wage and other terms of employment inspection and submission of periodical returns and all other matters

of alike nature.

d) The Engineer-in-charge concerned shall have the right to deduct from the money 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 the terms of the contract or non-observance of the regulations.

e) The Contractor shall be liable primarily for all payments to be made under the contract and for the observance of the Regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractors.

f) The regulations 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.

CHAPTER IV

VALUATION AND PAYMENT

49. Records and Measurements:

- All items having a financial value shall be entered in the B.H.E.L Measurement Book so that a complete record is obtained of all works performed under the Contract. Buildings, etc., priced in Schedule „A“ as a unit lump sum will be entered by number at the unit lump sum.
- Work carried out for agreed lump sum will be described and similarly recorded.
- Lump sum omissions will be entered for deduction. Measurement shall be restricted to that required to ascertain the financial liability of B.H.E.L under the contract.
- Work which fails to be measured in detail shall be measured physically, without reference to any local custom that may obtain excepting where it may otherwise be directed in the tender documents. The measurements shall be taken jointly by any person duly authorized on the part of the BHEL and by the Contractor.
- The Engineer-in-charge shall give reasonable notice in writing to the Contractor of appointment for measurement.
- The Contractor shall, without extra charge, provide assistance with appliance and other things necessary for measurement.
- The Contractor shall bear all the cost of measurement of his work.
- Measurement shall be entered in the B.H.E.L Measurement Book and signed and dated by both parties each day at the Site on completion of measurement. If the Contractor objects to any of the measurements recorded on behalf of the B.H.E.L a note to that effect will be made in the BHEL Measurement Book or against the item or items objected to; and such note shall be signed and dated by both the parties engaged in taking the measurement.
- If, as a result of such objection, it becomes necessary to re-measure the work wholly or in part, the expense of such re- measurement shall be borne by the party requiring the measurement.
- Measurement to be re-taken, provided that a net error is found by this measurement to amount to less than 5% (five percent) of the value as recorded by the first measurement. But, where the net

CONTRACTOR

ACCEPTING OFFICER (BHEL)

errors amount to 5% and over of the said value, then the cost is to be borne by the other party. In any case, if the net value of errors found exceeds Rs. 500/- the expense of re-measurement is to be borne by the other party. If the Contractor's representative fails to attend when required, the Engineer-in-charge shall have power to proceed by himself to take measurement and in that case these measurements shall be accepted by the Contractor as final.

- The contractor shall, once every month, submit to the Engineer-in-charge with a copy to the Civil Manager/Senior Engineer details of his claims for the work done by him up to and including the previous month which are not covered by his Contract Agreement in any of the following respects;
 - Deviation from the items and Specifications provided in the contract documents.
 - Extra Items/New Items of work
 - Quantities in excess of those provided in the contract schedule.
 Items in respect of which rates have not been settled. He should, in addition furnish a clear certificate to the effect that the claims submitted by him as aforesaid cover all his claim and that no further claims shall be raised by him in respect of the work done up to and including the period under report.
- Except where any general or detailed description of the work in quantities expressly shows to the contrary, schedule of quantities shall be deemed to have been prepared and measurements shall be taken in accordance with the procedure set forth in the schedule of rates specification notwithstanding any provision in the relevant standard method of measurement or any general or local custom. In the case of items which are not covered by the schedule of rates / specification, measurements shall be taken in accordance with relevant standard method of measurement issued by the Indian Standard Institution or as per standard engineering practice.

50. Valuation of Deviations:

- Rates for deviated items of work will be fixed as follows:-
- 1.For any item of work required to be carried out after the contract has been awarded and which is not covered by Contractor's Schedule but is covered by CPWD Delhi Schedule of rates 2013 the rate payable for such a fresh item will be derived from CPWD Delhi Schedule of rates 2013 by the method of proportion as follows:
 - In the same proportion to rate in CPWD Delhi Schedule of rates 2013 as the tendered rate for the nearest analogous item of work in Contractor's schedule bears to rate for the particular analogous item of work in CPWD Delhi Schedule of rates 2013.
 - If a single appropriate analogous item of work is not available in both Schedule (Contractor's and CPWD Delhi Schedule of rates 2013) then the method of proportion will be applied to the nearest analogous group of items available in both the Schedules referred to i.e. in the same proportion as the total tendered cost of that particular group of items (the sum of the products of the tendered rates and the quantities for which orders are placed bears to the total cost of the same items and quantities at the CPWD Delhi Schedule of rates 2013
 - If even an appropriate analogous group of items is not available in Contractor's Schedule and CPWD Delhi Schedule of rates 2013 , then the methods of proportion will be applied to all those items of the whole work, which are available in both the Schedules and for which orders have been placed on the contractor, i.e., in the same proportion as the total cost of all these items of work (the sum of the products of the tendered rates and the quantities for which orders are placed) bears to the total cost of the same items and qualities at the B.H.E.L Schedule of Rates.

- If any work not covered by any of the foregoing is ordered on the Contractor, the basis of payment shall be decided by the Accepting Officer whose decision shall be final and conclusive and binding on the parties.
- The selection of analogous items or analogous group of items referred to above shall be done by the Engineer-in-charge. Where the rates for deviated items or new items of work can be derived by the selection of different analogous items or analogous group of items, the lowest of all such derived rates shall be taken as the correct rate.
- In the case of the contracts for which the Engineer-in-charge is the Accepting Officer, all disputes regarding the settlement of rates of deviated or new items or work shall be referred to the Deputy Manager/Manager whose decision shall be final and conclusive as the case may be.

51. Reimbursement / Refund on Variation in Price, Materials:

- If after submission of the tender and/or during the progress of the works, the price of any material (not being a material supplied from the B.H.E.L store in accordance with the Conditions of the Contract) is increased or decreased by an Act of Legislature (Central or State) and/or any notification there under or on account of new duties or levies such as octroi or on account of increase or decrease in such duties affecting the price of materials required for incorporation in the works and made from materials of which the price has increased or decreased as aforesaid and the Contractor has thereupon to pay in respect of such material or item a price which is higher or lower than the price of that material or item as prevailing immediately before the passing of such Act or levying, increasing/ decreasing of such duty, the B.H.E.L shall in case of increase in price or the duty reimbursed to the contractor and in case of decrease in price, the B.H.E.L shall be entitled to a refund of the reduction price or the reduction in duty. Provided, however no reimbursement or refund shall be made if the increase/decrease is not more than 10% of the said price, and if so, the reimbursement or refund shall be made only on the excess over 10% provided always that any such increase shall not be payable if, in the opinion of the Deputy Manager/Manager (whose decision shall be final and conclusive) the increase is attributable to the delay in the execution of the contract within the control of the contractor or that any such increase has become operative after the contracted/or extended date of completion of the work or items of work in question.
- The Contractor shall, for the purpose of this condition, keep such books of account and other documents as are necessary to show the amount of any increase claimed or any reduction available and shall allow inspection of the same by any duly authorized representative of the B.H.E.L and further shall at the request of the Engineer-in-charge furnish for verification such other information of the Engineer-in-charge may require.
- The Contractor shall within a reasonable time of his becoming, aware of any alteration in the prices of any such materials, give notice thereof in writing to the Engineer-in-charge stating that the rate is submitted in pursuance to this condition together with all information relating thereto which he may be in a position to supply.

52. Advances on Account:

- No payment shall be made for work estimated to cost less than Rupees FIVE THOUSAND till the whole of the work shall have been completed and a certificate of completion given by the Competent Authority.
- In the case of work estimated to cost more than Rupees FIVE THOUSAND the contractor may at

intervals of not less than one month or as otherwise provided for in the Contract Documents, counting from the date on which order to commence work is given by Engineer- in-charge submit claims on B.H.E.L forms for payment of advances on account of work done and of materials delivered in connection with the Contract.

- The contractor shall be paid in respect of such claims to the extent approved and passed by the Engineer-in-charge subject a maximum of 90% of the value of the work actually executed to the satisfaction of the Engineer-in-charge. The certificate of the Engineer-in-charge regarding such approval and passing of the sums so payable shall be final and conclusive against the Contractor.
- “After the full amount of Security Deposit is made up through the 10% deduction from On account” bills, 100% payment of all subsequent bills may be made to the Contractor.
- The Contractor may also be paid during the progress of the work 75% of the value of any materials which are in the opinion of the Engineer-in-charge in accordance with the Contract, and are actually required for incorporation in the work and which have reasonably been brought to the site in connection therewith and are adequately stored and / or protected against damage by weather or other causes, but which have not at the time of payment of the advance been incorporated in the work on furnishing a formal hypothecation deed. Payment of such advances, however, shall be purely at the discretion of the Deputy Manager/Senior Engineer provided always that payments shall not be made under these periodical certificates in respect of perishable materials like lime, cement, timber, sand, kankar, etc., Any sums/due from the Contractor on account of Tools and Plant, Stores or any other items provided by B.H.E.L shall be deducted from the respective advances, the Engineer-in-charge shall from time to time certify the sums payable to the contractor after retaining the reserves.
- Any certificate relating to work done or materials delivered may be modified or corrected by any subsequent interim certificate or by the final certificate and no certificate of the Engineer- in-charge supporting an advance payment shall itself be conclusive evidence that any work or materials to which it relates are in accordance with the contract. All such intermediate payments shall be regarded as advances against the final payment only and shall not be considered as an admission of the due performance of the contract or any part thereof in any respect or the accruing of any claim whatsoever.
- Such intermediate payment shall not conclude, determine or affect in any way the powers of the Engineer-in-charge as to the final settlement and adjustment of the accounts or otherwise, or in any way vary or affect the contract.

53. Final Bill

- As soon as possible after the completion of the work to the satisfaction of the Engineer-in- charge, the contractor shall forward a certified final account on BHEL form, in duplicate.
- It shall be accompanied by all abstracts, vouchers etc., in support thereof and shall be prepared in the manner prescribed by the Engineer-in-charge.
- No claims will be entertained after the receipt of the final B ill.
- The Contractor shall be entitled to be paid the final sum less the value of payments already made on account subject to certification of the final bill by the Engineer-in-charge. Any sums due from the contractor on account of Tools & Plant, Stores or any other items provided by BHEL not yet recovered from the contractor shall be deducted from the final sum aforesaid.
- No charge shall be allowed to the Contractor on account of the preparation of the final bill.

54. Payment of Bills

- All payment to be made to the Contractor under this contract shall be by Electronic Fund Transfer / RTGS only (Within a reasonable time after the Certification by the Engineer-in-charge).

55. Recovery from Contractor:

- Whenever under the contract any sum of money shall be recoverable from or payable by the contractor the same may be deducted from any sum then due or which at any time thereafter may become due to the Contractor under the contract or under any other Contract with BHEL or from his Security Deposit or he shall pay the claim on demand.

56. Post Technical Audit of Work and Bills:

- BHEL reserves the right to carry out a post-payment audit and technical examination of the work and final bill including all supporting vouchers, abstracts etc., and to enforce recovery of any sums becoming due as a result thereof in the manner provided in the preceding sub- paragraphs provided however that no such recovery shall be enforced after three years of passing the final bill.

57. Refund of Security Deposit:

- 50% of the Security Deposit mentioned in condition 16 above, may be refunded to the contractor in respect of all contracts on completion of work and after payment of final bill and the balance 50% on expiry of the maintenance period, (described under clause 23) provided the contractor shall have rendered a “No-Demand” Certificate. In case of works where maintenance period is not involved 100% of the Security Deposit may be refunded after payment of final bill provided that the contractor shall have rendered a “No-Demand Certificate”

58. Arbitration:

- Except where otherwise provided for in the contract all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions hereinbefore 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 work or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Executive Director / General Manager of BHEL and if ED is unable or unwilling to act, to the sole arbitration of some other person appointed by the ED / General Manager, willing to act as such arbitrator. The cases referred to arbitration shall be other than those for which the decision of the Manager / Senior Engineer / Engineer-in-charge is expressed in the contract to be final and conclusive. There will be no objection if the arbitrator so appointed is an employee of B.H.E.L and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matters in dispute or difference.
- The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, such Executive Director / General Manager as aforesaid at the time of such transfer, vacation of office or inability to act, shall appoint another person to act as arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

- Subject as aforesaid the provision of the Arbitration & Reconciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.
- It is a term of the contract that the party involving arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.
- The arbitrator(s) may from time to time with consent of the parties enlarge the time for making and publishing the award.
- The work under the Contract shall, if reasonably possible, continue, during the arbitration proceedings and no payment due or payable, to the Contractor shall be withheld on account of such proceeding.
- The Arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the Parties fixing the date of first hearings.
- The arbitrator shall give a separate award in respect of each dispute or difference referred to him.
- The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion.
- The award of the arbitrator shall be final, conclusive and binding on all parties to this contract. In the event of disputes or differences arising between one public sector enterprise and a Govt. Department or between two public sector enterprises the above stipulations shall not apply the provisions of BPE office memorandum No. BPE/CL 001/ 76MAN / 2 (1.10) 75-BPE (GM-1) dated 1st January 1976 or its amendments for arbitration shall be applicable

SPECIAL CONDITIONS OF CONTRACT

CONTENTS

S/N	DESCRIPTION	Page No.
1	General Intent of the Specifications	33
2	General Services to be rendered by the Contractor.	34
3	General Technical Requirements (Specifications, Drawings and Codes)	35
4	Obligations of Contractor with respect to the Rates offered	36
5	Obligations of Contractor with respect to T&P, IMTEs	38
6	Obligations of Contractor with respect to Material and its Storage	38
7	Terms of Payment	40
8	Performance Monitoring	41
9	Obligations of Contractor with respect HSE & OHSAS	42
10	Obligations of Contractor with respect to LABOUR	46
11	Suspension of Business Dealings	50

CONTRACTOR

ACCEPTING OFFICER (BHEL)

1.0 INTENT OF THE SPECIFICATION

- 1.1** The intent of this specification is to provide services for execution of the Work according to modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards construction work shall not relieve the contractor of the responsibility of providing such services / facilities to complete the work or portion of work awarded to him. The quoted / accepted rates / price shall deem to be inclusive of all such contingencies.
- 1.2** The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during construction. If any portion of works is found to be defective in workmanship and not conforming to drawings / documents or other stipulations, the contractor shall dismantle and re-do the work duly replacing the defective materials at their own cost, failing which recoveries, as determined by BHEL, shall be effected from contractor's bills.
- 1.3** It is not the intent of this specification to specify herein all the details of construction. However, the system shall conform in all respects to high standards of quality and workmanship for performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his Judgments are not in full accordance herewith.
- 1.4** The omission of specific reference to any fabrication / construction or other method, equipment or material necessary for construction work shall not relieve the Contractor of the responsibility of providing such facilities to complete the work at quoted rates. Any mismatch/ defect found due to mistake in fabrication/ construction shall have to be rectified by the contractor free of cost. Inspection by BHEL (Customer) does not relieve contractor of his responsibility of executing quality construction.
- 1.5** The work covered under this specification should be of sophisticated nature, requiring the best quality of workmanship, supervision, engineering and construction management. The contractor should ensure proper planning and successful and timely completion of the work to meet the overall Work schedule. The contractor must deploy adequate quantity of tools & plants, modern / latest construction aids etc. He must also deploy adequate trained, qualified and experienced supervisory staff and skilled personnel.
- 1.6** Contractor shall do the construction works as per the sequence suggested by BHEL. Availability of materials, Drawings and fronts will decide this. BHEL Engineer's decision regarding correctness of the work and method of working shall be final and binding on the contractor. No claims for extra payment from the contractor will be entertained on the ground of deviation from the methods / sequence adopted in construction of similar sets elsewhere.
- 1.7** Following shall be the minimum responsibility of contractor and have to be provided within finally accepted rates / prices:

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

- 1.7.1 Providing as required of all types of labour, supervisors, engineers, watch and ward, tools & tackles, calibrated IMTEs (Inspection, measuring and testing equipment) as specified and otherwise required for the work, consumables for construction, testing and commissioning including material handling.
- 1.7.2 Providing as required of all material required for construction works as specified in scope of work and as specified in BOQ or mentioned in Technical specifications at site of work excluding those materials which shall be, free issued to the contractor at BHEL store as enumerated in Schedule 'B' of volume III price bid. Carriage of material from BHEL STORE to Site of work shall be in contractor's scope.
- 1.7.3 Achieving Proper out-turns / Turn-over as per BHEL plan and commitment of Contractor.
- 1.7.4 Completion of work as per BHEL Schedule and commitment of Contractor.
- 1.7.5 Good quality and accurate workmanship for proper performance of the equipment
- 1.7.6 Repair/Replacement and rectification during the construction.
- 1.7.7 Storage of all material either issued by BHEL or supplied by contractor himself during storage / construction until handing over.
- 1.7.8 Repair/ removal of defects in the work executed/Equipment supplied and commissioned during the warranty period which shall be for a period of 12 months for all works from the date of completion.

2.0 GENERAL SERVICES TO BE RENDERED BY THE CONTRACTOR

- 2.1 Services for construction works as defined in scope of work in technical conditions of contract which includes all necessary works required to complete the construction as directed by Engineer in charge including Disposal of garbage generated from Construction, testing of works executed by contractor if required.
- 2.2 Issuing materials from store/open yard from time to time for construction as per the construction program. The Contractor shall be the custodian of all the materials issued by BHEL and will provide safe storage till the Constructed portions/completed Works are officially taken over by the BHEL.
- 2.3 Carriage of issued material from BHEL store to their respective places of construction.
- 2.4 Supply, storage of material included in contractors scope of work and Quality testing of all such material supplied by Contractor at site of work as and when required to the satisfaction of BHEL.
- 2.5 Deployment of all skilled and unskilled manpower required for construction, Technical staff for supervision of construction, watch & ward and other services to be rendered under this specification.
- 2.6 Deployment of all construction tools & tackle, construction machinery, transportation vehicles and

CONTRACTOR

ACCEPTING OFFICER (BHEL)

all other implements in adequate number and size, appropriate for the construction work to be handled under scope of this specification except otherwise specified.

- 2.7 Supply of all consumables, eg welding electrodes, cleaning agents, diesel oil, lubricant etc. as well as materials required for temporary supports, scaffolding etc. as necessary for such construction work, unless specified otherwise.
- 2.8 Providing support services for the contractor's construction staff eg construction of site offices, temporary stores, residential accommodation and transport to work site for construction personnel, watch and ward for security and safety of the materials under the Contractor's custody etc. as required.
- 2.9 Removal of debris, rubbish and garbage generated at construction site and keeping the construction site neat and clean.
- 2.10 Maintaining proper documentation of all the site activities undertaken by the Contractor as per the Performa mutually agreed with BHEL, Submission of monthly progress reports and any such document as and when desired by BHEL, taking approval of all statutory authorities as applicable which fall under the jurisdiction of such statutes of laws.
- 2.11 Any other service, although not specifically called for but required for a contract of the size and nature indicated in the specification.
- 2.12 Repair/ removal of defects in the work executed during the warranty period.

3.0 GENERAL TECHNICAL REQUIREMENTS (SPECIFICATIONS, DRAWINGS AND CODES)

- 3.1 Design, Supply, Construction, Erection and Commissioning of Sewage treatment plant shall be based on requirements/guidelines of Indian standard codes as applicable, Drawings issued, Specifications of bill of quantities (schedule A of price bid) and CPWD works specifications as applicable. Technical conditions of contract shall be binding on the contractor. BHEL Engineer and contractor both as and when required will take reference of such specifications.
- 3.2 The detailed drawings, specifications available with BHEL engineers will be made available to the contractor during execution of work at site. The contractor will also ensure availability of all drawings / documents at work place.
- 3.3 Necessary drawings to carry out the construction work will be furnished to the contractor by BHEL on loan, which shall be returned to BHEL Engineer at site after completion of work. Contractor shall ensure safe storage and quick retrieval of these documents.
- 3.4 The contractor shall maintain a record of all drawings and documents available with him in a register as per format given by BHEL Engineer. Contractor shall ensure use of pertinent drawings / data / documents and removal of obsolete ones from work place and returning to BHEL.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

- 3.5** The data furnished in various annexure enclosed with this tender specification are only approximate and for guidance. However, the change in the design and in the quantity may occur as is usual in any such large scale of work. The contractors quoted rates shall be inclusive of the above factor.
- 3.6** Should any error or ambiguity be discovered in the specification or information the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.
- 3.7** Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.
- 4.0 OBLIGATIONS OF CONTRACTOR WITH RESPECT TO THE RATES OFFERED**
- 4.1** The rates shall be for finished item of works and shall provide for the complete cost towards fuel, tools, tackles, plant & machinery, temporary works, labor, materials, levies, taxes, transport, lay-out, repairs, rectifications, maintenance during warranty period, supervision, labor colonies, establishment, services, revenue expenses, overheads, profits & all other incidentals etc., complete for the specifications mentioned in BOQ (Schedule 'A')
- 4.2** Rate quoted shall be excluding Service Tax (as applicable) but including all royalties, terminal taxes, Octroi duties, Central or Provincial Excise Tax, Sales Tax as applicable and any other taxes leviable under the State or Central Government rules on this work. The Bharat Heavy Electricals Ltd., will not entertain any claim whatever in this respect. The service tax as applicable for this contract shall be mentioned specifically by Tenderer in Price bid and Technical Bid.
- 4.3** The Service Tax will be reimbursed to contractor on production of valid document / proof for having paid such taxes to the concerned authorities by them only. BHEL will not be responsible for any contravention or violation of service Tax rules by Tenderer/Contractor . Cost of free issue material given by BHEL and consumed in the work by contractor will be given to Contractor on his request.
- 4.4** Contractor will be responsible for Submission of his Contributions towards ESI/EPF to concerned Authority under relevant Statutory Acts/Rules/Laws.
- 4.5** The contractor shall pay all (save the specific exclusions as enumerated in this contract) applicable taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced or liable to pay any of such taxes, BHEL shall have the right to recover the same from the Contractors' bills or otherwise as deemed fit.

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

- 4.6 Necessary Deduction against TDS and Work contract Tax (as applicable) shall be done from contractor's bill as per statutory acts and rules. Other recoveries towards water charges, electricity and empty cement bags as per the Special conditions of contract will also be done from contractor's bill.
- 4.7 Wherever the relevant tax laws permit more than one option or methodology for discharging the liability of tax/levy/duty, CONTRACTOR will have the right to adopt the appropriate one considering the amount of tax liability as well as procedural simplicity with regard to assessment of the liability. CONTRACTOR shall be responsible for the option or methodology chosen by him. BHEL will not be responsible for any contravention of statutory Laws/Acts/rules by contractor against the liability of taxes/duties/levies. BHEL will also not bear any responsibility for delay in deposition of service tax or calculation of service tax by Contractor and will not be responsible for any penalty or interest applied by concerned authority for such contravention or delayed deposition or non-deposition or wrong deposition of tax by Contractor/Tenderer.
- 4.8 In case the Government imposes any new levy/tax on the output service/ goods/work after award of the work, the same shall be reimbursed by BHEL at actual.
- 4.9 No reimbursement/recovery because of increase/reduction in the rate of taxes, levies, duties etc. on input goods/services/work shall be made. Such impact shall be taken care by the bidder and he has to make his own assessment of the impact of future variation if any, in rates of taxes/duties/ levies etc. in his price bid
- 4.10 For any item of work not covered in Bill of Quantities, the rate will be arrived at based on the conditions given in BHEL General Conditions of Contract in force.
- 4.11 Some changes are likely in the quantities furnished as well as in the layout, design and specifications of the work. The rate quoted shall be deemed to be inclusive of all such contingencies. Quantities shown in the attached schedule are only tentative and approximate and are liable for variation. The contractor will have to execute all or any item of work irrespective of their quantities up to any extent without entitling the Contractors to any compensation, provided the total value of the Contract does not vary by more than 20% (twenty percent).
- 4.12 The contractor shall not increase their quoted rates, once the tender has been opened and during execution of the contract in case, his tender is accepted. The rates shall remain firm thought the contract period or extended period of contract. Price variation clause shall not be applicable to this tender and contract.
- 4.13 The decision of Engineer-in-charge shall be final and binding on the contractor regarding clarification of items in this tender schedule.

5.0 OBLIGATIONS OF CONTRACTOR WITH RESPECT TO T&P, IMTEs**5.1 T&Ps and IMTEs to be provided by Contractor**

5.1.1 All T&Ps and IMTEs are to be provided by the Contractor. Contractor has to make his own arrangement at his cost for completing the formalities (including arrangement of Road permits, if any) if required with Sales Tax/VAT authorities, for bringing their materials, plants and equipment at site for the execution of work under this contract.

5.2 Obligations in respect of T&Ps and IMTEs provided by BHEL

5.2.1 Normally no T&P / IMTEs shall be provided by BHEL to contractor. However in the interest of work if BHEL provides so than an appropriate recovery shall be done from contractor's bills towards hire charges and shall include market rate plus overhead as decided by BHEL.

5.2.2 Any loss / damage to any part of BHEL T&Ps and IMTEs shall be to the contractor's account and any expenditure on these accounts by BHEL will be recovered from the contractor's bill in case the contractor fails to make good the loss.

5.2.3 The contractor shall return BHEL T&Ps and IMTEs issued to him in good working condition as and when desired by BHEL (on completion or reduction of workload). If contractor delays return of T&P and MME, hire charges as applicable shall be levied by BHEL from time, it was requisitioned till the time of actual return. T&Ps and IMTEs returned in damaged / unserviceable condition shall be got repaired by BHEL at its own discretion and entire cost of repair with BHEL overheads shall be recovered from the contractor.

6 OBLIGATIONS IN RESPECT OF MATERIAL AND ITS STORAGE.

6.1 While BHEL will endeavor to store / stack / identify the quantity of free issued materials properly in their open / close / semi closed / tarpaulins covered storage yard / shed, it shall be contractor's responsibility to assist BHEL in identifying the quantity of materials well in time for construction. They should take the delivery of the same, following the procedure indicated by BHEL, and transport the material safely to construction site in time, according to program.

6.2 The contractor shall take delivery of free issued material after getting the approval of BHEL Engineer on standard indent forms.

6.3 The contractor shall identify and deploy necessary Engineers/supervisors /workmen for the above work in sufficient number as may be needed by BHEL, for areas covering their scope.

6.4 All the perishable material viz cements etc shall be handled and stored very carefully to prevent any damage or loss. BHEL will bear no responsibility for damage of material in construction stores at site of contractor after issue from BHEL store.

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

- 6.5 Contractor shall be responsible for examining all the materials issued to him and notify the Engineer immediately of any damage, shortage, discrepancy etc. before they are moved out of the stores / storage area. The contractor shall be solely responsible for any shortages or damages in transit, handling, and storage of free issued construction material once received by him. As the construction work will be spread in different areas / locations of the Work site, contractor has to arrange sufficient number of watch / ward personal to avoid any pilferage of material.
- 6.6 The contractor shall maintain an accurate and exhaustive record-detailing out the list of all material received by him for the purpose of construction and keep such record open for the inspection of the engineer at any time.
- 6.7 All the material in the custody of contractor and stored in the open or dusty locations must be covered with suitable weather proof / fire retardant covering material wherever applicable and shall be blocked up on raised level above ground. All covering materials including blocks and sleeper shall be arranged by the contractor at his cost.
- 6.8 If the material belonging to the contractor are stored in area other than those earmarked for his operation the engineer will have the right to get it moved to the area earmarked for the contractor at the contractors risk and cost.
- 6.9 The contractor shall ensure that all surplus / damaged / scrap / unused material, packing wood /special transporting frames etc from the BHEL supplied materials are returned to BHEL at a place in Work area identified by the Engineer. The contractor will maintain an account for all items received and returned to BHEL. Any shortage in returning such items shall be chargeable to the contractor.
- 6.10 The contractor shall hand over all free issued materials remaining extra over the normal requirement with proper identification tags to the stores as directed by the concerned BHEL engineer.
- 6.11 **Recovery for non-returned material/excess consumption of material /excess generation of scrap.**
Where in accordance with the contract stipulations certain Stores & Materials (for incorporation in the work) are to be issued to the Contractor by the BHEL as detailed under Schedule "B" of price bid such items will be so issued only to the extent required for the actual completion of the work as stipulated in the contract. The decision of the Engineer-in-charge regarding the quantities to be issued as above shall be final and binding on the contractor. For any excess quantities consumed on the work or excess scrap generated up to 5% over the theoretical consumption for steel reinforcement will be charged on rates equal to total purchase landing rates to BHEL and excess consumption beyond this limit, their cost will be recovered from the Contractor at punitive rates which will be 100% (Hundred Percent) more than the issue rates (total purchase cost) of the BHEL. Any Excess consumption of Cement up to 2 % for Grey Cement will be charged at the rates equal to total purchase landing rates to BHEL and for excess consumption beyond this limit, their cost will be recovered from the Contractor at punitive rates which will be 100% (Hundred Percent) more than the

issue rates (total purchase cost) of the BHEL.

- 6.12** A recovery of Rs. 1 per empty cement bags shall be done from contractor's bill in case cement bags are supplied to Contractor by BHEL. Empty cement bags are not required to be returned to BHEL.

7. TERMS OF PAYMENTS

- 7.1** The contractor shall submit his RA bills /Final bill with all the details required by BHEL on specified date as mutually agreed covering progress of work in all respects. An amount equivalent to 5 % of contract value in addition of Security deposit will be hold from RA bill and will be paid only after successful trial and run of Sewage treatment plant for 1 months after completion and handing over of entire work.
- 7.2** Mode of payment and measurement of work completed shall be as per relevant clauses of General Conditions of Contract and Technical conditions of contract and CPWD technical specifications of work.
- 7.3** Any interim Payment made relating to work done or materials delivered vide running account bill may be modified or corrected by any subsequent interim payment or by the final payment. No certificate of the Engineer-in-charge supporting an interim payment shall of itself be conclusive evidence that any work or materials to which it relates is/ are in accordance with the contract.
- 7.4** Release of payment in each running bill will be restricted to the value of work completed. No advance payment shall be done.
- 7.5** Security deposit up to the 10% of value of RA bill will be deducted by BHEL as per the relevant clauses of General conditions of contract.
- 7.6** Deductions towards TDS and Work Contract Tax (as applicable) and any other statutory levies as applicable shall be done from the contractor's bills against the work completed. Other deductions/recoveries towards water charges, electricity charges, empty cement bags, non-returned material, excess generation of scrap, and recoveries towards non deployment of technical staff, LD etc if applicable as per conditions of contract will also be done from contractor's bills.
- 7.7** The Service Tax will be reimbursed to contractor on production of valid document / proof for having paid such taxes/cess by them to concerned authorities.
- 7.8** The payment for running bills will normally be released within a reasonable time (30) days of Submission of running bill complete in all respects with all documents. It is the responsibility of the contractor to make his own arrangements for making timely payments towards labor wages, statutory payments, outstanding dues etc. and other dues in the meanwhile.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

7.9 BHEL shall release payment through Electronic Fund Transfer (EFT)/RTGS. In order to implement this system, Contractor has to furnish details pertaining to his Bank Accounts where proceeds will be transferred through BHEL's banker, as per prescribed formats:

8.0 PERFORMANCE MONITORING

8.1 The construction Work shall be monitored to control the time overrun, quality of workmanship and material. BHEL administrative and technical staff may ask the contractor to submit the detail program for completions of construction activities, technical specifications and quality tests/certificates of the material brought by contractor to the site of work. Contractor will have to submit the necessary documents in support of information required by BHEL.

8.2 Upon award, the contractor shall submit to BHEL within 15 days of issue of LOI, a work completion Schedule showing the sequence of activities with duration covering complete activities under the scope. Such schedule should be prepared considering parallel working in different area of work. Working in series shall not be permitted in any cases. The approved schedule shall be strictly adhered to for completing the Work in time. The contractor may also be required to work in minimum two shifts for meeting the Work schedule.

8.3 If any material brought by the contractor to site of work for use is rejected by BHEL at any stage of work due to its poor standards/characteristics or due to its deviated specifications (different from those mentioned in BOQ), then contractor will be responsible for re delivery of the material at site of work and time/Cost overrun will be attributable to contractor only.

8.4 The Contractor shall either himself supervise the execution of the Works or shall appoint a competent agency approved by the Engineer-in-Charge to act in his stead. If in the opinion of the Engineer-in-Charge to act in his stead, the Contractor has himself not sufficient knowledge and experience to be capable of receiving instructions or cannot give his full attention to the works, the Contractor shall, at his own expense, employ as his accredited agent an engineer approved by the Engineer-in- Charge. Orders given to the Contractor's agent shall be considered to have the same force as if these had been given to the Contractor himself. If the Contractor fails to appoint a suitable agent as directed by the Engineer-in-charge, the Engineer-in-Charge shall have full powers to suspend the execution of the Works until such date as a suitable agent is appointed and the contractor shall be held responsible for the delay so caused to the Works.

8.5 BHEL shall be entitled to terminate the contract/pending Work Orders at any stage and to get the work done elsewhere at the risk and cost of the Contractor, either the whole of the work or any part thereof which the Contractor has failed to complete or deliver within the time stipulated as aforesaid. Contractor shall be liable for the losses, which BHEL may sustain by way of such risk purchase in addition to aforesaid penalty for delayed delivery.

8.6 FORCE MAJEURE: If at any time during the continuance of this contract the performance in whole or in part by either party of any obligations under this contract shall be prevented or delayed by reason, of any war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine, restrictions or acts of GOD (hereinafter referred to as events) then provided notice of happening of any such events is given by either party to other within twenty one days from the date of occurrence thereof neither party shall reason of such events be entitled to terminate this contract nor shall either party have any such non-performance and delay is resumed as soon as practicable after such events has come to an end or ceased to exist. If the performance in whole or part of any obligation under this contract is prevented or delayed by reason or any such event claims for extension of time shall be granted for period considered reasonable by BHEL subject to prompt notification by the tenderer to BHEL of the particulars of the events and supply to the BHEL if required of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed to be a waiver of time in respect of remaining deliveries.

9.0 OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT MANAGEMENT/

9.1 BHEL, IVP is certified for ISO 9001 and have HSE certification (ISO 14001 & OHSAS 18001) and therefore Contractor shall organize/ plan/ perform all their activities to meet with the applicable requirements of these standards.

HSE (Health, safety & Environment): Contractor will comply with HSE (Health, safety & Environment) requirements of BHEL. HSE requirements in brief, are given below :-

9.1.1 Contractor will nominate one of their experienced employees as Safety Officer, who will be responsible for all HSE related issues of contractors work area. Safety Officer will have authority to stop any activity, in case he observes that the activity is not being carried out in safe manner. He will conduct surprise inspection as well as periodic inspection/drill (at least once in a month) and submit such reports to BHEL. He will conduct periodic meetings with supervisors of different working groups and explain HSE issues and use of PPEs to them. Reports of such meetings will be submitted to BHEL. Contractor will develop suitable work procedures based upon HSE guidelines and OCPs and implement it. Such work procedures will consist of Area of work, T&P Details, Work Procedure, PPE requirements etc. Contractor should highlight the requirement of safety to staff and labour through daily tool box meeting before start of the days job

9.1.2 The contractor shall ensure that proper job specific health check-up is done by Medical professional for their employees during initial mobilization and thereafter if there is any change of job.

9.1.3 Following personnel protective equipment's (PPEs), in adequate numbers, will be made available at site & their regular use by all concerned will be ensured as directed by Engineer in charge :-

- HELMET

- SAFETY GOGGLES & WELDING FACE SHIELDS as and when required

- SAFETY BELTS AND PROTECTIVE NET FOR WORKING AT HEIGHT

- SAFETY SHOES
- SAFETY GLOVES as and when required.
- ANY OTHER SAFETY EQUIPMENT REQUIRED FOR SAFE COMPLETION OF THE WORK

- 9.1.4 Providing appropriate First Aid facilities for prompt treatment of injuries and illness at work place. Arranging training to contractor workmen/ employees for giving first aid.
- 9.1.5 Arranging ambulance in case of any emergency situation.
- 9.1.6 Identification of nearest hospital and health check-up of workmen/employees
- 9.1.7 Providing filtered drinking water at work place in cool container.
- 9.1.8 Providing Canteen, Rest Room, Washing facilities to the contracted employees as per provisions of Contract Labour Regulation Act 1970 (Chapter V).
- 9.1.9 Providing appropriate firefighting equipment at designated work place and Nominate a fire officer/warden adequately trained for his job.
- 9.1.10 Identification of nearest fire station and display contact telephone nos. / person's name around work places for cases of emergencies .
- 9.1.11 Providing adequate no. of 24 V sources and ensure that no hand lamps are operating at voltage level above 24 Volts.
- 9.1.12 Fulfilling safety requirements at all power tapping points.
- 9.1.13 Red & White caution tape of proper width(1.5 to 2 inch) to be used for cordoning unsafe area such as open trench, excavation area etc.
- 9.1.14 Providing contractors company logo on cloths /uniform/ or proper identity cards with photographs, for correct identification of people working at Work site.
- 9.1.15 No welders will be deployed without passing appropriate tests and holding valid welding certificates. Approved welding procedure should be displayed at work place.
- 9.1.16 Displaying safe handling procedures for all chemicals such as lube oil, acid, alkali, sealing compounds etc , at work place .
- 9.1.17 All scaffolding/ platforms should be made from materials of appropriate quality/grade so that these are safe for use. It should be certified/declared safe for use by an experienced contractor person, before any scaffolding/platform is used.
- 9.1.18 All T&Ps/ IMTEs should be of reputed brand/appropriate quality & must have valid test/ calibration certificates bearing endorsement from competent authority of BHEL.
- 9.1.19 Ensure that the regulatory requirement of excessive weight limit (to carry/lift/ move weights beyond prescribed limits) for male and female workers are complied with.
- 9.1.20 Safety slogan, Safety/ Caution boards, wherever required to be displayed in consultation with BHEL.

- 9.1.21** Take suitable measures for waste management and environment related laws/legislation as a part of normal construction activities. Compliance with the legal requirements on storage/ disposal of paint drums (including the empty ones), Lubricant containers, Chemical Containers, and transportation and storage of hazardous chemicals will be strictly maintained. Ensure proper cleanliness of work place, housekeeping and waste management (including proper waste disposal) on daily basis.
- 9.1.22** It is imperative on the part of the contractor to join and effectively contribute in joint measures such as tree plantation, environment protection, contributing towards social upliftment, keeping good relation with local populace etc.
- 9.1.23** The contractor shall carry out periodic air and water quality check and Illumination level checking in his area of work place and take suitable control measure.
- 9.1.24** The Contractor is required to provide proper safety net systems where ever the hazard of fall from height is present as per instruction of BHEL Engineer. The safety nets shall be fire resistant, duly tested and shall be of ISI Mark and the nets shall be located as per site requirements to arrest or to reduce the consequences of a possible fall of persons working at different heights.
- 9.2 SAFETY AND CLEANLINESS :**
- 9.2.1** The contractor shall take all necessary safety precautions and arrange for appropriate appliances as per discretion of BHEL or its authorized officials (HOD Civil) to prevent loss of human lives, injuries, to personnel engaged and damage to property. Before commencing the work, the contractor shall submit a “Safety Plan” to the above authorized BHEL official and obtain approval on the same. The safety plan shall indicate in detail the measures that would be taken by the contractor to ensure safety of men, equipment, materials and environment during execution of the work. This will also include an organization structure, role and responsibilities of the concerned key personnel, the safety practices that will be followed, PPEs deployed, plan for handling critical activities and emergencies.
- 9.3** If the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions issued by the authorized BHEL official, BHEL shall have the right to take corrective steps at the risk and cost of the contractor.
- 9.4** During the course of construction, alternation or repairs, scrap with protruding nail, sharp edge etc and all other debris shall be kept clean from working areas, passage, ways and stairs in and around site.
- 9.5** Combustible scrap and debris shall be removed at regular intervals during the course of execution. Safe means shall be provided to facilitate such removal. The combustible scrap should be stored in safe place away from the plant materials to avoid fire accidents. The area shall be chosen in consultation with the Engineer and to be cordoned off.

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

- 9.6** The contractor shall insure his workmen against all accidents and the policy shall be presented to BHEL Engineer on demand. Otherwise, BHEL will arrange the same and the expenditure towards this will be debited to the contractor. In case of a fatal or disabling injury accident to any person at construction site due to lapses by the contractor, the victim and/or his/her dependents shall be compensated by the contractor as per statutory requirements. However, if considered necessary BHEL shall have the right to impose appropriate financial penalty on contractor and recover the same from payments due to the contractor for suitably compensating the victim and/or his/her dependence before imposing any such penalty. Appropriate enquiry shall be held by BHEL giving opportunity to the contractor for presenting his case. Above safety conditions are not exhaustive but gives an idea for the contractor and contractor shall adhere to all safety precaution given by the Engineer at site.
- 9.7** The contractor shall be responsible for provision of all the safety notices and safety equipment as enjoined on him by the application of relevant statutory regulation / provisions and/or as called upon by BHEL from time to time. He shall be held responsible for any violation of statutory regulations (local, state or central) and BHEL instruction that may endanger safety of men, equipment and material.
- 9.8** The contractor shall provide temporary fencing wherever required as a safety measure against accident and damage to properties. Suitable caution notices shall be displayed where access to any part is found to be unsafe and hazardous.
- 9.9** Contractor shall ensure safety of all the workmen, material and equipment either belonging to him or to others working at site. He shall observe safety rules and codes applied by BHEL without exception.
- 9.10** The contractor shall provide necessary first aid facilities for all his employees, representatives and workmen at site and BHEL shall have no obligation in this regard. The first aid boxes should be placed at various elevations so as to make them available within the reach and at the quickest possible time. The contractor should conduct periodical first –aid classes to keep his supervisor and Engineers properly trained for attending to any emergency.
- 9.11** In case of any delay in completion of a job due to mishaps attributable to lapses by the contractor, BHEL shall have the right to recover cost of such delay from the payments due to the contractor, after notifying the contractor suitably.
- 9.12** If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and/or if the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instruction

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

regarding safety issued by BHEL, BHEL shall have the right to take corrective steps at the risk and cost of the contractor after giving a notice of not less than 7 days indicating the steps that would be taken by BHEL.

- 9.13** In case of any damage to property due to lapses by the contractor, BHEL shall have the right to recover the cost of such damages from the contractor after holding an appropriate enquiry.
- 9.14** The contractor shall submit report of all accidents, fires and property damage etc to the Engineer immediately after such occurrence, but in any case not later than 24 hours of the occurrence. Such reports shall be furnished in the manner prescribed by BHEL. In addition periodic reports on safety shall also be submitted by the contractor to BHEL from time to time as prescribed by the Engineer.
- 9.15** Before commencing the work, the contractor shall appoint/nominate a responsible person to supervise implementation of all safety measures and liaison with his counterpart of BHEL.
- 9.16** Notwithstanding the above clauses there is nothing to exit the Contractor from the operations of any other Act or Rule in force in area of work in this respect. Provided always that all safety measures apart from those specifically provided in this agreement which are brought to the notice of the Contractor from time to time by the Engineer shall be complied by the Contractor. Provided further that all consequences, damages, or losses arising by reason of any safety code shall be met with by the Contractor.

10 RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF LABOUR, SUPERVISORY STAFF, ETC.

- 10.1** Relevant clauses of General Conditions of Contract (GCC) shall be applicable too.
- 10.2** The Contractor shall not employ in connection with the work any person who has not completed 18 years of age.
- 10.3** The Contractor shall in respect of labour employed by him either directly or through subcontractors, comply with or cause to be complied with the following statutory provisions and rules and in regard to all matters provided therein.
- a) The Contract Labour (Regulation & Abolition) Act 1970 and the related Punjab State Rules.
 - b) The Minimum Wages Act 1948 and the related Punjab State Rules.
 - c) The Payment of Wages Act 1936 and the related Punjab State Rules.
 - d) The Factories Act 1948 and the related Punjab State Rules.
 - e) The Employee's Provident Fund & Miscellaneous Provisions Act 1952.
 - f) The Employees State Insurance Act 1948.
 - g) The Workmen Compensation Act 1923.
 - h) The Industrial Disputes Act 1947.
 - i) The Payment of Bonus Act 1965.
 - j) Any other law or modifications to the above or to the Rules made there under from time to time.
- 10.4** Every Contractor shall give following information to BHEL HR section:

CONTRACTOR

ACCEPTING OFFICER (BHEL)

- a) The Name of the Contractor
- b) Nature of Contract Work
- c) Period of work
- d) Number of maximum labour employed by him on any one day
- e) License No. & Date (Applicable in case of contractor employing 20 or more workers)
- f) PF, ESI, etc., and enrolment No.

- 10.5** Contractor shall also comply with the requirements of local authorities/ project authorities calling for police verification of antecedents of the workmen, staff etc.
- 10.6** The Contractor employing 20 or more workmen is required to obtain license from the authorities (The Deputy Chief Inspector of Factories / Assistant Commissioner of Labour as the case may be). The license shall be amended and / or renewed wherever, there is an increase in the workmen employed by him or in the event of contract being extended or renewed. The Contractor shall inform the license number to the BHEL Management before taking up the work.
- 10.7** The Contractor (Licensed or unlicensed) shall promptly furnish every information and document required by BHEL authorities for the purpose of fulfilling their obligations as Principal Employer and shall render all necessary assistance for the same.
- 10.8** The contractor shall take his individual ESI and PF code as an independent employer which shall be furnished before payment of his First RA Bill.
- 10.9** The Contractor has to ensure payment of Minimum Wages as per Punjab State Minimum Wages including its periodical revision as applicable under law from time to time. The Contractor shall have to remit EPF & ESI contributions at the rates applicable under law to the authorities concerned for the total wages paid (i.e) Payment of minimum wages and additional payment as mentioned above.
- 10.10** The laborers engaged in this contract shall be paid minimum wages and all other payment as notified by the government. Also the labourers shall be paid a minimum bonus as per the payment of Bonus Act 1965 for the total wages paid (i.e) Payment of minimum wages and additional payment as applicable.
- 10.11** The Contractor shall disburse the wages before 7th day of the month.
- 10.12** The Contractor shall ensure payment of wages to the contract labour employed by him within three days from the end of wage period in case the wage period is one week or a fortnight and in all other cases before 10th day of the following month.
- 10.13** All Payment of wages shall be made on working days at the work site and during the working time and on date notified in advance. In case the work is completed before, the expiry of the wage period final payment shall be made within 48 hours of the last working day.
- 10.14** Where the employment of any worker is terminated by or on behalf of the Contractor, the wages

CONTRACTOR

ACCEPTING OFFICER (BHEL)

earned by him shall be paid before the expiry of the second working day from the day on which his employment is terminated.

- 10.15** Wages due to every worker shall be paid to him direct or to the person authorized by him in this behalf. All wages shall be paid in current coin or currency in both.
- 10.16** The Contractor shall ensure the disbursement of wages in the presence of such authorized representative of BHEL Management.
- 10.17** The above payment shall be verified by the authorized officer / representative of BHEL with the following certificate of the payment sheet “Certified that the amount shown in Column No..... has been paid to the workmen concerned in my presence onat.....”
- 10.18** A certificate of payment shall be furnished in duplicate by the Contractor to the Engineer in charge each month in Form „A”.
- 10.19** A notice showing the wage period and the place and time of disbursement of wages shall be displayed at the place of work and a copy to be sent to the Welfare Department by the Contractor under acknowledgement.
- 10.20** Notices showing the rate of wages, weekly rest days, hours of work, wage period, date of payment of wages, names and addresses of the Inspector having jurisdiction, the date of unpaid wages shall be displayed in Punjabi/Hindi and English in conspicuous places at the establishment and at work site by the Contractor. The Contractor shall inform the BHEL Management every month the details of contract labour engaged for contract in this following form :
- | | |
|--------------------------|--|
| a) Serial Number | b) Location |
| c) Period of work | d) No. of contract labour engaged during the month |
| e) No. of days worked | f) No. of men worked |
| g) Wages paid to workers | |
- The above statement shall be furnished to BHEL Management at the end of every month.
- 10.21** The following documents / formats under Contract Labour (Regulation & Abolition) Act 1970 and Punjab State Government Rules thereunder shall be maintained by each contractor.
- | |
|--|
| a) Register of persons employed by the Contractor |
| b) Employment Card |
| c) Service Certificate |
| d) Muster Roll, Wage Register, Deduction Register, Wage slip, Overtime Register, Register of Fines, Register of Advances etc., |
- 10.22** The Contractor shall display the abstract of the Contract Labour (Regulation Abolition) Act and the

CONTRACTOR

ACCEPTING OFFICER (BHEL)

Rules thereunder both in English and Punjabi/Hindi

- 10.23** Half yearly Return shall be sent by the Contractor in duplicate to the Licensing Officer
- 10.24** The Contractor shall submit the returns required under the Contract Labour (Regulation & Abolition) Act 1970 periodically to BHEL Management.
- 10.25** The Contractor shall without fail give upto date information in writing of the attendance of the workers employed by him.
- 10.26** The Contractor shall ensure that his workers keep and produce their Employment Card and Security Gate passes when coming to duty and take them back when leaving duty
- 10.27** All the above registers and records shall be preserved in original for a period of three years. All the registers, records and notice maintained under the Act and rules shall be produced on demand by Inspector or any authority under the Act.
- 10.28** No woman worker shall be required or allowed to work in the Factory except between the hours of 7.00 A.M. and 6.00 P.M.
The Contractor shall comply with the provisions relating to Welfare and Health facilities as provided in the Contract Labour (Regulation and Abolition) Act 1970 read with the Punjab State Governments“ Contract Labour Rules, if any.
- 10.29** Notwithstanding anything contrary to this, in the event of accident the contractor shall be required to fill injury report and submit the Engineer in charge immediately and ensure the compliances of ESI / Workmen’s compensation Act, Factories Act and Rules made thereunder. He shall also maintain a register of accident as per the Act.
- 10.30** The Contractor shall within seven days of the close of every month submit to BHEL a statement showing the amount of contribution payable / paid for employees engaged by him or through him towards ESI/PF and shall also furnish to BHEL such information as Principal Employer is required to furnish under the provisions of the ESI Act and PF as well as the schemes made thereunder to the authorities concerned.
- 10.31** Whenever any sum of money is found to be recoverable from or payable by the contractor under the above Act, the sum shall be deducted from any sum that may be due or which at any time thereafter may become due to the Contractor under this contract or under any other contract or from his security deposit. In case the recoveries are not sufficient to satisfy the claim, the contractor shall pay the balance thereof on demand. In case any recoveries are made under this clause from security deposit, the contractor shall immediately thereafter pay such further sums as may be required to

CONTRACTOR

ACCEPTING OFFICER (BHEL)

replenish the shortage caused by such recoveries in amount of security deposit.

- 10.32** The Contractor shall abide by all the labour and other laws applicable to contract labour / worker under this contract and shall at all times keep BHEL indemnified against all loses, claims, prosecutions under any law.
- 10.33** Non-exercise of any of the powers or rights available to BHEL hereunder or under any law, shall not in any way operate as waiver thereof.
- 10.34** BHEL may insist for witnessing the regular payment to the labor. They may also like to verify the relevant records for compliance with statutory requirements. Contractor shall enable such facilities to BHEL.
- 10.35** In case of non-compliance of any of the provisions of the Acts and in case BHEL having complied with the same, BHEL will be entitled to recover the same from the contractor / sub-contractor.

11.0 SUSPENSION OF BUSINESS DEALINGS

- 11.1** BHEL reserves the right to take action against contractors who fail to perform or indulge in malpractices, by suspending business dealings with them as per the BHEL procedures.
- 11.2** Suspension could be in the form of “Hold”, DE-Listing” or Banning a contractor.

ANNEXURE 1

LIST OF CONSORTIUM BANKS IN INDIA

(as on 15.12.2011)

List of Consortium Bank			
	Nationalized Bank		Nationalized Bank
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		Public Sector Banks
3	Bank of Baroda	20	IOBI
4	Canara Bank		Foreign bank
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	The Royal Bank of Scotland N.V.
10	Punjab National Bank	26	J P Morgan
11	Punjab & Sindh Bank		Private bank
12	State Bank of India	27	Axis Bank
13	State Bank of Hyderabad	28	The Federal Bank Limited
14	Syndicate Ban	29	HDFC
15	State Bank of Travancore	30	Kotak Mahindra Bank
16	UCO Bank	31	ICICI
17	Union Bank of India	32	Indusind Bank
18	United Bank of India	33	Yes Bank

CONTRACTOR

ACCEPTING OFFICER (BHEL)

TECHNICAL CONDITIONS OF CONTRACT

CONTENTS

SI No	DESCRIPTION	CHAPTER	Page No. PAGES
1	Work Site synopsis	Chapter-I	53
2	General Scope of Works	Chapter-II	54
3	Scope Matrix to facilitate construction	Chapter-III	58
4	Tools, Plants, equipment's, Measurement, and Testing Devices and Technical and Non-Technical Staff to be deployed by contractor.	Chapter-IV	61
5	Material	Chapter-V	63
6	Time Schedule	Chapter-VI	66
7	Other technical conditions	Chapter-VII	67
8	Technical Specifications	Chapter-VIII	71
9	Layout of STP Site	Chapter-IX	78

CONTRACTOR

ACCEPTING OFFICER (BHEL)

CHAPTER -1**WORK SITE SYNOPSIS**

Name of the Owner	BHARAT HEAVY ELECTRICALS LTD
Address of the tender inviting division of owner	INDUSTRIAL VALVES PLANT 433- Industrial Complex, Goindwal Sahib, Distt. Tarn –Taran, Punjab, Pin -143422
Name of work	Modification in existing sewage disposal system as per the Pollution Control Board recommendation with a Sewage Treatment Plant of 100 KL PD Capacity including its Design, Supply, Construction, Erection and Commissioning for BHEL IVP at Goindwal Sahib , Punjab
Address of site of work	FACTORY PREMISES; INDUSTRIAL VALVES PLANT 433- Industrial Complex, Goindwal Sahib, Distt. Tarn –Taran, Punjab, Pin -143422
Nearest railway station (Major Connectivity)	Amritsar /Jalandhar (both station are approximately 50 Km Away from Goindwal.
Nearest bus stand (Major Connectivity)	Amritsar /Jalandhar (both station are approximately 50 Km Away from Goindwal.
Nearest Distt. Level city	Tarn-Taran (approximately 24 Km away from Goindwal)
Other nearer Distt. Level city	Kapurthala (approximately 30 Km away from Goindwal)
Nearest airport	Amritsar (Raja Sansi)
Town/city/village where site is located	Village : Goindwal Sahib, Tehsil: Khadoor Sahib, Distt. Tarn –Taran
Population	7772 (census 2010)
Highest temp. during summer	47/48° C
Lowest temp. during winter	1-2 ° C
Type of Soil	Alluvial/Sandy Loam
Basic Wind Speed	47 M/s
Earthquake Zone	Zone IV

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

CHAPTER –II

2 GENERAL SCOPE OF WORK

- 2.1 The Scope of Work covers all works of “Design, supply, construction, erection and commissioning of Sewage Treatment Plant (STP) of 100 KL PER DAY capacity in factory of BHEL IVP AT Goindwal Sahib, Punjab with inclusion and exclusion as enumerated in following paragraphs.
- 2.2 The scope of work includes (a) Design, Supply and Construction works of all civil units viz RCC tanks, all foundations for prefab tank & pumps , Chambers , Sludge beds etc, inserts in the tanks, roof of tanks, ladders, steps, trenches Surrounding MS railing, (b) Design, Supply, Testing, Erection and Commissioning of all mechanical and electrical equipment and units of STP , cabling, cable trays, piping within battery limit, successful commissioning including performance test (48 hours continuous operation) and trial operation (one month) of the plant to meet the output requirement.
- 2.3 Making connection of existing sewage collection sump (T1) with proposed new pumping station of sewage and laying of RCC drainage line/HDPE Pipes and Construction of pumping stations including Design, Supply, Erection, Commissioning of sewage pumps for disposal of raw sewage into screening chamber/primary settling tanks of sewage treatment plant and provision of safe sludge disposal/treatment mechanism if any generated from the treatment process including all civil mechanical and electrical units of sludge disposal/treatment mechanism.
- 2.4 All chemicals, consumables, lubricants etc except electricity during the commissioning & trial running of the plant for 1 month after commissioning.
- 2.5 Testing of raw sewage and treated sewage in Pollution control board Approved Laboratories and submission of Test reports to BHEL.
- 2.6 The battery limit is **from collection sump** *designated as ‘T1’ in drawing in Annexure A* (last sewage manhole of factory where in all raw sewage is discharged and collected before disposal to public sewer) **to Treated sewage storage tank** *designated as ‘T7 ’ in drawing in Annexure A* (new tank proposed to be constructed where all treated effluent will be collected .
- 2.7 **Scope of Work for Design and Engineering:**
- Carry out Process design based on present hydraulic and organic loading and other design requirements specified in Technical Specifications (Chapter VIII). Preparation of Hydraulic Flow Diagram, Plan Layout & General arrangement drawing.
 - Preparation of Mechanical and Electrical design calculations for arriving the suitable capacity of pumps & motors and aeration system and Primary/secondary/tertiary biological /chemical/physical treatment system of Sewage. Submission of supplier’s technical details including characteristic features of equipment.
 - Preparation of Structural Design and preparation of Civil Construction Drawing and getting it vetted by third party (NIT/IIT or any other government institutions) and approved by BHEL.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

- Preparation of Civil drawings with details for safety provisions like handrail, ladders, platforms, foundations, inserts, roofs, manholes etc complete.

Note: Above said drawings should be submitted in 3 sets after incorporating necessary changes if required as suggested by BHEL.

2.8 Scope of Work for Supply, Construction, Erection and Commissioning

- Includes supply, storage at site, erection, testing, commissioning of all mechanical and electrical equipment and units as per design and as indicated under "Specification for Mechanical Units" (Table 4 & 5).
- Includes Supply of all construction materials and construction of chambers, pumping stations, foundations, primary/secondary settling tanks, sludge drying beds, equalization tanks, and treated water storage tanks and units as indicated under "Specification for Civil Units" (Table 3).
- Supply of necessary piping including laying, jointing with necessary specials and flow control valves (gate valves & Non-return valves) within the battery limit.
- Supply and erection of lifting devices for the pumps wherever necessary with chain pulley arrangement.
- Earthwork excavation for laying pipes and cables within the battery limit.
- Supply and erection of dosing tank and connections.
- Supply and laying of all type of electrical wiring and laying of electrical cables within the battery limit. Power source will be provided at one Point within battery limit from which the contractor has to tap for his requirement.

The MCC should include Amps Incomer, RYB Indicator, Ammeter and Voltmeter, Electronic KWH Meter, Single Phase Preventer, Power Feeder of each 9 Amps Power contactor, Overload relay, MCB, Trip Indicator, Push Buttons for all Motors, an additional set of Push Button near the Motors and aerators. Provision for one spare feeder.

The Submersible Pumps should be provided with auto float switch. And the Sludge Pump should run on Electronic Timer to regulate the frequency of Sludge re-circulation to Aeration Tank. MIMIC LED Indication with Hydraulic Flow Diagram on the Control Panel Showing Motor ON/OFF indication. Flow measurement device shall be installed at pumping station.

Providing labour, supervision, material, scaffolding, erection equipment, tools and plants, temporary works, transportation and all incidental items not shown or specified but reasonably implied or necessary for proper successful completion of work in all respects.

2.9 Performance test (48 hours) and Trial operation (one month)

After successful commissioning of the plant in all respects, all the equipment will be tested for performance guarantee for a duration of 48 hours, within the one-month trial operation.

During this period, all the equipment should run continuously without stoppage and performance parameters as required for each equipment need to be proved.

The Contractor shall supply all the materials and labor to supervise, operate, keep in operation, adjust, test service, repair and do all things necessary to keep the plant running. This is inclusive of the provision of such labor on a 24 hour – a – day basis during the period of Contract.

During this period, all the equipment should be checked for Vibration, Noise Level and alignment. Contractor shall take immediate steps to rectify the deficiency if found without any extra cost to BHEL.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

The Contractor should supply all chemicals like hypo chlorite solution for disinfection and other chemicals if require for stabilizing the process.

During the period of trial operation, the contractor has to stabilize the total treatment and prove the results as stated for the post treatment. The contractor has to get the samples (both inlet and outlet to plant) analyzed once in a week from pollution control board (PCB) approved laboratory to establish the results. Parallel sampling will be done by BHEL to cross check the results.

- The Contractor is responsible for any defect in the equipment (mechanical & electrical) and any defect in civil construction for a period of one year after satisfactory commissioning of the complete works. In case of any defects coming to the notice within this period the same shall be made good by the Contractor at no cost to BHEL.
- Various items of work have been only briefly described in the scope of work and some of the minor items may not have been described. The contract being a lump sum turnkey one with respect to design, supply, Construction, erection & commissioning of Electrical and Mechanical equipment and related civil works of tanks, chambers etc. The contractor shall execute the works in all respects for satisfactory operation and maintenance of the plant to the full satisfaction of BHEL.
- Operation & Maintenance manual should be specific to the equipment supplied by the contractor including operation and trouble shooting of treatment process. The following points should be covered in the O & M manual:
 - (a) Brief description of overall plant operation including chemicals preparation and handling, troubleshooting methods, etc.
 - (b) Operation and maintenance of all equipment both mechanical and electrical.
 - (c) General Safety precautions to be taken during the plant operation
 - (d) Periodical preventive checks/maintenance to be conducted for all the equipment for long running life
 - (e) Power requirement, equipment wise and the total Power requirement per day
 - (f) General arrangement drawing of all equipment (As built) preferably in A4 size.
 - (g) Power panel wiring diagram for housing electrical installations for motors and aerators.
 - (h) List of Agencies with full correspondence addresses for supply of spares equipment wise.

2.10 The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably implied and necessary for completion of the job as a whole all as desired and as directed by the engineer.

2.11 The work under this contract shall be carried out as per BOQ Cum Rate Schedule. In case the description / specifications as per BOQ are found to be incomplete, Indian standard specifications and CPWD works specifications shall be followed. Quantities mentioned in the rate schedules are approximate only and liable for variation due to change of scope of work / variation in schedule of quantities, changes in design etc. The Contractor shall undertake to execute actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be worked out on the basis of quantities actually erected at site and payments will also be regulated for the same. The quantities indicated against each item may vary to any extent and no compensation will be payable in variation of Individual quantity till overall value of work executed is more than 20% of contract value of work.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

2.12 ALSO INCLUDED IN THE SCOPE

Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the “Bill of Quantities” shall include but not be limited to the following.

- Furnishing all labor, materials, supervision, construction plants, equipment, supplies, transport, to and from the site, fuel, transit and storage insurance and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provide by the engineer during the course of works.
- Furnishing samples of all materials required by the engineers for testing / inspection and approval for use in the works. The engineer for final incorporation in the works may retain the samples.
- Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the Engineer in charge.
- Giving all notices, paying all fees, taxes etc., in accordance with the general conditions of contract, that are required for all works including temporary works.
- Arranging manufacturer’s supervision for items of work done as per manufacturer’s specifications when so specified.
- Carrying out topographic survey of the work area and establish levels and coordinates at suitable intervals from existing grid levels and coordinates furnished by the owner established bench marks, setting out the locations and levels of proposed structures, constructions and marking of reference pillars and other identification works etc., The contractor shall provide the owner/BHEL such a assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used.
- Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

Exclusions:

1. Electricity, water required during the construction which shall be supplied by BHEL at one point within battery limit.
2. Disposal of treated sewage & sludge if any generated from STP and all pipe system from treated sewage storage tank which shall be laid by BHEL.
3. Control Room Shade/Building, Walkway, boundary wall to STP Site. Air conditioning Arrangement.
4. Site levelling and Approach roads within factory premises, STP Lightening

CONTRACTOR

ACCEPTING OFFICER (BHEL)

CHAPTER –III

SCOPE MATRIX TO FACILITATE CONSTRUCTION

S/N	CONSTRUCTION FACILITY (Brief description)	SCOPE/ RESPONSIBILITY		REMARKS
		BHEL	CONTRACTOR	
1.	<u>ESTABLISHMENT</u>			
1.1	<u>FOR CONSTRUCTION PURPOSE:</u>			
A	Open space for site office	YES	-	BHEL shall provide free of charge limited open space for office and store as and where made available.
B	Open space for site storage	YES	-	
C	Construction of Contractor's Site office, canteen and storage building including supply of materials and other services	-	YES	
D	Contractor's all office equipment's, office / store / canteen consumables	-	YES	
E	Canteen facilities for the Contractor's staff, supervisors and engineers etc	-	YES	
F	Firefighting equipment's like buckets, extinguishers etc	-	YES	
G	Fencing of storage area, office, canteen etc of the Contractor	-	YES	
1.2	<u>FOR LIVING PURPOSES OF THE CONTRACTOR</u>			
A	Open space	-	YES	Arrangement of space/area will have to be done by contractor due to unavailability of space with BHEL
B	Living accommodation	-	YES	
2	POWER / WATER/ COMPRESSED AIR			

CONTRACTOR

ACCEPTING OFFICER (BHEL)

2.1	POWER (ELECTRICITY)			Free supply of water and Electricity
2.1.1	<i>Electricity For construction purposes (to be specified whether chargeable or free)</i>	YES	-	
A	Single point source	YES	-	
B	Further distribution for the work to be done which include supply of materials and execution	-	YES	
2.2	WATER SUPPLY			
2.2.1	<i>For construction purposes: (to be specified whether chargeable or free)</i>			
A	Making the water available at single point	YES	-	
B	Further distribution as per the requirement of work including supply of materials and execution	-	YES	
2.3	COMPRESSED AIR	-	YES	
2.4	LIGHTING			
A	Providing the necessary consumables like bulbs, switches, etc during the course of construction for Lighting purpose at Site of Construction	YES	-	
3	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE CONTRACTOR			
A	Telephone, fax, internet, intranet, e-mail etc	-	YES	
4	ENGINEERING WORKS FOR CONSTRUCTION:			
4.1	Providing the drawings good for construction for all the works covered under this scope	-	YES	
4.2	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site in the reference of drawings issued by BHEL	-	YES	

CONTRACTOR

ACCEPTING OFFICER (BHEL)

4.3	Mix design of concrete /Ready Mix concrete	-	YES	
4.4	Testing of Concrete Cubes, bricks, Cement and all those material brought by Contractor at Site of work.	-	YES	”
4.5	Testing of Raw Sewage and treated Sewage.	YES	YES	
5	CONSTRUCTION MATERIAL			
5.1	Supply of Steel reinforcement, Cement, Bricks, Tiles and all raw construction material required for civil units of STP .	-	YES	
5.2	Carriage of BHEL issued material from BHEL store to site of work	-	YES	
5.3	All other material required for construction as per scope of work (other than free issue material by BHEL)	-	YES	
5.4	Construction stores for Material available at site (both material either issued by BHEL or brought by contractor)	-	YES	
6	ALL T&P , IMTE REQUIRED FOR CONSTRUCTION AS PER SCOPE OF WORK	-	YES	
7	ALL SAFETY EQUIPMENT'S, APPLIANCES AND PPES FOR SAFE WORKING OF MEN AND MACHINES AT CONSTRUCTION SITE	-	YES	
8	SUPERVISION AND MONITORING OF WORK			Detail is given in this tender document (technical conditions of contract)
8.1	Preparation of site construction schedules and other input requirements	-	YES	Detail is given in this tender document (special conditions of contract)
8.2	Review of performance and revision of site construction schedules in order to achieve the end dates and other commitments.	YES	YES	

CONTRACTOR

ACCEPTING OFFICER (BHEL)

8.3	Weekly construction schedules	-	YES	
8.4	Daily construction / work plan	-	YES	
8.5	Periodic visit of the senior official of the Contractor to site to review the progress so that works are completed as per schedule.	-	YES	
8.6	Monitoring the technical and financial aspect of work and review of site supervision	YES	YES	
9	COMPLIANCE OF STATUTORY LAWS APPLICABLE ON SITE WORK	-	YES	
10	DEVELOPMENT OF GREEN TREE PLANTATION TO IMPROVE THE ENVIRONMENT	YES	YES	If any tree is required to be cut by Contractor at site of work than he will plant equal number of trees at the location identified by Engineer In charge.
11	SAFE DISPOSAL OF ALL DEBRIS, GARBAGE AND RUBBISH GENERATED AT CONSTRUCTION SITE	-	YES	

CHAPTER –IV

LIST OF TOOL & PLANTS, (T&P) ; INSPECTION, MEASURING AND TESTING EQUIPMENT'S (IMTE's) TO BE DEPLOYED BY THE CONTRACTOR

- INDICATIVE LIST OF T & P; IMTE TO BE ARRANGED BY THE CONTRACTOR FOR EXECUTING THE WORK AT SITE AT HIS OWN COST

Sl. No.	EQUIPMENT	QUANTITY
1	Concrete mixer/ Ready Mix Concrete Miller From Plant	As per requirement
2	Concrete vibrators for beam, slab, column, Shutter	As per requirement
3	Steel /Ply wood shuttering	As per requirement
4	JCB, Excavator, Dozer, Jack Hammers with compressor	As per requirement
5	Trucks/lorries/Tractors/Dumpers	As per requirement
6	Concrete cubes molds	As per requirement

CONTRACTOR

ACCEPTING OFFICER (BHEL)

NOTES:

- The above list specifies only major T&P /IMTEs (may not be complete to be deployed by the contractor). All additional / other tools and plants including trucks & devices, tackles, machines, measuring instruments etc. in good and safe working conditions which are required for satisfactory & timely completion of work shall also be deployed by the contractor within finally accepted rate / price. Contractor has to mobilize / maintain adequate numbers of equipment's for meeting the requirement of actual planned work of Concreting / masonry / Flooring /Finishing etc.
- Other terms and conditions regarding above items please also refer clause 5 OF SCC and Clause 24 GCC.
- All the tools and plants required for this scope of work, except the Tools & Plants provided by BHEL are to be arranged by the contractor within the quoted rates. The list is suggestive in nature. Any additional T & P required to be arranged by the contractor.
- IF ABOVE MENTIONED T&P/IMTEs ARE NOT DEPLOYED IN SPECIFIED TIME AND IT IS FOUND THAT WORK IS BEING DELAYED DUE TO NON DEPLOYMENT OF ADEQUATE T&P, BHEL MAY DECIDE TO HIRE THE T&P FROM MARKET AND WILL CHARGE TO CONTRACTOR CURRENT MARKET RATE + OVERHEADS AS DECIDED BY BHEL, FOR NON AVAILABILITY OF T&P or levy a day wise penalty for non-deployment for delayed deployment in the interest of work progress.
- If work gets delayed due to non-availability of T&P/IMTEs , BHEL also reserves the right to get the work done at the risk and cost of contractor without prejudice to rights of BHEL as in GENERAL CONDITIONS OF CONTRACT.
- **LIST OF TECHNICAL AND NON-TECHNICAL STAFF TO BE DEPLOYED BY THE CONTRACTOR**

Sl. No.	Requirement of staff	Numbers	Minimum experience in similar work (Years)	Designation
1	Project Manager /Project Engineer	01	5 Years	Principal representative
2	Technical Consultant	01	Post Graduate in Environment Engineering with minimum 5 years of experience	Technical representative
5	Skilled /unskilled workers and foremen	As per actual requirement of work.		

- Above is an indicative list of minimum numbers and qualification of staff required to be deployed by Contractor at site. Actual may be higher than this as and when required to do so in the interest of work.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

CHAPTER –V

5.0 MATERIALS

- The contractor shall, at his own expenses (Inclusive of Taxes), provide all materials required for the work EXCLUDING THOSE stipulated in Schedule “B” of this tender document, which will be supplied by BHEL to the contractor free of cost.
- All stores and materials to be provided by the Contractor shall be of the best kind in conformity with the specifications laid down in the contract or as per relevant Indian standard and the Contractor shall, if requested by the BHEL Engineer, furnish proof to the satisfaction of BHEL Engineer that the materials so comply.
- The Contractor shall, at his own expense and immediately, supply to the BHEL Engineer samples of materials proposed to be used in the works. The BHEL Engineer shall within seven days of supply of samples or within such further period as he may require will 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 BHEL Engineer for his approval fresh samples complying with the specifications laid down in the Contract. Any delay in approval of samples (original or fresh ones) shall not make the contractor eligible for any compensation.
- The **BHEL** Engineer shall have full powers for removal of any or all of the materials brought to site by the Contractor which are not in accordance with the Contract specifications or do not conform in character or quality to samples approved by him. In case of default on the part of the Contractor in removing rejected materials, the Engineer shall be at liberty to have them removed by other means. The **BHEL Engineer** shall have full powers to procure other proper material to be substituted for rejected materials and in the event of the Contractor refusing to comply; he may cause the same to be supplied by other means. All costs, which may attend upon such removal and / or substitution, shall be borne by the Contractor.
- The Contractor shall indemnify BHEL, its representatives or employees against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties or other charges which may be payable in respect of any article or material or part thereof included in the Contract. In the event of any claim being made or action being brought against BHEL or any agent, servant or employee of BHEL in respect of any such matters as aforesaid, the Contractor shall immediately be notified thereof, provided that such indemnity shall not apply when such infringement has taken place in complying with the specific directions issued by BHEL but the Contractor shall pay any royalties or other charges payable in respect of any such use, the amount so paid being reimbursed to the Contractor only if the use was the result of any drawings / specifications issued after submission of the tender.
- The **BHEL** Engineer shall be entitled to have tests carried out as specified in the Contract for any materials supplied by the Contractor other than those for which, as stated above, satisfactory proof has already been furnished, at the cost of the Contractor and the Contractor shall provide at his expense all facilities which the Engineer may require for the purpose. If no tests are specified in

CONTRACTOR

ACCEPTING OFFICER (BHEL)

the Contract, and such tests are required by the Engineer, the Contractor shall provide all facilities required for the purpose and the charges for these tests shall be borne by the Contractor only. The cost of materials consumed in tests shall be borne by the Contractor in all cases except when otherwise provided.

In addition, the Contractor shall perform / submit at his own cost such tests / samples as may be required by the **BHEL** Engineer out of the materials used by the company except for the costs of materials used in such tests/ samples.

- After acceptance of the Contract, if Contractor desires BHEL to supply any other materials, such material may be supplied by BHEL, if available, at rates to be fixed by the BHEL Engineer along with prevailing departmental charges to be decided at the time of decision. BHEL reserve the right for not to issue any material. The non-issue of such material will not entitle the Contractor for any compensation whatsoever either in time or in cost.
- Material required for the works, whether brought by the Contractor or supplied by BHEL, shall be stored by the Contractor only at places approved by the Engineer. Storage and safe custody of material shall be the responsibility of the contractor.
- BHEL's officials concerned with the Contract shall be entitled at any time to inspect and examine any materials intended to be used in or on the works, either on the Site or at factory or workshop or other place(s) where such materials are assembled, fabricated, manufactured or at any place (s) where these are lying or from which these are being obtained and the Contractor shall give such facilities as may be required for such inspection and examination.
- All materials brought to the Site shall become and remain the property of BHEL and shall not be removed off the Site without the prior written approval of the Engineer. But whenever the Works are finally completed and advance, if any, in respect of any such material is fully recovered, the Contractor shall at his own expense forthwith remove from the Site all surplus material originally supplied by him and upon such removal, the same shall re-vest in and become the property of the Contractor.
- Other relevant conditions as stipulated in Clause 5 of SCC and chapter II and III of GCC will also prevail.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

APPROVED MAKE OF MATERIALS

1. **CEMENT** : OPC (As per IS 43 grade (conforming to IS: 8112) ordinary Portland cement, as required in the work, from reputed manufactures of cement, having a production-capacity of one million tons per annum or more, such as ACC, L&T, Vikaram, Shri Cement Corporation of India, etc., as approved by Ministry of industry, Government of India, and holding license to use ISI certification mark for their product. Supply of cement shall be taken in 50 kg Bags bearing Manufacturer's name and ISI marking.)

PPC cement as per IS 1489 part1 can also be used but Contractor shall submit the mix design of M25 grade concrete and all RCC works shall be done with M25 grade concrete without any extra cost to BHEL.

2. ELECTROMECHANICAL EQUIPMENT

Sr. NO.	Particular	MAKE
1	Sewage Submersible Pump with Accessories	KSB/CRI/KIROLSKER/LUBI / GRUNDFOS/EQUIV.
2	Air Root Blower	KAY / EVEREST / AIRVAK OR EQUIVALENT
3	Air Diffuser	REHAU / EDI / AIRFIN / EQUIV.
4	RAS Pumps	KSB/CRI/KIROLSKER/LUBI / GRUNDFOS/EQUIV.
5	Filter Feed Pump	JHONSON/KSB/CRI/KIROLSKER/LUBI / GRUNDFOS/EQUIV.
6	Electrical Control Panel	SIEMENSE & L&T BY AMAZING TECHNOLOGY
7	Electrification and INTERNAL Cabling	POLYCAP / EQUIV.
8	Pipes	FINOLEX/SUPREME/ JINDAL OR EQUIVALENT
9	Valves	LEADERS/ZOLOTO/SAINT OR EQUIVALENT
10	POWER WIRE	FINOLEX/QFLEX/KEI/ OR EQUIVALENT

Note: Approval of BHEL engineer is to be obtained before procurement of materials specified above. The make of material mentioned if not available in the market or is not suiting the site conditions or the make of material is not mentioned in the above list, equivalent make may be used after the approval from BHEL engineer.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

CHAPTER –VI**TIME SCHEDULE****6.1 MOBILIZATION, TIME SCHEDULE, CONTRACT PERIOD****INITIAL MOBILIZATION**

After receipt of fax/email LOI, Contractor shall discuss with HOD/Civil –BHEL IVP regarding initial mobilization. Contractor shall mobilize necessary resources within 2 weeks of issue of fax / email letter of intent or as per the directive of HOD/Civil-BHEL IVP. However, BHEL Engineer will certify the actual date of start of work after adequate mobilization of materials, manpower and T&Ps by the contractor.

Scheduled date or stipulated date of start of work will be 15th Day from the date of fax/email LOI. Contractor's resources shall be progressively augmented to match the schedule of milestones /Construction.

6.2 COMMENCEMENT OF CONTRACT PERIOD AND TENTATIVE SCHEDULE

The contract shall be deemed to have come into force from the date of issue of LOI. Entire work as detailed in tender specification shall be completed within 2 months from the date of Placement of LOI. Contractor has to mobilize adequate resources to meet completion target and to avoid cost and time over run.

Detailed Work completion Schedule will be submitted for approval by the successful bidder within 1 week of issue of LOI .

In case due to reasons not attributable to the contractor, the work gets delayed and scheduled completion gets extended, time extension will be accordingly granted by BHEL without any price variation.

The work under the scope of this contract is deemed to be completed in all respects, only when all the works are carried out as per satisfaction of BHEL. The decision of BHEL on completion date shall be final and binding on the contractor.

In order to meet above schedule in general, and any other intermediate targets set, to meet Work schedule requirements, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL.

6.3 CONTRACT PERIOD

The contract period for completion of entire work under scope shall be up to the Date of completion of Work from date of the “START OF CONTRACT PERIOD” as specified earlier.

6.4 CONSEQUENCE OF DELAY

It may be noted that in the event delay in completion is attributable to the contractor BHEL may impose LD to the contractor as per General Conditions of Contract.

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

CHAPTER –VII

OTHER TECHNICAL CONDITIONS OF CONTRACT

1.0 The work shall be executed in a workman like manner and to the entire satisfaction of the Engineer and as per technical specification issued with tender, IS codes, CPWD specifications as applicable. In case of conflict, the decision of the BHEL Engineer shall be final & binding.

2.0 The BHEL Engineer will communicate or confirm his instructions to the Contractor in respect of the execution of the work in a "Work Site Order Book" maintained at his office and the Contractor shall visit this office daily and shall confirm receipt of such instructions by signing the relevant entries in this book. Such entries will rank as order or notices in writing within the intent and meaning of these conditions.

3.0 SETTING OUT

All the works shall be set out to the true lines, grades and elevation indicated on the drawing. The contractor shall be responsible to locate and set out the works. Only one grid reference line and bench mark shall be made available for setting out the works under the contract. This reference lines shall be used as datum for the works under the contract and the contractor has to establish for his work area at available points horizontal and vertical control points. The contractor shall inform BHEL well in advance of the times & places at which he wishes to do work in the area allotted to him so that suitable datum points established by him are checked by BHEL to enable the contractor to proceed with the works. Any work done without being properly located may be removed and / or dismantled by BHEL at contractor's expenses.

The contractor shall at his own expense take all proper and responsible precautions to preserve and maintain these datum marks to its true position. In the event of these marks being disturbed or obliterated by accident or due to any other cause whatsoever, the same may be deemed necessary placed by BHEL at contractor's expenses.

4.0 SITE DRAINAGE

All water including sub-soil water which may accumulate on the Site during the progress of the works or in trenches and excavations, including monsoon period shall be removed by the contractor from the Site to the satisfaction of the Engineer. It will also be responsibility of the contractor to de-water all the foundation pits, trenches with suitable de-watering methods like, pumping out, well point system etc. All such expenditure on de-watering shall be deemed to be included in quoted rates.

5.0 INSPECTION AND STAGE APPROVAL OF THE WORK

The Sr. DGM/ Civil or his duly authorized representative shall have at all reasonable times access to the contractor's premises or works and shall have the power to inspect drawings or any portion of the work, examine the materials and workmanship and shall have the authority to reject any work. This may be implemented through joint inspection by the representative of the Contractor and BHEL and in the form of joint protocols without any extra claims and loss of time and amount.

All work embracing more than one process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice in writing to the Engineer when each stage is ready.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

In default of such notice being received, the Engineer shall be entitled to approve the quality and extent thereof at any time he may choose and in the event of any dispute, the decision of the Engineer thereon shall be final and conclusive.

6.0 UNCOVERING AND MAKING GOOD

The Contractor shall uncover any part of the Works and/or make openings in or through the same as the Engineer may from time to time direct for his verification and shall reinstate and make good such part to the satisfaction of the Engineer. If any such part has been covered up or put out of view after being approved by the Engineer and is subsequently found on uncovering to be executed in accordance with the Contract, the expenses of uncovering and / or making opening in or through, reinstating and making good the same shall be borne by BHEL. In any other case all such expenses shall be borne by the Contractor.

If neither drawing nor specification contain any mention of minor details of construction which in the opinion of the Engineer whose decision shall be final and conclusive, are reasonable and obviously and fairly intended for satisfactory completion of work, such details shall be provided by the contractor without any extra cost, as if they were specially mentioned and shall be deemed to be included in the scope.

7.0 NUISANCE

The Contractor shall not at any time do, cause or permit any nuisance on Site or do anything which shall cause unnecessary disturbance or inconvenience to owners, tenants or occupiers of other properties near the Site and to the public generally.

8.0 MATERIAL OBTAINED FROM EXCAVATION

Materials of any kind obtained from excavation on the Site shall remain the property of BHEL and shall be disposed of as the Engineer may direct, at no extra cost.

9.0 TREASURE, TROVE, FOSSILS etc.

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site shall be the absolute property of BHEL and the Contractor shall take reasonable precautions to prevent his workmen or any other person from removing or damaging any such article or thing, shall immediately upon discovery thereof and before removal acquaint the Engineer with such discovery and carryout the Engineer's directions as to the disposal of the same.

10.0 PROTECTION OF WORKS

Trees designated by the Engineer shall be protected from damage during the course of the Works and earth level within 1 meter of each such tree shall not be charged. Where necessary, such trees shall be protected by providing temporary fencing.

The contractor shall provide and maintain at his own expense all lights, guards, fencing and watching when and where necessary or required by the Engineer for the protection of the Contractor's Works or for the safety and convenience of those employed on the Works or the public.

The contractor shall have total responsibility for protecting his works till it is finally taken over by the Engineer. No claim will be entertained by the Engineer for any damage or loss to the contractor's works and the contractor shall be responsible for the complete restoration of the damaged works to its original

condition to comply with the specifications and drawings. Should any such damage to the contractor's works occur because of other party not under his supervision or control, the contractor shall make his claim directly with the party concerned. The contractor shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The contractor shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such disputes.

11.0 PROTECTION OF EMBEDMENT'S ETC.

The contractor shall ensure proper protection to the satisfaction of the Engineer, of all bolts, inserts, embedment etc. From weather etc/ by greasing, rapping them with gunny bags or canvas or by any other means as directed by Engineer. Cost of such protections shall be deemed to be included in the rates quoted for the item.

12.0 CLEARANCE OF SITE AND REPAIRS.

Contractor has to clear the site / area after completion of construction work. In case, he fails to clear the site, this will be done at his risk & cost by BHEL.

13.0 QUALITY ASSURANCE

The contractor, if directed by Engineer in charge-has to establish / arrange at site the field testing facilities for testing of civil construction materials and concrete cubes for ensuring the proper quality, grade and strength of the materials used in the construction in line with approved field quality check list of material used etc. All testing shall be done as per IS code specifications/ BHEL's quality plan. If further test is required by the engineer in addition to field test in site laboratory or in the absence of field test in site laboratory, these will be carried from outside laboratory and the cost of the same shall be borne by the contractor.

14.0 COMPLETION OF WORK

The works shall be completed to the entire satisfaction of the Engineer in charge and in accordance with the completion schedule as specified in the Contract, and all unused stores and materials, tools, plant, equipment, temporary buildings, site office, labour hutments and other things shall be removed and the site and work cleared of rubbish and all waste materials and delivered up clean and tidy to the satisfaction of the Engineer at the Contractor's expenses.

BHEL shall have power to take over from the Contractor from time to time such sections of the work as have been completed to the satisfaction of the Engineer. Such work however shall not be treated as have been completed until the extra works are executed to the satisfaction of Engineer. The Guarantee period shall commence only after handing over of the entire works.

The Engineer shall certify to the contractor the date on which the work is completed and the date thereof defect liability Period (Maintenance Period begin).

15.0 METHOD OF MEASUREMENTS

If not exclusively specified in the tender, shall be as per relevant IS Codes / CPWD Specifications.

16.0 The contractor shall comply with all provisions towards **Safety, Health, Environment and labor staff** as stipulated in special and general conditions of contract.

CONTRACTOR

ACCEPTING OFFICER (BHEL)

17.0 DISCREPANCIES AND ADJUSTMENT OF ERRORS

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 drawings and figures dimensions in preference to scale and special conditions in preference to general conditions.

In case of discrepancies between schedules of quantities, the specification and the drawings, the following order of preference shall be observed.

- (a) Description in schedule of quantities.
- (b) Technical conditions of Contract
- (c) Drawings

If there are varying or conflicting provisions made in any one document forming part of the contract, the Engineer-in-charge shall be the deciding authority with regard to the document.

Any error in description, quantity 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 the drawings and specifications or from any of his obligations under the contract.

18.0 SITE DOCUMENTS

The following site documents shall mainly be maintained by the contractor at site:

- Copy of contract documents and drawings.
- Computerized bill format.
- Site Order Book.
- Material testing registers/ Quality Inspection Reports.
- Measurement books on computerized format.
- Progress bar chart.
- Sample approval register.
- Visitors register.
- Any other detail and specific requirement as deemed necessary.
- Hindrance Register
- Work Diary,
- Stage passing Register
- Registers as mentioned in special conditions of contract towards availability of labor and staff

CHAPTER –VIII

TECHNICAL SPECIFICATIONS

Design, Supply, Construction, Erection and Commissioning of Sewage Treatment Plant by Bidder is to be guided by the following basic design considerations:

- (1) **Engineering**
- (2) **Environmental**
- (3) **Process**
- (4) **Cost**

These are discussed below in brief.

(1) Engineering.

Topographical, Engineering and other considerations which should figure prominently in project design are noted below.

1.1 Design period of sewage treatment plant and its various component shall be as described in table 1 below.

Table 1

Component	Design Period in Years	Clarifications
Collection Systems, Tanks and Pipe Network with all civil works of STP including pumping stations	30	Shall be designed with sound structural engineering as the replacement during the design period is not possible.
Pumping Machinery	15	Shall be Capable to meet the variable flow and should be accompanied by stand by arrangement too.
Sewage Treatment Plant including all reactors, settlers, filters etc	30	Shall be Modular type for easy expansion to meet the requirement of higher loading during future growth

Raw Sewage from factory is a combination of following two components

- (a) Domestic Sewage: From Offices, Toilets, Canteen, Pantry and Car parking/washing areas.
- (b) Industrial waste water: From Hydro Test bed where water is used for hydro testing (pressure) of valves only. This water is recirculated inside test bed for 5-7 days and then discharged into sewage system when it becomes turbid.

Sewage flow from factory is fluctuating. Domestic sewage flow as described above may be said constant as it is excrete of around 700 persons per day. Industrial waste water is varying and depends on production output. It vary every day from almost zero sewage/waste water per day to 50-70 KL per day.

Maximum Water demand of factory as metered on source of water is 125 KL per day. Therefore sewage flow from factory may be called varying and fluctuating from 50 KLPD to 100 KLPD with maximum 125 KLPD on some days and 0 KLPD on holidays.

1.2 Site selected for sewage treatment plant is located in rear side of factory near last sewage manhole of factory (where in all raw sewage is discharged and collected before disposal to public sewer).

CONTRACTOR

ACCEPTING OFFICER (BHEL)

Site is levelled but available with following constraints for Sewage treatment plant.

- (a) Invert level of last sewage manhole as described above (from where all sewage will be diverted to Sewage treatment plant instead of public sewer) is 2.5 m below ground level. Therefore pumping of sewage may be required to transfer the raw sewage into various tanks of sewage treatment plants. Gravitational flow of raw sewage will increase tank size. In this case A pumping station will be required to be constructed in adjoining area to serve the purpose of transfer of sewage from this sump (manhole T1) to STP which should be equipped with pumps (1 w+ 1 sb) with sensors to allow the pumping during peak load. In other case to ensure gravitation flow, higher depth of tank (beyond 2.5 m below NGL) may be constructed. Capacity and size of the tank and pump is to be decided by designer himself.
- (b) Land available for construction of various units of sewage treatment plants is 10-12 m wide and 30-40 m Long.
- (c) Ground water table is 70-80 feet deep below NGL . Soil strata expected to meet below NGL at the site of STP is Silty sand.
- (d) On site disposal facility of sewage and sludge will not be preferred and all treated sewage will be collected in a continuous flowing tank through pumping and shall be used for gardening, car washing, and excess quantities may also be disposed in rain water harvesting pits.

(2) Environmental.

The following aspects should be considered during the design.

- (a) Sewage treatment plant shall be design to handle the characteristics of input sewage /wastewater and to perform to meet the quality parameter of output water. Characteristics of raw sewage from factory and desired characteristic of Treated sewage from Sewage treatment plant are enumerated in table 2 below.
- (b) Sewage treatment plant shall be designed and installed to provide a noiseless, odorless, mosquito nuisance free environment during the treatment process.
- (c) Sewage treatment plant shall be designed and installed to provide an environment free from Gases viz CH₄ (methane), H₂S (Hydrogen Sulphide) and Nitrogenous gases during the treatment process. If these are unavoidable then a safe mechanism to dispose these in atmosphere as per relevant Norms shall be provided in STP without any extra cost to BHEL.
- (d) Sewage treatment plant structures need not be ugly and unsightly. At no extra cost, Some Architectural Concepts should be used and the plant shall be designed to suit the main climates (humid, cold, Hot and dry) generally met in Goindwal sahib, Amritsar Punjab.

TABLE 2

SI No	Characteristics	Raw Sewage cum waste water	Desired Quality of Treated Effluent
1	PH	6.0-8.5	6.5-8.5
2	TSS	450 mg/l	< 30 mg/l
3	BOD	300 mg/l	< 20 mg/l
4	COD	500 mg/l	< 100mg/l
5	Oil & Grease	20 mg/l	< 5 mg/l
6	TDS	600 mg/l	-
7	Ecoli/ helminthes/ pathogens etc	-	Must be absent
8	Odour	-	Nil

CONTRACTOR

ACCEPTING OFFICER (BHEL)

(3) Process Considerations

Process Considerations involve the factors which affect the choice of treatment method. Its design criteria and related requirements should be based on:

- i) Nature and magnitude of Hydraulic loading (as described in 1.1 a & b above) and Typical Organic loading as described in Table 2 above).
- ii) Desired Characteristics of output water as described in table 2 above for reuse of water as described in 1.2 d above.
- iii) Environmental parameters as described above in S/n 2. All treatment technologies are acceptable provided they meet the following criteria
 - Small foot print, compact in design to meet the criteria of less floor area as described above in S/n 1.2 b.
 - Modular design for future expansion.
 - Low initial capital cost and low operating cost.
 - Minimum or preferably no Sludge handling. If sludge cannot be avoided then a safe, easy and economical mechanism shall be provided in STP to handle and dispose any sludge from treatment process.
 - Standby arrangement for all pumping units.
 - Safety arrangements including guard rail, covered roof and ladders for all tanks, chambers of STP
 - Easy to operate. Low maintenance and low consumption of fuel, lubrications and power.
 - Capable to meet the hot and cold climate of Goindwal Sahib Punjab.

Following Treatment technologies are suggested but the Bidder is free to Design and Supply any suitable and optimum treatment process based on requirements as described in these technical specifications and successive rate of treatment process in past years.

- Extended Aeration
- Aerobic Biological Suspended Growth Process
- Aerobic Biological Attached Growth Process
- Anaerobic Biological Growth Process.
- Bio reactors. (Mix Bed, Fluidized film ,Batch type ,Plug flow, , Continuous Batch , Plug flow etc)
- Facultative Aerated Lagoons
- Anaerobic Aerobic Systems (anaerobic treatment of whole raw waste in an aerobic unit).

(4) Cost.

Finally from above , STP shall be designed and installed for minimum overall initial capital cost towards supply and construction of civil units, supply , erection and commissioning of mechanical and electrical units and low operating cost towards fuel, lubricants, chemicals, consumables, power and skilled operating staff.

TABLE 3**INDICATIVE SPECIFICATIONS FOR CIVIL UNITS**

1	Screen Chamber/Grit Chamber/ Grease Trap (if required) Pumping Chamber (to transfer raw sewage from Last sewage manhole (T1) to various chambers/ settling tanks of STP	Size and Numbers to be decided as per the design requirements. Material of construction shall be RCC of Minimum grade M25 only. Sludge beds and Other small chamber under gravity flow of sewage may be made of Bricks masonry in CM 1:4 with Cement Plaster in 1:3 with Concrete Base not leaner than M20.
2	Primary Settling tanks/ Equalization Tanks	
3	Secondary Settling Tanks (If required)	
4	Sludge drying beds (if required)	
5	Treated sewage storage tanks	One or Two tank to provide total capacity of 25000 Ltrs . Material of construction shall be light weight, rust and leak proof, hygiene, structurally sound HDPE/FRP or otherwise RCC of M25 grade concrete with removable top for cleaning etc.
6	RCC NP 2 pipes of dia not less than 450 mm from last sewage manholes (existing collection sump) to Screen /Grit Chamber and /or Pumping station	Of length required as per site
7	GI/CPVC/HDPE pipes of adequate dia to transfer the sewage from Screen chamber/grit chamber/ Pumping Stations to Settling /equalization tanks of STP	Of suitable size and length required as per site and design
8	Foundations /Platforms of various components of STP	Size and Numbers to be decided as per the design requirements. Material of construction shall be RCC of minimum grade M20 only.
9	Guard rails and safety covers all around tanks	Size and Numbers to be decided as per the design requirements. Made of MS tubular section with red oxide primers and paints
10	Roof covers of Tanks, Chambers	Size and Numbers to be decided as per design with load carrying capacity as per BIS Norms. Material of construction shall be RCC of Grade not less than M20 or structural steel plates with full safety provisions and man holes for maintenance purposes.

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

TABLE 4**INDICATIVE SPECIFICATIONS FOR MECHANICAL UNITS**

COARSE / FINE BAR SCREEN/ TEE SCREEN	
No of units	As per Design requirement
Size	As per the Design requirement
Material of construction	MS Epoxy /SS 304
SEWAGE TRANSFER PUMPS	
No of units	At sewage pumping station and in Equalization tanks and in any other tanks (if required) As per Design with 100 % Stand by
Capacity	As per the Design requirement
Type	Non clog, submersible
Head	As per the Design requirement
Motor HP	As per the Design requirement
MOC	CI
AERATION SYSTEM	
Air root Blower	As per Design ; 100 % Stand by
Coarse bubble diffusers (SCS)	One lot – As per Design ; H D P E / e q u i v
Fine bubble diffusers (ASP)	One lot – As per Design ; E P D M / e q u i v
BIO REACTORS WITH MEDIA /BIO-ACCELERATOR	
No of units & capacity	As per Design
Tanks of Reactors	RCC of M25/ Prefab (Sound quality)
SECONDARY CLARIFIER MECHANISM	
No of units	As per Design
SLUDGE TRANSFER /RECIRCULATION PUMPS	
No of units & capacity	As per Design with 100 % Stand by
Type	Horizontal, centrifugal, non-clog
MOC	CI

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

FILTRATE PUMPS/FEED PUMPS	
No of units & capacity	As per Design with 100 % Stand by
Type	Horizontal, centrifugal, non-clog
MOC	CI
SLUDGE THICKENING /DEWATERING/DIGESTION MECHANISM	
No of units & capacity	As per Design
Tube Settler & Media/FILTER PRESS	Settler Tank of RCC / Prefab of sound Quality
CHEMICAL DOSING/COAGULATION/DISINFECTION MECHANISM	
No of units & capacity	As per Design
Tanks	RCC/Pre Fab of Sound Quality
TERTIARY TREATMENT MECHANISM FOR REUSE	
No of units & capacity	As per Design
Sand Filters/Activated Carbon Filters	As per Design
INTERCONNECTING PIPES, FITTINGS & VALVES	
No of units & capacity	As per Design ; MADE OF HDPE/UPVC/GI
TREATED WATER TRANSFER PUMP	
No. of units & capacity	As per design with 100 % Stand by

TABLE 5**CONTROL PANEL SPECIFICATION FROM MOTOR CONTROL CENTRE (MCC)**

1	PANEL CONSTRUCTION	14 /16 MM (DOOR / LOAD MEMBER) CRCA
2	BASE FRAME	Sheet steel enclosure as per IS. 8623 3 MM folded construction
3	PANEL TYPE	MCC (Individual Compartment Type)
4	PAINTING	Pretreatment followed by powder coating Shade Siemens grey – I s.631
5	BUSBAR	Aluminum of suitable rating with necessary Support
6	INCOMER	Suitable rating of FSU with necessary Door Interlock
7	INSTRUMENT	Digital voltmeter, ammeter with current Transformer, R – Y – B indication

CONTRACTOR**ACCEPTING OFFICER (BHEL)**

8	MOTOR	Each D.O.L starter comprise of one no FSU Contactor, selector switches, over load relay illuminated start / stop Push Button, O/L trip indication lamp Each Star / Delta starter comprise of one no FSU Contactor selector switches over load relay illuminated start / stop Push Button, O/L trip indication lamp
9	WIRING	Suitable power wire minimum 2.5 sq. mm with Ferrule No, Socket terminal block control wiring 1 .5 sq mm 1100 volt grade
10	CABLE ENTRY	Bottom Removable Gland plate will be provided degree of protection IP – 54
11	FINISH	Both Interior and Exterior will be Light Grey Shade 631 OF ID – 5
12	BASE FRAME	Bright Black
13	FEEDER & CABLE CHAMBER DOORS	Hinged
14	BUSBAR CHAMBER DOOR	Bolted

Table 6**LIST OF INSTRUMENTATIONS**

All the pumps will have Low and High level switch for dry running protection, Pressure Gauge at pump outlets, filter inlet and outlet is must.

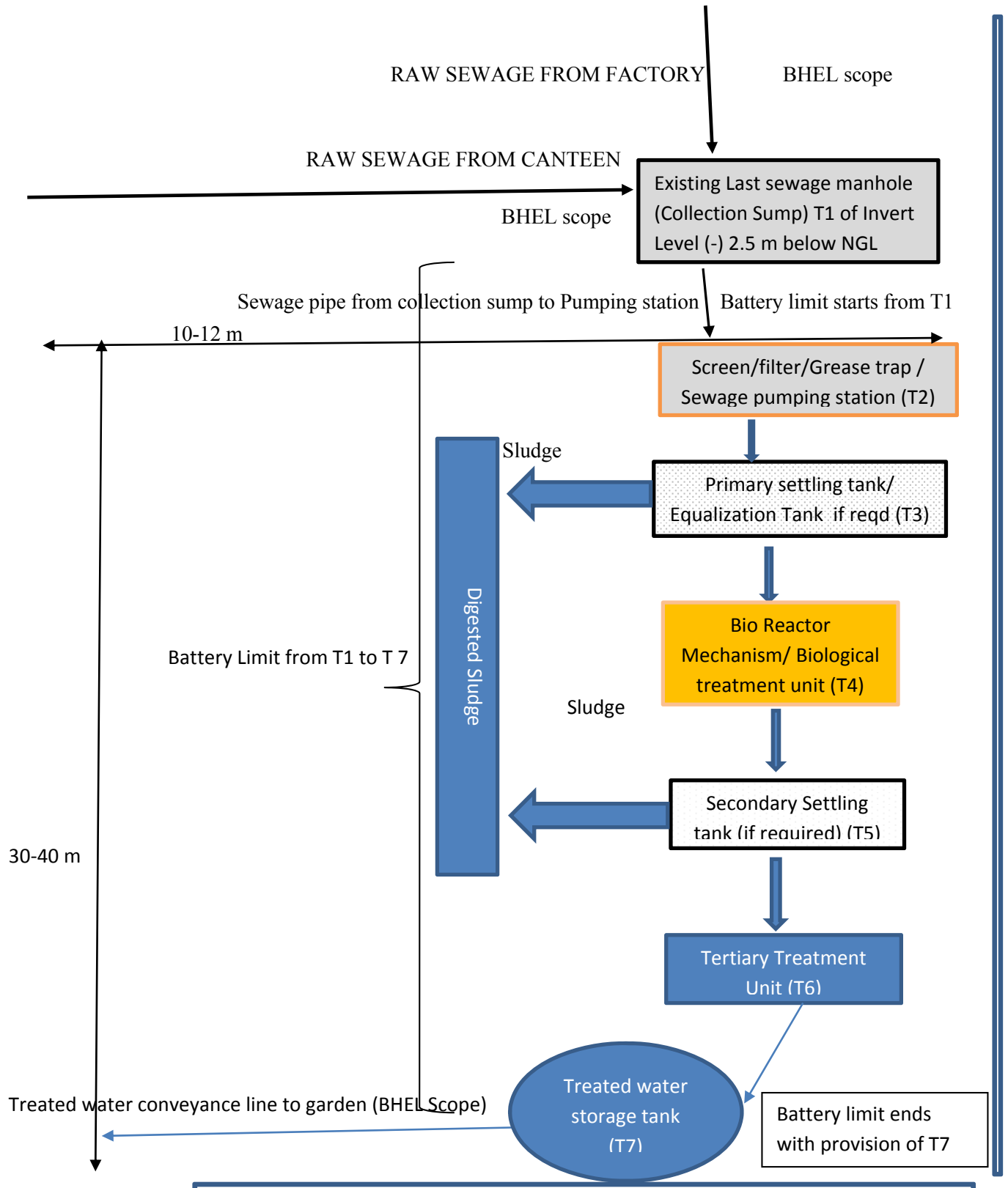
Sr. NO.	Particular	Quantity/Size
1.	Pressure Gauge	As per Design
2.	Level Switch	As per Design
3.	Inline Type Rota Meter	As per Design
4	Flow meter at Pumping Station	As per Design

CONTRACTOR

ACCEPTING OFFICER (BHEL)

CHAPTER -IX

Layout of STP Site and Indicative Process flow.



CONTRACTOR

ACCEPTING OFFICER (BHEL)