**HLL LIFECARE LIMITED**

**A Government of India Enterprise**

**TENDER DOCUMENT**

***For***

***Providing External Water Supply and sewage system at staff quarters-II,IV&V for JIPMER,***

***PUDUCHERRY.***

**PART-III**

**Special Conditions of Contract & Price Bid**

**TENDER NO. HLL/ID /JIPMER/EWS&SS/16/08**

**Dated: 21st June 2016**

**INFRASTRUCTURE DEVELOPMENT DIVISION**

**SECTION I**

**SPECIAL CONDITIONS OF CONTRACT**

**1.0 Scope of Work**

1.1 The construction works shall, inter-alia, include the following, as specified or as directed:

**Providing Bore Well and Water Treatment plant for Staff Qtrs at JIPMER, Puducherry:**

**1 Bore Well**

**2 Pump Room & Tank**

**3 External Water Supply Line**

**4 External Sewage line**

**5 Electrical & Mechanical Work**

1.2 The successful tenderer will be expected to complete the Works within 03 calendar months from the 15th date from the date of issue of letter of acceptance or date of handing over of site whichever is later.

1.3 Throughout these tender documents, the terms “tender” and “bid” and derivatives tenderer/bidder, tender/bid and tendering/bidding etc. are synonymous and “day” means calendar day.

**2.0 Location of Site**

The site is located in JIPMER campus, Puducherry.

**3.0 Deleted**.

**4.0 Dimensions and Levels**

All dimensions and levels shown on the Drawings shall be verified by the Contractor on the Site and he will be held responsible for the accuracy and maintenance of all the dimensions and the levels.

**5.0 Recorded Survey**

As early as practicable after receipt of the work order, the Contractor shall carry out complete survey of the developed site including taking spot levels covering the whole of site. The spot levels shall be recorded on a drawing to be prepared by the Contractor and agreed by the Employer’s Representative and the drawing shall be duly signed by the Contractor and the Employer’s Representative and be maintained carefully for future reference.

**6.0 Notice of Operation**

The Contractor shall not carry out any important operation without the consent in writing of the Employer’s Representative.

**7.0 Assistance for Employer/Employer's Representative**

The Contractor shall provide for the Employer/ Employer’s Representative at all times during the Contract including Maintenance Period, a competent chainman and/or all such other men as he may require to assist him in carrying out or checking any measurements, levels, setting out or measuring up or inspection of work. The Contractor shall also provide ladders, gangways, etc., and the necessary attendance to move and adopt as required and directed for inspection or measurement of the works by the Employer/ Employer’s Representative.

8.0 **Drinking Water**

The Contractor shall provide and maintain at his cost and expense adequate drinking water complying in every respect with the regulations of local authorities for his workmen, sub-contractors and other contractors workmen working in the project and the Employer’s Representative.

**9.0 Construction Record**

The Contractor shall keep and provide to the Employer’s Representative and accurate records of the dimensions levels and positions of all new work and any other information necessary for the Employer’s Representative to be able to prepare complete drawings, recording details of the works as constructed.

**10.0 Safety of Adjacent Structures and Trees**

The Contractor shall provide and erect to the approval of the Employer’s Representative such supports as may be required to protect efficiently all structures and protective guards to trees which may be endangered by the execution of the works or otherwise take such permanent measures as may be required by the Employer’s Representative to protect the structures and trees.

Trees if any, existing at the site except those which are essential to be removed as per direction of the Employer’s Representative be protected and maintained carefully to retain its healthy life.

**11.0 Ordering Material**

It shall be the responsibility of the Contractor to procure and bring to site of works all materials including cement and steel required for fulfilling the contract.

The Bill of Quantities shall not be used as a basis for ordering materials and the Contractor shall be entirely responsible for assessing the quantities of materials to be ordered.

**12.0 Temporary Services**

The Contractor shall provide and maintain all temporary services on or about the site required for the execution of the works and shall remove them on completion.

**13.0 Keep Site Clean**

During the progress of the works and when directed by the Employer’s Representative the Contractor shall keep the site clear of all rubbish and debris including that which may be deposited on the site by other sub- contractors until the date of issue of certificate of completion. The cost of keeping the site clean shall be deemed to have been included for in the rates.

On completion of the works, the Contractor shall at his own expense clear away and remove from the site not later than 7 days from the date of completion of works all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the entire site and works clean and in a workmanlike condition to the satisfaction of the Employer’s Representative.

**14.0 (i) Office Accommodation for Contractor, Employer/ Employer’s Representative and Visiting Officials**

The Contractor shall provide and maintain all necessary office/s, workshops, stores, shelters, sanitary facilities, canteens and other temporary buildings for themselves and their staff at site to the approval of the Employer’s Representative.

Within 30 days of the date of the work order/handing over of site the Contractor shall also provide without any extra cost office accommodation of approx. 30Sqm. for the Employer’s Representative, inspecting officials and Meeting Room with attached Toilets. The office spaces shall be well lighted and cooled and shall be provided with adequate number of electric lights, plug points, ceiling fans, water cooler and Air-conditioners and all required furniture and fittings including cabinets and drawing stands. The layout and detail plan of all temporary office accommodations to be built at the site shall be to the approval of the Employer/ Employer’s Representative.

All layout and detail plan of all temporary office accommodation to be built at the site shall be to the approval of the Employer’s Representative.

All such facilities shall be removed at the completion of project or shifted/removed at any later date as directed by the Employer’s Representative.All expenses for maintenance of the above facilities as well as running expenses shall be borne by the Contractor at no extra cost.

**(ii)Telephone**

The Contractor shall maintain one telephone at site at his own and shall pay all bills for calls and maintenance. The Telephone shall be installed by the Contractor and the Contractor shall allow the use of the telephone to all other contractors/sub-contractors engaged on the works, and may recover proportionate call charges from them. He shall also allow free use of one telephone to the Employer’s Representative and other visiting officials for phone calls in connection with the works.

**(iii)** **Testing Facilities (Site Laboratory)**

The Contractor shall allow for providing all tests as required by the Specification and/or as instructed by the Employer’s Representative including providing all necessary materials or samples and cost for testing all such tests from outside laboratories as required and approved by the Employer’s Representative.

The Contractor shall set up at the site for use of the Employer’s Representative a laboratory complete with the necessary equipment for testing of construction materials and concrete, all of which will revert to the Contractor at the end of the Contract. The Contractor shall also provide such labour, Lab. Technician, materials, and transport as the Employer’s Representative may require to assist him in carrying out normal tests and checks on materials and workmanship and setting out and measurement of the work. The Contractor shall provide but not limited to the following materials, equipment and facilities in the site laboratory. The layout of the laboratory shall be got approved by the Employer’s Representative before installation :

i) A set of I.S. sieves for sieve analysis

ii) Weighing scales upto 2 kg. andupto 20 kg.

iii) Graduated cylinder 500 c.c. and Thermometer for temperature tests

iv) Slump cone, 18 Nos. Cube Moulds (15 cm size) with standard poking rods.

v) Concrete cube testing machine

vi) Adequate curing facilities under shade.

**15.0 Lighting for Works**

The Contractor shall at all times provide adequate and approved lighting as required for the proper execution and supervision and inspection of the works.

**16.0 Site Instruction Book**

The Employer’s Representative shall maintain a site instruction book on the site in which he or his authorized representatives remarks, instructions, decisions and other essential details, of the work shall be recorded. The Contractor shall regularly note the contents of this book and initial if signifying his having done so and take immediate action on the same. The book shall not be removed from the Employer’s Representative office.

**17.0 Progress Report**

The Contractor shall submit monthly progress reports indicating status of each activity planned for the period under consideration and summary of each completed and planned activity and the anticipated starting dates for activities planned but not in progress, schedule of materials including the details of materials received and Expected Time of Arrival (ETA) of other materials as ordered and such other details affecting the programme and progress of work to the Employer’s Representative in a form as required by him which shall also include reasonable number of progress photographs of the works.

**18.0** **Site Meetings**

Progress and quality evaluation meetings will be held at the site every week. The Contractor's senior representative in charge of the project alongwith his site-in-charge and other staff including of approved Sub-Contractors and suppliers as required shall participate in these progress review meetings and ensure all follow up actions.

**19.0 Return of Plant**

The Contractor shall supply to the Employer’s Representative a monthly return showing full particulars on a form, to be approved by him of the items of plant including location and state of each and the sections of the works on which they are employed. This return is to be presented before the 10th day of each month.

**20.0 Contractor to Verify Site Measurements**

The Contractor shall check and verify all site measurements whenever requested by other Specialists Contractors or by nominated or other Sub-Contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness as will not in any way delay the work. A copy of all such information passed on shall be given to the Employer’s Representative.

**21.0 Hoardings**

The Contractor shall at his cost put up a suitable hoarding of approximate size 4 m x 3 m in English and Hindi to a design to be approved by the Employer’s Representative before the Commencement of Work. The board shall include the name of the Project, Owner/Employer’s Representative, Architect/Consultant & the Contractor as directed by the Employer and shall be installed at a location with adequate frames and supports as approved by the Employer’s Representative.

22.0 **Statutory Obligations, Notices, Fees and Charges**

(1) (a) The Contractor shall comply with and give all notices required by any act, any instrument rule or order made under any Act, or any regulation or byelaw of any local authority or of any agency which has jurisdiction with regard to the Works or with whose systems the same are or will be connected (all requirements to be so complied with being referred to in these Conditions as the statutory requirements).

**(b) If the Contractor shall find any divergence between the statutory requirements and all or any of the contract documents or any variation instruction issued in accordance with these Conditions. He shall immediately give to the Employer’s Representative a written notice specifying the divergence.**

(c ) If the Contractor gives notice under paragraph (b) of this sub-clause or if Employer’s Representative shall otherwise discover or receive notice of a divergence between the statutory requirements and all or any of the contract documents or any variation, instructions issued in accordance with these Conditions, the Employer’s Representative shall within 7 days of discovery or on receipt of a notice, issue instructions in relation to the divergence, if and insofar as the instructions require the works to be varied, they shall be deemed to be Employer’s Representative instructions issued in accordance with these conditions.

(d) (i) If in any emergency compliance with paragraph (a) of this sub-clause requires the Contractor to supply materials or execute work before receiving instructions under paragraph (c ) of this sub-clause the Contractor shall supply such limited materials and execute such limited work as are reasonably necessary to secure the statutory requirements.

(ii) The Contractor shall forthwith inform the Employer’s Representative of the emergency and of the steps that he is taking under this paragraph of these conditions.

(iii) Work executed and materials supplied by the Contractor shall be deemed to have been executed and supplied pursuant to an Employer’s Representative instruction in accordance with these Conditions provided that the emergency arose because of a divergence between the statutory requirements and all or any of the documents referred to in these Conditions or any variation, instructions issued in accordance with these Conditions, and the Contractor has complied with sub-paragraph (ii).

(e) Provided that the Contractor complies with paragraph (b) of this sub-clause, the Contractor shall not be liable to the Employer under this Contract if the works do not comply with the statutory requirements from the Contractor having carried out work in accordance with the documents referred to these Conditions or any variation instruction issued in accordance with Clause (d)(i) of these Conditions.

(2) The Contractor shall pay and indemnify the Employer against liability in respect of any fees of charges (including any rates or taxes) legally demandable under any Act, any instrument, rule or order made under any Act, law or any regulation or byelaw of any local authority or of any statutory or agency in respect of works.

(3) It shall be the Contractor’s responsibility to obtain all licences, permits, etc. from the local authorities as required in relation to the execution of work at the site.

Any assistance which the owner renders to the Contractor in terms hereof or otherwise relative to the above matters, shall not for any cause afford a basis or defense to the Contractor for any of his obligations under the contract nor ground for extension of time for completion.

**23.0 Bar-bending Schedule for reinforcement Work**

The Contractor shall prepare a detailed bar-bending schedule for all R.C.C. work and get them approved by the Employer’s Representative well in advance of Construction and copies of such approved bar-bending schedules shall be submitted to the Employer’s Representative for their use.

**24.0 Specialist Sub-Contractor**

The Contractor shall employ an Architect for the detailed design, structural design etc. and get all the specialist works such as the Sanitary Plumbing & Drainage works, Electrical works such as DGs et, UPS, Fire Protection Works, False Ceiling, Aluminium works, Doors, Waterproofing works, HVAC, Lift, Medical gas etc. executed through approved specialist sub-contractors having requisite experience as per the section IV in the technical bid in the particular trade. The list of such specialist sub-contractors the contractor proposes to use shall be submitted with his tender along with details of their experience and on approval by the Employer’s Representative the particular sub-contractor only shall be appointed for carrying out the work. The Employer/ Employer’s Representative shall have the right to reject any specialist sub-contractor proposed in which case the contractor shall get the work executed by another specialist sub-contractor who meets with the approval of the Employer/ Employer’s Representative and no claim by the Contractor regarding this aspect shall be entertained.

**25.0 Shop Drawings**

The Contractor and/or his approved sub-contractors shall prepare shop drawings for specialist trades such as Sanitary & Plumbing, Electrical & Mechanical works, Fire Protection Works, False Ceiling, Aluminium Doors & Windows, removable partitions and any other item as stipulated in the specifications in respect to the requirement under the contract. The shop drawings shall follow the design and detailing requirements as indicated in the Architect's drawings, specifications and Bill of Quantities and shall incorporate the fabrication details as proposed by the Contractor/Sub-Contractors, the features and exact conditions as available at the site of construction, any aspect related to coordination with other disciplines which might interfere with the proper installation of his work and any other details that the Employer’s Representative might stipulate. Three copies of these shop drawings shall be submitted by the Contractor to the Employer’s Representative. The Employer’s Representative shall at his earliest convenience forward 2 copies of shop drawings to the Employer / Architect for their comments/approval. On receiving such comments/approval in general from the Employer’s Representative, one copy of the approved shop drawing shall be forwarded to the contractor by the Employer’s Representative. On receiving the final approval on the shop drawings, further work on the item shall be proceeded with by the Contractor. The Contractor shall submit these shop drawings to the Employer’s Representative sufficiently early and well in advance to order for procurement of materials at site considering the overall time schedule to allow the Employer’s Representative reasonable time to scrutinise the drawings and get it reviewed before further processing by the Contractor. Any plea of delay on this aspect by the Contractor shall not be entertained.

The Employer’s Representative approval of fabrication working details and shop drawings, however, shall not relieve the contractor of his responsibility for errors and incorrect setting out and co-ordination between the trades or disciplines. The Architect's approval shall be in general and not intended to serve as a check and shall not relieve the contractor from furnishing the materials and performing the works as required by the Drawings and specifications.

Should the Contractor prove unable to produce satisfactory "Shop Drawings" or be unable to produce drawings to conform to the progress of the work, the Employer’s Representative reserves the right to take whatever steps are necessary to have drawings undertaken by others and debit to the contractor's account.

Any decision taken by the Employer’s Representative to have shop drawings produced elsewhere shall not relieve the Contractor of his contractual obligations and the contractor must provide to the Employer’s Representative all necessary details, physical dimensions, descriptive literature of all equipment and materials to be incorporated on drawings within 10 days of a request from the Employer’s Representative. No extension in contractual delivery time shall be allowed on account of the time consumed in submission and reviewing of defective drawings and resubmission of the drawings after being incorporated with the comments of the Architect.

**26.0 As Built Drawing**

The Contractor shall furnish 3 sets of drawings “as erected” and approved by different statutory authorities in accepting the work in its entirely and completion

(i) **As built and Record Drawings**

Before the works for any Section thereof are completed in accordance with clause 48 hereof, the Contractor shall furnish to the Employer all operating and maintenance instructions/manual/technical catalogues together with as-built drawings of the works as completed, in sufficient detail in the opinion of the Employer’s Representative to enable the Employer to maintain, dismantle, reassemble and adjust all parts of the works. The Contractor shall submit the as-built drawings and record drawings for whole of the works including civil works, plumbing, drainage and water supply, electrical and all other services for approval of the Employer’s Representative. Firstly, a set of draft drawing shall be submitted and on approval of which the final as built drawings shall be submitted and shall comprise each 3 prints and one reproducible of each drawing covering all essential information for proper and easy maintenance.

In addition to the above, the contractor shall also submit E & M and B& R inventories and warranty/ guarantee certificates for the electrical/ mechanical equipments.

The works shall not be considered to be completed until such approved instructions, manuals, drawings have been supplied to the Employer. Cost or charges for the purpose shall be included in the price for relevant work.

**Operating & Maintenance instructions and list of Spares**

The Contractor shall submit to the Employer’s Representative for approval, as early as possible before dispatch of any equipments etc. general instructions namely operations and maintenance instruction manuals concerning the correct manner of assembling, operating and maintaining the work with special references to any recently developed features. This instruction manual shall be submitted, immediately following approval of the drawings together with the lists of spare parts separately. The contractor shall also quote for the Operation of utilities during the warranty period and rate for the Operation and maintenance of utilities installed in the building after the warranty period. This will not be considered for tender comparison purpose.

The manual shall be submitted for approval in the same manner as the drawings and when finally approved, copies shall be prepared and forwarded to the Employer’s Representative. The Contractor shall ensure that the erection supervisor has a copy in his office at site.

The instruction manual shall describe in detail the erection procedure and the use of all erection equipment and measurement devices. The procedure for assembling, adjusting, operating and dismantling of each component, system and machine shall be described and illustrated. The maintenance of each component shall be described including the recommended frequency of inspections and lubrication.

The Contractor shall, in preparing the instruction manual, take into account the lack of experience and familiarity of the operating personnel with this type of equipment.

The Contractor shall be fully responsible for ensuring that all plant and materials supplied under this contract are suitable for use under local climatic conditions.

**27.0** **Photographs of Works Carried Out**

The Contractor shall every month supply at his own cost a reasonable number of post card size clear coloured photographs of the works carried out from time to time as per the instructions of the Employer’s Representative. In the event of any dispute or termination of the contract either by the Employer or the Contractor as provided, the Contractor shall arrange to obtain photographs of the works completed in A-4 size upon the date of such termination of contract.

**28.0 Approved Makes**

The specifications provide a list of approved makes of some materials specified. The Employer’s Representative has the right to choose any of the approved makes from the list, which according to him is the best and most suitable for the purpose. The tender price quoted shall cover for this aspect. Only when it is not possible to use any of the approved makes, either due to non-availability or due to technical reasons, the Contractor shall propose alternative materials and if found suitable these shall be approved by the Employer’s Representative for construction but without any extra cost to the Employer.

**Termination**

If, the Contractor failing to complete the works within the stipulated period of completion, the Employer may, notwithstanding anything contained to the contrary in the contract, terminate at any time the contract, without being liable in any manner whatsoever to the contractor by 14 days’ notice in writing to the contractor and proceed to complete or get completed the works which have remained incomplete/not done at the time of such termination, at the risk and cost of the Contractor.

**Issue of Extra Construction Drawings**

Extra prints of drawing for construction shall be issued for client’s record. This shall be in addition to the as-built drawings.

31.0 **GENERAL**

31.1 Unless provided otherwise the work shall be carried out as per printed CPWD Specifications for Works 2009 (for Civil) Volume I & II, CPWD Specifications for Heating Ventilation & Air Conditioning (2004), CPWD Specifications for Electrical Works Part l (Internal - 2005), Part II (External – 1994), Part III (Lifts & Escalators - 2003) Part IV (Sub Station - 2007), Part V (Wet Risers & Sprinkler System - 2006) & Part VII (DG Sets - 2006) with upto-date correction slips.

32.0 **SPECIALIST AGENCIES**

32.1 Agencies to be engaged by the main contractor shall have to fulfil the eligibility criteria laid down below and they shall be engaged only with the prior approval of the Engineer-in-Charge.

32.2. If the main contractor fails to associate with or engage specialist agencies for execution of works listed from serial number 3 onwards in clause 2 of NIT within prescribed time or furnishes incomplete details or furnished details of ineligible agencies even after the tenderer is given due opportunity, the entire scope of such component of works shall be withdrawn from the tender and the same shall be got executed by the Engineer-in-Charge at the risk and cost of the main contractor.

32.3. In case the main contractor intends to change any of the agencies so engaged during the operation of the contract, he shall obtain prior approval of Engineer-in-Charge. The new agency/agencies shall also have to satisfy the laid down eligibility criteria. In case engineer-in-charge is not satisfied with the performance of any agency, he can direct the contractor to change the agency executing such items of work and this shall be binding on the contractor.

32.4. Same milestones shall be applicable for all components of work. The agencies so engaged will ensure that their components of the work are executed in time without giving any chance for slippage of m milestones of the project. The amount to be withheld under Clause 5 of the contract will be decided by the Engineer-in-Charge. In the event of not achieving the necessary milestones as assessed from milestone bar chart, specified percentage of the tendered value of work will be withheld for failure of each milestone.

32.5. Specialist Agencies for works listed from serial number 3 onwards in the NIT, shall meet the eligibility criteria laid down herein and shall be employed with the prior approval of the Engineer-in-Charge.

Architect

The Architect or one of the Directors in the case of an Architectural Firm shall be registered with the Council of Architecture and shall provide comprehensive architectural consultancy on the basis of the concept plans appended to this tender document.

Internal Electrical Installation:

The Specialist Agency should have satisfactorily completed under their own name at least two internal electrical installations for similar buildings each costing not less than 1.50 crores (at least one of them in Central Government/Central Government Autonomous Bodies/Central Government PSUs) during last five years ending last day of the month of May 2011. Certificate of satisfactory completion/commissioning and working of the plant with date of completion, value as per final bill paid duly certified by authorized official not below the rank of Executive Engineer/ Project Manager to be enclosed. They should have a valid electrical license of applicable class issued from the State Govt. of Puducherry.

**SECTION II**

**LIST OF APPROVED MANUFACTURERS / AGENCIES**

**Services / Materials to be consumed in the work shall be of the following manufacturers / agencies. In case the required materials / services are not available or the materials / services available with the manufacturers / agencies mentioned below do not meet the specifications (decision of the E-in-C in this regard shall be final & binding), the contractor shall obtain materials / services from the manufacturers / agencies approved by the E-in-C in writing.**

1. **LIST OF APPROVED MAKES / AGENCIES**

|  |  |  |
| --- | --- | --- |
| **S. N** | **Materials** | **Manufacturers / Agencies** |
| 1 | Ready mixed Concrete | Lafarge/RMC/RAMCO/ACC/Birla |
| 2 | Ordinary Portland Cement (Minimum 43 Grade) | UltraTech//RAMCO/India Cements/Birla/ ACC /Madras Cements |
| 3 | Steel Reinforcement/Structural Steel (Each LOT shall accompany manufacturer’s Test Certificate) | SAIL, TISCO, RINL, JINDAL or BIS approved manufacturers |
| 4 | Stainless Steel | Salem Steel or as approved by E-IN-C |
| 5 | White Cement | JK Cement, Birla White |
| 6 | Bricks, Stones slabs, Lime, Neeru Stone aggregate & River sand | Sample to be got approved by E-in-C before use |
| 7 | Vitrified Tiles | Nitco, Johnson, Naveen, Euro, Morbito, Somany |
| 8 | Flush doors | Kutty Flush Doors, Mysore Boards, Indian Plywood Mfg, Co, ‘KIT’ Ply’ brand or any BIS approved brand |
| 9 | Fire check steel doors | Godrej, Sukri, Pacific works controls |
| 10 | FRP Doors | Fibrevent, Techno skills or Equivalent (or as approved by E-IN-C) |
| 11 | Aluminium Fittings | Everite, Garnish, Crown Classic |
| 12 | Hydraulic floor Spring/ Door Closers | Everite, Garnish, Hardwyn |
| 13 | Aluminium Extruded Sections | Jindal, Hindalco, Indalco |
| 14 | Aluminium Doors/Windows | Fabricator to be approved by E-IN-C |
| 15 | Paints, Distempers | Jenson & Nicholson, Asian, ICI, Nerolac |
| 16 | Glazing | Float Glass of Modiguard or Saint Gobain |
| 17 | Water proofing Works | As approved by E-IN-C |
| 18 | Water Proofing Cement Paint | Showcem India, ICI, Nerolac |
| 19 | Ceramic Glazed Floor Tiles | Nitco, Johnson, Somany, Naveen |
| 20 | Super plasticizer | CICO, MC Bauchemie (India) Pvt Ltd, Roffes Construction Chemicals, Pedilite Industries, FOSROC |
| 21 | PVC Flooring | Armstrong |
| 22 | False Ceiling (a) Fibre  (b) Galvanized Steel  (c) Calcium Silicate | Armstrong, Gyproc or Equivalent  Armstrong, Gyproc, Hunter Douglass or Equivalent  Aerolite, Gyproc or Equivalent |
| 23 | Cast Iron Pipes/ Fittings (Soil Pipes) | BIC, HEP, NECO, Ajmera |
| 24 | RCC Pipes | Indian Hume Pipe Co, Spun Pipe Co.,  Sementia, CH Patel & Co or Equivalent |
| 25 | Stoneware Pipes & Fittings | Dalmia, Parry |
| 26 | Cast Iron Pressure Pipes & Fittings | Tisco, BRM, KESORM or Equivalent |
| 27 | GI Pipes (ISI marked) | TATA, Zenith, Jindal, Gujarat Steel, ITC |
| 28 | GI Fittings (ISI marked) | ‘R’ Brand KS/UNIK |
| 29 | Gunmetal Valves & Fittings | Premier/Leader/Zoloto/Sant/or with ISI mark |
| 30 | CI Sluice Valves, Check valves | IVC (Calcutta) Kirloskar/ Upadyaya/or with ISI mark |
| 31 | CP Brass Sanitary and water supply Fittings | Jaguar/Essess/SOMA/BILMAT/ Dripless or equivalent approved by E-In-C |
| 32 | Vitreous China Sanitary ware | Hindustan, EID Parryware/Cera/Neycer |
| 33 | WC Seats & Covers | Commander/Diplomat/Admiral |
| 34 | Polyethylene/Polypropylene cistern | Everlast/Flushflo/Esyflo/Challener/Champion/Commander, Marvel |
| 35 | CI Fixtures | Ashok Iron Works/Bombay Iron Works/A Husainji / Ismaelji or Equivalent approved by E-In-C |
| 36 | Stainless Steel Works | SP Fabricators, JINDAL ER Manda & Co or as approved by E-In-C |
| 37 | Curtain/Wall/Structural Glazing | Specialist Agency to be employed with Prior Approval of E-In-C |
| 38 | Plywood Products, Particle Boards & Veneers | Duroply (BWR) Century Plywood, Green Plywood, Kitply, Mysore Boards |
| 39 | Adhesive | Pidilite, Araldite |
| 40 | Plastic Laminates | Formica, Greenlam, Bakelite HYLAMylam |
| 41 | Powder Coatings | Berger/Nerocoat/Jenson & Nicholson |
| 42 | Tile Joint Filler | Bal Adhesives & Grouts, ”ROFFE” Rainbow Tile Mate, Silicon Sealant of GE Bayer /”Zentrival FM” of MC-Bauchemie (India) Ltd |
| 43 | Resin Bonded Glass Wool | Crown Fibre Glass/Rock lloyd or equivalent approved by E-in-C |
| 44 | MS Tubes | TATA or equivalent |
| 45 | Silicon Sealant | GE Bayer Silicone, SIKA |
| 46 | Anchor Fastener | Hilti, Bosch |
| 47 | Formwork Release Agent | Fosroc, MBT, MC Baucheme CICO, ADO Conmat |
| 48 | EPOXY | FOSROC. SIKA Qualcrete, Aradlite MBT |
| 49 | Water proofing System | CICO, FOSROC, SIKA, Supreme Siltech Chemicals, ADO Conmat |
| 50 | Stainless Steel Sinks | Prestige/AMC/Jayna/Kingston/Neelkanth |
| 51 | CP Waste, Spreaders for Urinals | Jaguar / Essess |
| 52 | Sensor based Auto Flushing System for Urinals | AOS Systems/Angash |
| 53 | SFRC Manhole Covers | KK/SK & Precast Concrete |
| 54 | UPVC Pipes/Fittings | Supreme/Prince/ Finolex |
| 55 | Mirror | Atul / Modifloat/Saint Gobain/Golden Fish |
| 56 | Water treatment plant | Aqua Clara, Aqua tech or Equivalent approved by E-In-C |

**LIST OF APPROVED MAKES FOR ELECTRICAL AND SUBSTATION ITEMS**

|  |  |  |
| --- | --- | --- |
| S. No | **Materials** | **Manufacturers / Agencies** |
| 1 | H.T.Panel | Crompton/ABB/Alsthom/Siemens/Ashok Leyland |
| 2 | Transformer | Crompton/kirloskar/Voltamp/Alsthom/(DRY, Cast Resin) / BHEL/ Universal |
| 3 | Bus trunking/Rising mains | (Along with all accessories) L&T /Schneider/GE/Control & Switchgear) |
| 4 | LT Panels | GE/BB/L&T/Simens/schneider |
| 5 | ACBs | Same as in (4) |
| 6 | MCCBs | Same as in (4) |
| 7 | MCBs with DBs | Legrand/Hager/Alsthom/Merlin/Gerin/  Havells/Standard/Indo-asian |
| 8 | Accessories of HT/LT Panels | As per manufacturer’s specified make |
| 9 | HT/LT UG cables | Cable corporation/Universal/Gloster/Havells/NICO /Polycab |
| 10 | Wiring cables | Polycab/Havells/RR Cables/Finolex |
| 11 | Switches (SFU) | GE/ABB/L&T/Siemens/Schneider |
| 12 | Modular Switches (SFU) | Legrand/Crabtree/Ess Esskay(signature)MK/clipsal/Northwest |
| 13 | Piano Type switches and Boxes | Anchor/Leader |
| 14 | Cubicle Type Fuse Unit | Siemens /GE/L&T/Siemens/Schneider |
| 15 | SFUs/Isolators | Siemens/GE/L&T/ABB/ schnEider |
| 16 | Starters / Contractor/Bi metal Relay | Siemens/L&T/ABB |
| 17 | Push Button/Indicating Lamps (LED type) | Siemens/L&T/ABB |
| 18 | CTs | Kappa |
| 19 | Control Fuse Base with HRC fuse | GEC / Alsthom |
| 20 | Selector Switch | Salezer |
| 21 | Measuring Instruments | AE/IMP/Rishab |
| 22 | MS Conduit | Supreme /BEC/NIL /or any Other ISI marked |
| 23 | PVC Conduit | Precision/Avon Plast/Clipsal |
| 24 | Accessories for PVC Conduit | Precision/Avon Plast |
| 25 | Capacitors | Universal / Siemens/L&T / GE |
| 26 | Relays | L&T/EE/GE |
| 27 | Digital Meters | Enercon/Alacrity/L&T |
| 28 | Jointing Kits | Rey Chem/3 Birla |

**LIST OF APPROVED MAKES FOR FIRE HYDRANT SYSEM**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Materials** | **Manufacturers / Agencies** |
| 1 | Diesel Engine | Kirloskar/Cummins |
| 2 | Fire Pumps | Kirloskar/Mather & Platt/Seimens |
| 3 | Electrical Motors | Kirloskar / Seimens |
| 4 | MS Pipes (‘C’ Class) | Tata / Zenith |
| 5 | Butterfly Valves | Intervalve / Audco/ Leader |
| 6 | BALL VALVE (15-40 mm Dia) | RB/ITAP/Leader |
| 7 | Sluice Valves | Kirloskar/Kalpana/UNIK’R’ Brand |
| 8 | Non-Return Valve-Flap Type Cast Iron | Intervalve/Audco |
| 9 | Hydrant Valves | Newage/Minimax/Peter Autokit |
| 10 | Hose | Newage Premier Extra /Padmini Aqua Dura |
| 11 | Fire Extinguisher | Safex/Minimax/Peter Autokit |
| 12 | Pressure Guage | HD/Waree/-GURU/Fiebig//HH-GURU/Fiebig |
| 13 | Pressure Switch | Danfoss/Indfoss |
| 14 | Termination Lugs | Dowells/Usha |
| 15 | PVC insulated Copper Wires | Finolex/Wincap/Polycab |
| 16 | Cables | Universal/CCI/Gloster |
| 17 | SFU’s/FSU’s | Ee/L&T/C&S |
| 18 | HRC Fuses | Havells/Ee |
| 19 | Over Load Relays | Ee/L&T |
| 20 | Single Phase Preventer | L&T/ Minilac |
| 21 | Indicating Lamps & Push Buttons (LED Type) | L&T /Technic |
| 22 | Air Break Contractors | Seimens/L&T/ABB |
| 23 | Sprinkler Head | HD/Tyco/Reliable/Fireasfe |
| 24 | Sprinkler Icv | HD/Tyco/Viking/Reliable/Fireasfe/Wormacd |
| 25 | Gunmetal Branch Pipe | Newage/Minimax/WINCO/Kailash |
| 26 | Threaded pipe fittings | R Brand/Unik |
| 27 | Air Release Valve | Rb/Tbs/Cimbrio |
| 28 | First Aid Hose Reel Drum | Minimax/Newage |
| 29 | First Aid Hose pipe | Padmini/Swastik/Usha Fire |
| 30 | Suction Strainer | Grandprix /Jaypee/Kirloskar/Leader |
| 31 | Battery | Exide/Amco |
| 32 | Pipe Protection | Pipe Kote (4mm Thick) |
| 33 | Pipe Support | Hi-Tech /Fabricated As per Site Conditions |
| 34 | Nozzle | Newage/Winco/Kailash |
| 35 | Foot valve (Gunmetal) | Neta/Leader |
| 36 | Foot Valve (Cast iron) | Kirloskar |

**Price Bid format**

|  |  |  |  |
| --- | --- | --- | --- |
| **Providing External Water Supply and sewage system at staff quarters-II,IV&V** | | | |
| **ABSTRACT** | | | |
| **SI.NO** | | **DESCRIPTION OF WORK** | **AMOUNT** |
| 1 | Bore well | |  |
| 2. | Pump room & tank | |  |
| 3. | External Water Supply Line | |  |
| 4. | External Sewage line | |  |
| 5. | Electrical & Mechanical work | |  |
|  | **TOTAL** | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Providing external water supply and sewage system to Staff Quarters II ,IV & V, for JIPMER Puducherry.** | | | | | |
| Sl.No. | **Description** | **Unit** | **Quantity** | **Rate in Rs. (In Figures& Words)** | **Amount in Rs.** |
|  | **CIVIL WORKS** |  |  |  |  |
|  | **Bore Well** |  |  |  |  |
| 1 | Drilling of borewell including transportation in alluvial soil sedimentary strata of clay, sand stone, shale, pebbles, boulders etc. By first taking a pilot bore of 216mm and then enlarging to required dia by direct or reverse rotary mud circulation method, including fuel, labor for drilling, bentonite mud, water required for drilling at the site, contruction of mud pit, using rotary rig. | Rm | 150 |  |  |
| 2 | Reaming from 216mm dia pilot bore to 312mm dia bore, upto 106 mts depth ending below ground level. | Rm | 150 |  |  |
| 3 | Reaming from 312mm dia pilot bore to 406mm dia bore, upto 106 mts depth ending below ground level. | Rm | 150 |  |  |
| 4 | Supplying of approved make UPVC plain casing pipe (IS 12818-1992) for borewell, with relevant amendments with class designation CM. Including transportation and stocking at site - 200mm dia. | Rm | 100 |  |  |
| 5 | Supplying of approved make UPVC ribbed screen slotted casing pipe (IS 12818-1992) for borewell, with relevant amendments with class designation CM. Including transportation and stocking at site - 200mm dia. | Rm | 50 |  |  |
| 6 | Supplying transportation and packing of 8mm/suitable size pebbles, including filling the annular space gradually complete. | cum | 24 |  |  |
| 7 | Supplying transportation and packing of clay balls, including filling the annular space gradually complete. | cum | 6 |  |  |
| 8 | Charges for developing the bore wells with air compressor. Including transportation, labor, and fuel charges for compressor. | Hours | 18 |  |  |
| 9 | Supplying and fixing of M.S top cover suitable for UPVC casing pipes. Including the cost of materials and labor etc. | Nos | 1 |  |  |
| 10 | Getting Approval from Ground Water authorizes and Geo Technical Investigation | LS |  |  |  |
|  | **Total for Bore well** |  |  |  |  |
|  |  |  |  |  |  |
|  | **PUMP ROOM AND TANK** |  |  |  |  |
| 11 | Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil | Cum | 313.38 |  |  |
| 12 | Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :1:4:8 (1 cement : 4 fine sand : 8 graded stone aggregate 40 mm nominal size | Cum | 13.7 |  |  |
|  |  |  |  |  |  |
| 13 | Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m. | cum | 8.58 |  |  |
| 14 | Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. (Note :- Cement content considered in this item is @ 330 kg/cum. Excess/ less cement used as per design mix is payable/recoverable separately). |  |  |  |  |
| a | All work upto plinth level | cum | 67.34 |  |  |
| b | All work above plinth level upto floor V level | cum | 29.36 |  |  |
| 15 | Extra for providing richer mixes at all floor levels. Note:- Excess/less cement over the specified cement content used is payable /recoverable separately. 5.34.1 Providing M-30 grade concrete instead of M-25 grade BMC / RMC. (Note:- Cement content considered in M-30 is @ 340 kg/ kg/cum) | cum | 96.7 |  |  |
| 16 | Centering and shuttering including strutting, propping etc. and removal of form for : |  |  |  |  |
| a | Foundations, footings, bases of columns, etc. for mass concrete | cum | 120 |  |  |
| b | Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc | cum | 485 |  |  |
| c | Suspended floors, roofs, landings, balconies and access platform /Shelves (Cast in situ) | cum | 145 |  |  |
| d | Lintels, beams, plinth beams, girders, bressumers and cantilevers | cum | 35 |  |  |
| e | Columns, Pillars, Piers, Abutments, Posts and Struts | cum | 65 |  |  |
| 17 | Brick work with common burnt clay modular bricks of class designation 5 in foundation and plinth in: |  |  |  |  |
|  | Cement mortar 1:6 (1 cement : 6 coarse sand) | cum | 15 |  |  |
|  |  |  |  |  |  |
| 18 | Brick work with common burnt clay modular bricks of class designation 5 above plinth level up to floor V level in all shapes and sizes in |  |  |  |  |
|  | Cement mortar 1:6 (1 cement : 6 coarse sand) | cum | 40 |  |  |
| 19 | Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level |  |  |  |  |
|  | Thermo-Mechanically Treated bars | kg | 13460 |  |  |
| 20 | Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level |  |  |  |  |
|  | Thermo-Mechanically Treated bars | kg | 7300 |  |  |
|  |  |  |  |  |  |
| 21 | 12 mm cement plaster of mix : |  |  |  |  |
|  | 1:6 (1 cement: 6 fine sand) | sqm | 150 |  |  |
| 22 | 15 mm cement plaster on rough side of single or half brick wall finished with a floating coat of neat cement of mix : |  |  |  |  |
|  |  |  |  |  |  |
|  | 1:4 (1 cement: 4 fine sand) | sqm | 572.4 |  |  |
|  |  |  |  |  |  |
| 23 | 6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand) | sqm | 60 |  |  |
| 24 | Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers | Per bag of 50 kg cement used in the mix | 700 |  |  |
|  |  |  |  |  |  |
| 25 | Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete. | kg | 500 |  |  |
| 26 | Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters. |  |  |  |  |
|  | 80x0.90 mm M.S. laths with 0.90 mm thick top cover | Sqm | 15 |  |  |
|  |  |  |  |  |  |
| 27 | Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position with hold fast lugs or with dash fasteners of required dia & length ( hold fast lugs or dash fastener). | cum | 1.5 |  |  |
|  | Sal wood |  |  |  |  |
| 28 | Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete. 40 mm thick with 20 mm nominal size stone aggregate | sqm | 68 |  |  |
| 29 | Finishing walls with water proofing cement paint of required shade : New work (Two or more coats applied @ 3.84 kg/10 sqm) | sqm | 500 |  |  |
| 30 | Providing and laying integral cement based water proofing treatmentincluding preparation of surface as required for treatment of roofs,balconies, terraces etc consisting of following operations: a) Applying aslurry coat of neat cement using 2.75 kg/sqm of cement admixed withwater proofing compound conforming to IS. 2645 and approved byEngineer-in-charge over the RCC slab including adjoining walls upto 300mm height including cleaning the surface before treatment. b) Laying brickbats with mortar using broken bricks/brick bats 25 mm to 115 mm sizewith 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed withwater proofing compound conforming to IS : 2645 and approved byEngineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5(1 cement :5 coarse sand ) admixed with water proofing compoundconforming to IS : 2645 and approved by Engineer-in-charge to requiredslope and treating similarly the adjoining walls upto 300 mm height |  |  |  |  |
|  | including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineerin-Charge : |  |  |  |  |
|  | With average thickness of 120 mm and minimum thickness at khurra as 65 mm. | sqm | 68 |  |  |
|  |  |  |  |  |  |
| 31 | providing fixing of Rungs of required nos as per instruction of Engineer In charge | LS |  |  |  |
| 32 | providing fixing of Puddle Flange of required nos as per instruction of Engineer In charge | LS |  |  |  |
| 33 | Pressure sand fillter | Nos | 2 |  |  |
| 34 | RCC Cover Slab | LS |  |  |  |
|  | **Total for Pump room & tank** |  |  |  |  |
|  |  |  |  |  |  |
|  | **External Water Supply Line** |  |  |  |  |
| 35 | Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil | Cum | 1166 |  |  |
| 36 | Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement ,trenching ,refilling & testing of joints complete as per direction of Engineer in Charge. External work 50 mm nominal outer dia Pipes | Rm | 1050 |  |  |
| 37 | Providing and fixing gun metal non-return valve of approved quality (screwed end) 50 mm nominal bore  Horizontal | Nos | 10 |  |  |
| 38 | Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) : 50 mm nominal bore | Nos | 10 |  |  |
| 39 | Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 300 mm dia. R.C.C. pipe 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete : | Rm | 80 |  |  |
|  | **Total for External Water Supply Line** |  |  |  |  |
|  | **External Sewage Line** |  |  |  |  |
| 40 | Providing and fixing PVC Soil, waste and vent pipe to IS: 13592 of SWR quality 4kg/sq.cm pressure rated upto 110mm dia and 6kg/sq.cm pressure rated agriculture series above 100mm, including all fittings, like EG: Bends, Tees, Elbows, Collars, junction, (including Earth work etc complete) |  |  |  |  |
| a | 160mm | Rm | 325 |  |  |
| 41 | Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty)455x610 mm internal dimensions, total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg): |  |  |  |  |
|  | With common burnt clay F.P.S.(non modular) bricks of class designation 5.0 | Nos | 11 |  |  |
| 42 | Inside size 120x90 cm and 90 cm deep including C.I. cover with frame (medium duty) 500 mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg) : |  |  |  |  |
|  | With common burnt clay F.P.S.(non modular) bricks of class designation 5 | Nos | 15 |  |  |
| 43 | Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design : |  |  |  |  |
| a | 150 x 100 mm size P type | Nos | 28 |  |  |
|  | **Total for External Sewage line** |  |  |  |  |
|  | **Electrical & Mechnical Work** |  |  |  |  |
|  |  |  |  |  |  |
|  | PUMP FOR DOMESTIC TANK |  |  |  |  |
| 44 | Supply Installation testing and commisioning of 5 HP submersible Motor pump(1 Main and 1 stand by pump)suitable for pumping from Under ground sump to Overhead tank with head upto 35 meters ,and delivery of 5LPS with dia 50mm delivery. The cost shall include CPVC pipe from suction to pump,NRV valves suably, Bypass valve suitable and CPC pump to nearest delivery approximately 1mtrs from tank with all accessories complete etc. | set | 3 |  |  |
| 45 | Supply Installation testing and commisioning of 3HP submersible Motor pump(1 Main and 1 stand by pump)suitable for pumping from Under ground sump to Overhead tank with head upto 35 meters ,and delivery of 5LPS with dia 50mm delivery. The cost shall include CPVC pipe from suction to pump,NRV valves suably, Bypass valve suitable and CPC pump to nearest delivery approximately 1mtrs from tank with all accessories complete etc. | set | 1 |  |  |
| 46 | Supply Installation testing and commisioning of CONTROL PANEL with starter for the pump from UG sump to over head tank. The panel shall work automatically with auto chage over from main pump to standby pump and also to control on/off according to the availabuility of water. The cost shall include wiring from sump to control panel and also the control cables. | NOS | 4 |  |  |
|  | PUMP FOR BORE WELL |  |  |  |  |
| 47 | Supply Installation testing and commisioning of suitable HP submersible Motor pump for pumping from borewell to Under Ground sump with head upto 200 meters ,and delivery of 10LPS with dia 25 mm delivery. The cost shall include CPVC pipe from suction to pump,pump to ug sump with suitable valves, NRV valves suablywith all accessories complete etc.(the cost shall include cabel also) | Set | 1 |  |  |
| 48 | Supply installation testing and commisioning of Control panel suitable for borewell and reservior complete in automation( Inclusive of all types of cables) | Set | 1 |  |  |
|  | WATER TREATMENT PLANT |  |  |  |  |
|  | Supply , installation testing and commissioning of following with all accessories complete etc. complete (inclusive of plumbing pipes , valve and accessories) |  |  |  |  |
| 49 | Feed Pump, 3EH3-40 , 3 HP, 3P, 50X40 mm ( 1W + 1S) - CRI Make | Nos | 2 |  |  |
| 50 | Dosing Pump ( 1W + 1S) make - I Dose/UKL | Nos | 2 |  |  |
| 51 | Dosing Tank 200 Liters Capacity | Nos | 1 |  |  |
| 52 | Hypo in Liters | Nos | 50 |  |  |
| 53 | PSF & ACF - Vessel  36 72, Top & Bottom Distribution, Vacuum Beaker and 2" MPV - Make Aventura | Nos | 2 |  |  |
| 54 | PSF Media in Lot ( Pebbles, Silex, Fine sand ) | Nos | 1 |  |  |
| 55 | ACF Media in Lot ( Pebbles, Silex, Activated Carbon ) | Nos | 1 |  |  |
| 56 | Micron Cartridge with Housing - 20" Jumbo, Spun,  - 5 micron, | Nos | 3 |  |  |
| 57 | Pressure Gauges | Nos | 3 |  |  |
| 58 | Floty   5 meter | Nos | 2 |  |  |
| 59 | Electrical Panel ( OLR) | Nos | 1 |  |  |
| 60 | UV - ECS 150 R \_ Alfaa | Nos | 1 |  |  |
|  | **Grand Total** |  |  |  |  |
|  | **GRAND TOTAL** |  |  |  |  |
|
|