

**ALL INDIA INSTITUTE OF MEDICAL SCIENCES  
NEW DELHI**

**TENDER**

**FOR**

**PROVIDING  
OPERATION & MAINTENANCE SERVICES  
AT  
CONVERGENCE BLOCK  
OF  
ALL INDIA INSTITUTE OF MEDICAL SCIENCES  
NEW DELHI**

**CONSULTANT  
HSCC (INDIA) LTD  
(A GOVERNMENT OF INDIA ENTERPRISE)  
Plot No. 6-A, Block-E, Sector-1, NOIDA (U.P.) – 201 301  
PHONE: 0120-2540153      FAX: 0120-2542447  
URL: <http://www.hsccltd.co.in>**

All India Institute of Medical Sciences (AIIMS)  
New Delhi

Tender No. HSCC/MAINT/ AIIMS/PCT/2016

Dated: 10.03.2016

**NOTICE INVITING TENDER (NIT)**

All India Institute of Medical Sciences, New Delhi through HSCC (India) Ltd invites sealed tenders, from eligible contractors/ firms for providing Operation and Maintenance Services for the following works:

Sl. No	Name of Work	Estimated Cost (Rs.)	EMD (Rs.)	Period of Completion	Sale of Tender	Date of Submission & Opening of bid.
1.	Operation & Maintenance of services at Convergence Block, AIIMS, New Delhi.	26.50 Lakhs	53,000/-	6 Months	11.03.16 to 21.03.16 Upto 13:00 Hrs	21.03.16 by 15:00 Hrs & opening of bid 21.03.16 at 15:30 Hrs

For details in regard of eligibility, bid security, purchase & submission of tender document, please refer HSCC website [www.hsccltd.co.in](http://www.hsccltd.co.in) & Institute website [www.aiims.edu](http://www.aiims.edu) or [www.eprocure.gov.in](http://www.eprocure.gov.in) Pre bid meeting shall be held on 15.03.2016 at 11:00 Hrs in the office of HSCC (India) Ltd, E(6) A, Sector-1, Noida-U.P and bids shall be submitted at the office of HSCC as above.

Prospective bidders are advised to regularly scan through HSCC website as corrigendum/ amendments etc, if any, will be notified on the company's website and separate advertisement will not be made for this.

Director,  
All India Institute of Medical Science,  
Ansari Nagar, New Delhi

## **NOTICE INVITING TENDER**

**All India Institute of Medical Sciences  
Ansari Nagar, New Delhi**

### **INVITATION OF BIDS FOR OPERATION & MAINTENANCE OF SERVICES AT CONVERGENCE BLOCK, AIIMS- New Delhi.**

Sealed Offers under two bids system are invited from eligible contractors for providing Repair and Maintenance Services listed in this bid document for 6 months..

Details of the works for which tenders are invited are:

- a) HVAC system– Annexure –A
- b) Electrical works– Annexure - B
- c) PHE, Firefighting System/ Plumbing System – Annexure –C
- d) Civil Works.

The total area involved is approximately 18000Sq.m.

The site for the work is available and can be seen on any working day during office hours.

#### **Pre Bid Meeting:**

A pre bid meeting shall be held on 15.03.2016 at 11:00 Hrs to clarify issues connected with the tender. Prospective tenderer are invited to attend.

AIIMS/HSCC reserves the right to accept or reject any/ all application without assigning any reasons thereof.

#### **Bid document**

Tender documents for invitation of bids for operation and Maintenance works can be obtained from 11.03.2016 to 21.03.2016 during working hours from 1000hrs. to 1630 hrs. (but up to 1300 hrs. on 17.03.2016) on all working days on payment of a non refundable cost of Tender of Rs. 1000/- in the form of a Demand Draft/Banker's payable to "HSCC (India) Limited" payable at New Delhi / Noida.

Tenderer may also download the tender enquiry documents from the web site [www.hsccltd.com](http://www.hsccltd.com), [www.aiims.edu](http://www.aiims.edu) or [www.eprocure.gov.in](http://www.eprocure.gov.in) and submit its tender by utilizing the downloaded document, along with the required non-refundable fee as mentioned above. The tenderer must submit the above-mentioned tender document fee along-with its tender failing which the tender submitted by the tenderer shall be ignored.

The last date of submission of Tender is 21.03.2016 by 3.00 P.M.

The Tender shall be opened in the presence of the Tenders who choose to be present on the same date at 3.30 PM.

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## **INSTRUCTIONS TO THE TENDERERS**

1. Sealed offers under two bids system in the prescribed forms are invited from eligible tenderers for providing Operation and Maintenance services detailed in this bid document for a period of 6 months.
2. The amount of earnest money deposit (EMD) shall be Rs. 53,000/- (Rupees fifty three thousand only) in the form of DD/Pay Order from a scheduled bank drawn in favour of HSCC(I) Ltd. payable at New Delhi/ Noida.
3. Tender form shall be complete in all respect. **Incomplete tenders or tenders without E.M.D shall be treated as invalid.**
4. Last date of submission of tender is 21.03.2016 upto 15.00 Hrs
5. Date and time of opening of tender is 21.03.2016 at 15.30 Hrs.
6. Each and every page of the tender documents should bear the stamp and signature of the authorized representative. Format I & II enclosed shall be filled without exception. The tenderer shall also enclose the latest Income Tax Clearance Certificate and proof of VAT/works Contract Tax Registration where applicable.
7. The rates for each and every item shall be quoted in Figure and words. In case of any discrepancy in rates, the rates written in words shall prevail.
8. The envelope containing tender document shall be sealed and bear the name of work and the name and address of the tenderer.
9. The Competent Authority of AIIMS/ HSCC (I) Ltd., reserves the right to accept or reject any tender or all tender without assigning any reason.
10. Conditional tenders are liable to be rejected.
11. The tender for the work shall remain open for acceptance for a period of sixty days (60) from the date of opening of tender,
12. These instructions shall form a part of the contract document.
13. The EMD of unsuccessful tenderers shall be refunded within one month after the award of work to the successful tenderer.
14. Rates quoted shall be firm and fixed and are inclusive of cost of manpower, material, machinery, tools and plant consumable etc., complete and include all taxes (including service tax), duties and levies, insurance etc. no escalation of whatsoever nature shall be payable.

**15. Eligibility criteria:**

The applicant should meet the following minimum criteria for prequalification:

1. The Experience should be in the name of bidding company and not in the name of subsidiary/ associate/ group company etc.
2. Experience of having successfully completed work either from A or B during last seven years ending last day of month previous to one in which applications are invited.
  - A. Construction of One building along with associated works such as electrical, HVAC, Fire Fighting, Plumbing etc. of value not less than 50 crores.

OR

- B. Having experience of operation / Maintenance of services such as electrical, HVAC, Fire Fighting, Plumbing etc
  - (i) One similar completed work of value not less than the amount equal to 80% of estimated cost
  - (ii) Two similar completed work of value not less than the amount equal to 50% of estimated cost
  - (iii) Three similar completed work of value not less than the amount equal to 40% of estimated cost

Further, the agency should have in the past 3 years satisfactory completed, at least one order of similar nature of value **not less than 40%** of the estimated cost of work in Central Government/ State Government/Public Sector Undertakings/Government Autonomous bodies.

3. The tenderer should have substantially in house manpower to cover requirements of Formats III.
4. Average Annual financial turnover during the last 3 financial years should be at least 75% of the value of work to be executed (copies of balance sheets signed by CA to be submitted).

The successful tenderer would be required to establish its office within the site of the work in the space provided by the AIIMS.

16. **Submission of bids:** proposals should be submitted in two separate envelopes namely, 'Technical Bid' (Part A) and 'Financial Bid' (Part B). The technical and financial bids duly sealed in separate envelopes must be kept inside a single third envelope and clearly superscribed as "Operation and Maintenance Work of CONVERGENCE Block at AIIMS". The inner envelopes should be clearly marked as 'Technical Bid' (Envelope-I) and 'Financial Bid' (Envelope-II). This third envelope shall also contain the EMD.
17. **Evaluation of Technical Bids:** Bids received and found valid will be evaluated by the HSCC (I) Ltd. to ascertain the best-evaluated bid for the complete work/services. The tenderer should take care to submit all the information sought in prescribed formats.
- a. Firm's relevant experience and strength – Profile of agency, registration details, experience of similar works, annual turnover, total manpower employed.
  - b. Qualification/Related experience.
18. **Financial Bid:** The financial bid of the tenderers, whose technical bid is found to be suitable, will be opened in the presence of the tenderers, who choose to attend the opening of financial bid. Minimum two-day notice will be given to tenderer for this purpose.
19. **Award of work:**
- i. The selection of the agency will be at the sole discretion of the HSCC/AIIMS who reserve the right to accept or reject any or all the tenders without assigning any reason.
  - ii. The contract for the Operation and Maintenance shall be awarded to the qualified responsive tenderer who has quoted lowest.
  - iii. Upon evaluation of offers the notification on award of contract will be intimated to the successful tenderer.

20. Duly filled tender documents shall have to be submitted by hand delivery/courier to at the following address:

Chief General Manager  
HSCC (India) Ltd.  
E – 6A, Sector - 1  
Noida , U.P. 201 301.

21. Delay/Late tenders for whatever be the reason will summarily be rejected and returned unopened.



**TECHNICAL BID (PART A)**

**Format I**

**BRIEF DESCRIPTION OF THE FIRM**

(with an outline of the experience of the firm for similar works during last three years)

- a) Name of the firm.
- b) Year of registration.
- c) Type of firm (Individual/Proprietary/Limited Company or any other)
- d) In house facilities available in following fields.

**A. For Construction**

S.No.	Fields	Manpower with more than 10 years experience	Manpower with 5 to 10 years experience	Manpower with lesser than 5 years experience
1.	Mechanical Work			
2.	Pipe work & water supply etc.			
3.	Electrical works			
4.	HVAC System			

**B. For Maintenance**

S.No.	Fields	Manpower with more than 10 years experience	Manpower with 5 to 10 years experience	Manpower with lesser than 5 years experience
1.	Mechanical Work			
2.	Pipe work & water supply etc.			
3.	Electrical works			
4.	HVAC System			

## Format II

### EXPERIENCE OF COMPANY

(Experience of relevant and similar work of Maintenance of Mechanical works / PHE System/ Electrical works/ Ventilation System/ Horticulture Operations construction, pipe laying/annual Repair and Maintenance completed during last three years preceding February, 2016 and on going works) Use separate sheet for each work.

1.	Project title & Location:	
2.	Name of the Client and Address:	
3.	Describe area of Participation (Specific Work done/Services rendered by the applicant)	
4.	Period of Work Done/Services rendered for the project	
5.	Total cost of work/AMC cost	
6.	Date of start of the work and the present status	
7.	Any other details	

#### NOTE::

Supporting documents like certificates from the client in support of each of the above projects alongwith contact details e.g. name, mobile no. etc. to be furnished.

**Format III**

**MANPOWER DEPLOYMENT SCHEDULE**

**A. The following minimum skilled manpower is to be deployed in daily shifts as mentioned against each:**

S.N.	Designation	Number of person				
		G shift	A Shift	B Shift	C Shift	Total
<b>1</b>	<b>HVAC Works</b>					
	J.E./ Supervisor (Mech.)	1	0	0	0	1
	Operator cum mechanic	0	1	1	1	3
	Electrician	0	1	1	1	3
	Helper	1				1
<b>2</b>	<b>Electrical Works</b>					
	J.E./Supervisor (Electrical)	1	0	0	0	1
	Electrician cum DG Operator	0	1	1	1	3
	Lift Operator	0	1	1	0	2
	Technician	1	0	0	0	1
<b>3</b>	<b>Fire Fighting and Plumbing</b>					
	Operator	0	1	1	1	3
	Helper (common for sub-head 2 and 3)	0	1	1	1	3

**Note:-** Only licenced / certified electricians/operators shall be deployed. Preferably the other skilled worker deployed shall also be licenced/certified.

The above mentioned man power is bare minimum which contractor has to deploy at site, however if the system demands more than the contractor has to deploy the more manpower as per the requirement.

All the above staff of the contract shall wear uniform and badges identifying their category and name in English and local language.

- General (G) Shift (9.00AM to 5.00PM)
- Morning (A) Shift (6.00AM to 2.00PM)
- Second (B) Shift (2.00PM to 10.00PM)
- Night ( C) Shift (10.00PM to 6.00AM)

**FINANCIAL BID (PART B)**

**Name of work: Operation & maintenance of services at PC Teaching Block, AIIMS-  
New Delhi.**

**BILL OF QUANTITIES**

**A. Lumpsum Items**

<b>S.No.</b>	<b>Description of Items</b>	<b>Unit</b>	<b>Qty.</b>	<b>Rate</b>	<b>Estimated Cost (Rs.)</b>
1.0	<b>Plumbing works And Services</b>				
1.1	Daily Operation of Fire Fighting Systems & Water supply Pumps:				
1.1.1	Operation of Fire Fighting System with requisite manpower as per instruction of engineer-in-charge including all consumables, services of diesel engine & change of oil, refills for the fire extinguishers etc. required for proper functioning of the system & maintaining the record for the same, complete in all respect as per statutory requirement and as directed by Engineer incharge. Manpower as per Format III. ( Refer - Annexure –C)	Per month	6		
1.1.2	Daily operation of pumps, tubewell, Panel, water Drainage, RO& Water treatment plant, Backwashing of Filters, Regeneration of Softner resin ion, Pump chemical required for Softner, Replacement of RO membrane & filter cartridge, Cleaning of Solar Panels, replacement of insulation if any required, Solar water Heating	Per month	6		

	<p>system, Water supply pumps, U.V drainage pumps and system cutter pumps etc. Agency will maintain minimum requisite manpower including material &amp; allied systems for requirement of the same as per instruction of engineer-in-charge &amp; all consumables etc. required for proper functioning of the system &amp; maintaining the record for the same including AMC for RO, Solar, Filtration &amp; Softner system complete in all respects as defined in various clauses of the tender document. Manpower as per Format III. (Refer – Annexure-C)</p>				
2.0	HVAC System				
2.1	<p>Day to day Operation and Maintenance in three shifts including Minimum manpower as per specifications, materials, spares, consumables, tools, equipments and personals for operation and maintenance (routine, preventive and breakdown) of entire HVAC System complete comprising of water cooled chillers, pumps and motors, cooling towers, hot water generators, AHUs, FCUs, Exhaust fans piping networks, filters, valves, strainers , insulations, duct work systems , air devices, control dampers, fire dampers and various electricals panels with their accessories (including associated switchgears) complete as per specifications, standard Operation and Maintenance manuals of equipments and standard practices. (Refer Annexure-A)</p>	Per month	6		
3.0	Electrical Works				
3.1	Operation charges for following system through deployment of qualified manpower as per	Per month	6		

	suggested minimum manpower chart. The charges will be all inclusive. (Refer Annexure –B)				
3.1.1	Round the clock operation of electrical sub-station, DG sets, Lifts, FDA &PA, EPBAX etc. through minimum defined manpower in Format III.				
3.2	Annual maintenance. The AMC will be done by OEM or his authorized service provider. The bidder is required to quote the annual cost of the AMC.				
	Charges for the AMC:				
	DG Set				
	Maintenance during period including all B Check material, labour etc. for 500 KVA DG Set (Make Greaves Power) including AMF cum Synchronization panel, day tank and associated pumps pipe lines, power & control cable , acoustics enclosure, heat exchanger etc. complete including <b>One 'B'</b> checks as per the manufacturer's recommendations/ requirements.	NOS.	2		
4.0	Civil works				
4.1	Supply of unskilled labours	Man days	25		
4.2	Supply of skilled labours i.e. ( mason etc. )	Man days	25		
	<b>Total (In Figures)</b>				

**Total (in words)** \_\_\_\_\_

**Note:-**

- (i) Diesel to be supplied free of cost by AIIMS, Log book to be maintained by the contractor.
- (ii) The Contractor shall maintain an inventory and use common parts/ materials which are required for the work the cost of which is included in the above item.
- (iii) The rates quoted for skilled/unskilled labour under sl.no. 4 above should also include small quantities of material required for minor repair/rectification works.

- (iv) In the case of absence of any of the above mentioned workers under format III without providing suitable replacement, an amount of Rs 600 per day shall be recovered as liquidated damages per person per day of absence.



## **GENERAL CONDITIONS OF CONTRACT**

### Definitions and Interpretation

#### **1. Definitions**

(a) In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:

- i) "Employer" means the AIIMS and the legal successors in title to AIIMS.
- ii) "Engineer" means the person appointed by AIIMS/HSCC to act as Engineer for the purposes of the Contract.
- iii) "Contractor" means an individual or firms (proprietary or partnership) whether incorporated or not, that has entered into contract (with the employer) and shall include his/its heirs, legal representatives, successors and assigns. Changes in the constitution of the firm, if any shall be immediately notified to the employer, in writing and approval obtained for continued performance of the contract.

(b) i) "Contract" means these conditions, the Specification, the Bill of Quantities, the Tender, the Letter of acceptance, the Contract Agreement (if completed) and such further documents as may be expressly incorporated in the Letter of Acceptance or Contract Agreement (if completed).

ii) "Specification" means the specification of the Works included in the Contract and any modification thereof.

iii) "Drawings" means all the completion drawings, calculations and technical information of a like nature provided by the Engineer to be Contractor under the Contract and all drawings, calculations, samples, patterns, models, Repair and Repair and Maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Engineer.

- iv) "Bill of Quantities" means the priced and completed bill of quantities forming part of the Tender.
  - v) "Tender" means the Contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance. The word Tender is synonymous with "Bid" and the words "Tender Documents" with "Bidding Documents".
  - vi) "Letter of Acceptance" means the formal acceptance of the tender by AIIMS/HSCC.
  - vii) "Contract Agreement" means the contract agreement (if any) referred to in (b) (i) above.
  - viii) "Appendix to Tender" means the appendix comprised in the form of Tender annexed to these Conditions.
- (c)
- i) "Commencement Date" means the date upon which the Contractor receives the notice to commence the works.
  - ii) "Time for Completion" means the time period for which the contract of Repair and Operation and Maintenance has been awarded by the employer to the contractor.
- (d)
- "Taking Over Certificate" means a certificate issued by employer evidencing successful completion of the awarded work.
- (e)
- i) "Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract.
- (f)
- i) "Work" means the Work to be executed in accordance with the contract.
  - ii) "Site" means the places provided by the Employer for Operation and

Maintenance Services.

- iii) “Cost” means all expenditure properly incurred or to be incurred, whether on or off the Site, including over head and other charges but does not include any allowance for profit.

## **ENGINEER**

### **2. Engineer’s Duties and Authority**

- (a) The Engineer shall carry out the duties specified in the Contract.

### **3. Custody and Supply of Drawings and Documents**

The Drawings shall remain in the sole custody of the Employer/Engineer, but copies as required thereof shall be provided to the Contractor free solely for the purpose of this contract.

### **4. Sufficiency of Tender**

The Contractor shall be deemed to have based his Tender on the data made available by the Employer and on his own inspection and examination of this site conditions.

### **5. Contractor’s Employees**

The Contractor shall provide on the Site qualified and experienced technical staff in connection with the Operation and Maintenance of the Works and the remedying of any defects therein.

### **6. Engineer at Liberty to Object**

The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in

the proper performance of his duties, or whose presence on Site is otherwise considered by the Engineer to be undesirable, and such person shall not be again allowed upon the Works without the consent of the Engineer. Any person so removed from the Works shall be replaced as soon as possible by a qualified person approved by the Engineer.

## **7. Safety, Security and Protection of the Environment**

The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein:

- i) Have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons, and
- ii) Provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Engineer or by any duly constituted authority for the protection of the Works or for the safety and convenience of the public or others, and
- iii) Take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods.

## **8 Damage to Persons and Property**

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of :

- (a) death of or injury to any person, or
- (b) loss or damage to any property (other than the Works):

Which may arise out of or in consequence of the Operation and Maintenance of the works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof.

**9. Accident or injury to Workmen**

The Employer shall not be liable for or in respect of any damages or compensation payable to any workman for death or injury resulting from any act or default of the contractor. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation and expenses whatsoever in respect thereof or in relation thereto.

**10. Evidence and Terms of Insurance**

The Contractor shall take out appropriate insurance to cover workers and staff employed by him fully. The contractor shall provide evidence to the Engineer/Employer as soon as practicable after the respective insurance have been taken out but in any case prior to the start of work at the Site that insurance required under the Contract have been effected.

**11. Compliance with Statutes, Regulations**

The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provision of:

- (a) Any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the operation and Maintenance Work.
- (b) The rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works, and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for

breach of any such provision.

- (c) Any changes required for approval due to revision of the local laws.

**12. Time for Completion**

The Operation and Maintenance work shall be for a period of **six months** or as mentioned in the letter of commencement and shall start from the date issue of letter commencement and shall stand terminated after the expiry of one year.

**13. Extension of Time**

The Operation and Maintenance contract may be extended on the written mutual consent of both Employer and Contractor for a further period of six months. However, employer reserves its right to terminate the Operation and Maintenance and Maintenance contract by giving 15 days notice at any time during the currency of the contract if the services of the agency are not satisfactory as per the opinion of employer or its representative.

**14. Defect Identification and its rectifications**

The Contractor shall immediately attend the defects and complaints noticed at site. The Contractor shall provide and develop a system for regular Operation and Maintenance of all the services which includes defects identifications and its immediate rectification so, that services are not effected. It shall be the sole responsibility of the Operation and Maintenance agency that all the services are kept in functional condition round the clock during the currency of the contract.

**15. Liquidated Damages for Delay**

If the Contractor fails to attend any complaint or defect in the response time indicated in Annexure – D due course of time and if in the opinion of engineer delay is on the part of Operation and Maintenance agency, the employer can impose liquidated damages on the contractor as detailed in the particular conditions.

**16. Contractor's Failure to Carry out Instructions**

In case of default on the part of the Contractor in carrying out Operation and Maintenance the Employer/Engineer shall be entitled to employ and pay other persons to carry out the same and if such work, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor.

**17. Instructions for Variations – Deleted**

**MEASUREMENT**

**CERTIFICATES AND PAYMENTS**

**18. Monthly Statements**

The Contractor shall submit a bill in 3 copies to the Engineer by 7<sup>th</sup> day of each month for the work executed up-to the end of previous month in tabulated form approved by the Engineer, showing the amounts to which the Contractor considers himself to be entitled. The bill must be supported with the following documents:-

- (a) Certified bill of work done..
- (b) Details of defects/complaints attended and rectified within time.
- (c) Details of complaints attended late.
- (d) Test certificates of materials used and tests carried out for quality control as required by the specifications and the Engineer.
- (e) Attendance details of the manpower deployed during the month.

**19. Deduction of Income Tax**

The amount to be deducted towards the advance income tax shall be at the rate

applicable.

**20. Monthly Payments**

The Contractor shall submit monthly bill complete in all respects by the 7<sup>th</sup> day of each month. The Engineer shall clear the bill and certify due amounts for payment within 15 days.

**21 Retention Money**

Retention money @ 10 % (ten percent) shall be deducted from each monthly bill subject to the maximum of 5% (Five Percent) of the contract price after approval by engineer. 50% of the total retention money will be released after successful completion of 6 months maintenance & balance 50% will be released within one month thereafter.

**22. Performance Guarantee**

Within two weeks of award of work, the Contractor shall submit a Performance Security equivalent to 5% of the contract value for proper performance of the Contract in the format enclosed as Enclosure III.

The performance guarantee shall be valid for the duration of the contract period plus 60 days.

The performance security can be encashed by the Employer to recover any amount which is payable by the Contractor to the Employer on any account for a cause arising out of the contract.

**23. Correction of Certificates**

The Engineer may by any Interim Payment Certificate make any correction or modification in any previous Interim payment Certificate which has been issued by him, and shall have authority, if any work is not being carried out to his satisfaction, to omit or reduce the value of such work in any Interim Payment Certificate.



**24. Final Certificate**

Within 28 days after receipt of the Final Statement, and the written discharge, the Engineer shall issue to the employer (with a copy to the Contractor) a Final Certificate stating:

- (a) The amount which, in the opinion of the Engineer, is finally due under the Contract, and
- (b) After giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled under the Contract.

**25. Default of Contractor**

25.1 If the performance of the contract and is not satisfactory and not corrected within 15 days of receiving notice, then employer shall be at liberty to terminate the contract and get the work executed through other means at the risk and cost of the Contractor.

25.2 In the event of termination of the contract, employer shall be at liberty to get balance work done at the risk and cost of the contractor and due payment of the contractor, if any, shall be released after the completion of whole of the works.

**26. Amicable Settlement of Dispute**

The party shall use their best efforts to settle amicably all disputes arising out of or in connection this contract or the interpretation thereof.

**27. Arbitration**

Any dispute and differences relating to the meaning of the specifications, designs, drawings and instructions herein before mentioned and as to the quality of workmanship of materials used in 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 or these

conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof in respect of which amicable settlement has not been reached shall be referred to the Sole Arbitration of the Chief Engineer, AIIMS who shall proceed as per the Arbitration Act, 1996.

27.1 The work under the contract shall continue, during the Arbitration proceedings.

27.2 The award of the Arbitrator shall be final, conclusive and binding on both the parties.

## **PARTICULAR CONDITIONS OF CONTRACT**

- CPWD specifications shall be followed. Where not available, BIS/ Engineering practice as directed by the Engineer shall be followed.
- Complaints shall be made in the format (Enclosure-I).
- A complaint register (format at Enclosure-II) shall be maintained in the Repair and Maintenance Office of the contractor in which all complaints received shall be documented.
- Formats of Performance Guarantee and Contract Agreement are at Enclosure III and IV respectively
- All Repair and Maintenance related complaints shall be attended to within times specified in Annexure-D failing which a recovery of Rs. 100 per event per hour shall be made from the subsequent payment certificate of the contractor.
- The Sewer man shall ensure that all lines are maintained in a clean condition by carrying out preventive cleaning of all lines at least once each month.
- As the work will have to be carried out in building and area in use the contractor shall ensure:-
  - a) That the normal functioning of AIIMS activity is not effected as far as possible.
  - b) That the work is carried out in an orderly manner without noise and obstruction to flow of traffic.
  - c) That all rubbish etc. is disposed off at the earliest and the place is left clean and orderly at the end of a each days work.
  - d) The Contractor shall ensure that his Repair and Maintenance staff is qualified and licensed for their part of work. He shall be responsible for their conduct. The staff should behave in a courteous manner. The contractor shall be held responsible for any loss or damage to AIIMS property.
- The contractor shall ensure safety of his workers and others at site of work and shall be responsible for any consequence arising out of execution of the Repair and Maintenance work.
- When instructed to do so, the contractor shall ensure proper record keeping and storing of irreparable/dismantled material.
- Water and electricity shall be made available free of cost at near by source of work. The contractor has to make his own arrangement for use of the same including drawing temporarily lines etc. The responsibility for following relevant rules, regulations and laws in this regard shall be entirely that of the contractor.
- No residential accommodation shall be provided to any of the staff engaged by the contractor. The contractor shall also not be allowed to erect any temporary set up for residence of his staff in the campus.
- The Supervisor(s) who are employed by the Contractor shall be present at the site from 9:00 AM to 5:00 PM on all working days and shall carry mobile telephone(s) to enable the Engineer to have easy and quick communication. Nothing extra shall be paid to the contractor on this account and his quoted rates for various items under this contract will be inclusive of this obligation.
- Staff employed by the contractor shall be well behaved, Polite & courteous. Any complaint against staff on behaviour shall be taken very seriously and such staff shall be replaced by the contractor on demand from Engineer. The decision of Engineer shall be final and binding in this case.

- Contractor shall be fully responsible for any damages caused to any property by him or his staff in carrying out the work and the same shall be rectified by the contractor at his own cost.
- VAT/WCT/Income Tax/other taxes as applicable shall be recovered from the contractor's bill.
- Chases, holes & drilling works etc. shall be done using only power operated tools.
- The contractor will maintain attendance records of the staff which can be checked by the Engineer or his officers as & when required
- The following facilities shall be made available to the agency:-
  - A Suitable Space for use as Complaint/Service Centre by the Contractor.
  - All furniture etc required for contractor's staff shall be arranged by the contractor at his own cost.
  - Electricity/Water connection
  - The Contractor shall restore back the premises and other articles provided by the Employer to the contractor at the time of closure of the contract in good condition.

## **ADDITIONAL PARTICULAR CONDITIONS OF CONTRACT**

For the services to be operated and maintained by the Contractor for which lump-sum amounts have been quoted, the following shall apply:-

### **Operation of HVAC system:**

The plant/Air-conditioners shall be taken over by the Contractor after recording the total no. of plant and equipments and Air Conditions in each location and their make, model, running condition etc. The same shall be maintained and run by the Contractor for the contract period providing all required inputs and including all operational staff and manpower complete.

After completion of the maintenance period, the same shall be handed over back to AIIMS in the same condition in which they were taken over, normal wear and tear accepted.

### **Fire Fighting and Alarm System:-**

The systems, equipments etc. shall be taken over recording the details of the fire fighting and alarm system and their running conditions. During the operation period, the same shall be maintained by the Contractor providing all material, labour and T&P etc. required. The same shall be maintained to the satisfaction of the concerned statutory authorities and clearances obtained from them as per requirements. The systems shall be handed over in the same conditions as it was taken over, normal wear and tear accepted.

### **Operation and Maintenance of Sub-stations, Pumping systems and DG sets etc.:**

All the above plant and equipments etc. shall be taken over after recording the complete details of make, date of manufacture etc. including their running conditions.

During the contract period, the same shall be operated and maintained by the Contractor including supply of all spares, materials, labour, T&P etc. and including consumables like Engine oil, transformer oil etc. complete. The maintenance and operation shall meet all the requirements of the concerned statutory authorities. At the end of the Contract Period, the equipment/system shall be handed over back to AIIMS, in the condition in which they were taken over, normal wear and tear accepted.

Renewal of License from Lift Inspector / Electrical Inspector and AMC of Lifts shall not be in the scope of bidder.

### **NOTE:**

All breakdowns/faults shall be attended to immediately and rectified promptly.

Only genuine/original spare parts shall be used while carrying out the maintenance work.

Any major repair involving overhaul of engine, rewinding of motors, replacement of major components like compressor etc. is excluded from the scope of work and shall be paid for on actuals. However, if the repairs/replacement arises out of negligence of the Contractor or his staff, the same shall be carried out by the Contractor at his own cost. Prior approval of the Engineer is to be obtained for any such major repair/replacement.

The Contractor shall depute qualified and experienced staff for running and maintenance of the Systems/Equipments.

The Contractor shall follow all instructions conveyed to him by the concerned AIIMS officials regarding maintenance of the above.

**COMPLAINT REGISTRATION FORM**

Date  
Time  
Nature of complaint

Complainant: \_\_\_\_\_  
Signature : \_\_\_\_\_

Complaint attended.

Date

Time                                      From                                      To

Certified that the complaint has been satisfactorily attended.

Contractor                                      Complainant

Date

To be submitted along with running bills.

**MAINTENANCE COMPLAINT REGISTER**

S.No.	Date & Time	Complainant	Nature of complaint	Complaint attended Date & Time	Remarks	Signature of Contractor



**PROFORMA FOR PERFORMANCE BANK GUARANTEE**

(On a stamp paper of appropriate value from any Nationalised Bank or Scheduled Bank)

To,

M/S HSCC (India) Ltd.  
Plot No. 6 (A), Block E, Sector – 1,  
NOIDA -201301

Dear Sir,

In consideration of the All India Institute of Medical Sciences(AIIMS), New Delhi (hereinafter called 'Employer') which expression shall include his successor and assignees represented by his Consultant, M/s. HSCC (India) Ltd., Plot No. 6(A), Block – E, Sector - 1, Noida, Uttar Pradesh – 201 301 (hereinafter called HSCC) having awarded to M/s. \_\_\_\_\_ (hereinafter referred to as the said Contractor or 'Contractor' which expression shall wherever the subject or context so permits include its successors and assignees) a Contract No \_\_\_\_\_ in terms inter alia, of the \_\_\_\_\_ Letter No. \_\_\_\_\_ dated \_\_\_\_\_ and the General Conditions of Contract and upon the condition of the Contractor's furnishing Security for the performance of the Contractor's obligations and discharge of the Contractor's liability under and in connection with the said Contract upto a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) amounting to \_\_\_\_\_ percent of the total Contract value.

1. We, \_\_\_\_\_ (hereinafter called 'The Bank' which expression shall include its successors and assignees) hereby jointly and severally undertake to guarantee the payment to the Employer in rupees forthwith on demand in writing and without protest or demur or any and all moneys payable by the Contractor to the Employer in respect of or in connection with the said Contract inclusive of all the Employer's losses and damages and costs, (inclusive between attorney and client) charges and expenses and other moneys anywise payable in respect of the above as specified in any notice of demand made by the Employer to the Bank with reference to this guarantee upto an aggregate limit of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only).
2. We, \_\_\_\_\_ Bank Ltd. further agree that the Employer shall be sole judge of and as to whether the said Contractor has committed any breach or breaches of any of the terms and conditions of the said Contract and the extent of loss, damage, cost, charges and expenses caused to or suffered by or that may be caused to or suffered by the

Employer on account thereof and the decision of the Employer that the said Contractor has committed such breach or breaches and as to the amount or amounts of loss, damage, costs, charges and expenses caused to or suffered by the Employer from time to time shall be final and binding on us.

3. The Employer shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder to take any other Security in respect of the Contractor's obligations and liabilities hereunder or to vary the Contract or the work to be done thereunder vis-a-vis the Contractor or to grant time or indulgence to the Contractor or to reduce or to increase or otherwise vary the prices of the total Contract value or to release or to forbear from enforcement of all or any of the Security and/or any other Security(ies) now or hereafter held by The Employer and no such dealing(s) reduction(s) increase(s) or other indulgence(s) or arrangements with the Contractor or release or forbearance whatsoever shall absolve the bank of the full liability to the Employer hereunder or prejudice the rights of the Employer against the bank.
4. This guarantee shall not be determined or affected by the liquidation or winding up, dissolution, or change of constitution or insolvency of the Contractor but shall in all respects and for all purposes be binding and operative until payment of all monies payable to the Employer in terms thereof.
5. The bank hereby waives all rights at any time inconsistent with the terms of this guarantee and the obligations of the Bank in terms hereof shall not be anyway affected or suspended by reason of any dispute or disputes having been raised by the Contractor stopping or preventing or purporting to stop or prevent any payment by the Bank to the Employer in terms hereof.
6. The amount stated in any notice of demand addressed by the Employer to the Bank as liable to be paid to the Employer by the Contractor or as suffered or incurred by the Employer on account of any losses or damages or costs, charges and/or expenses shall be conclusive evidence of the amount so liable to be paid to the Employer or suffered or incurred by the Employer as the case may be and shall be payable by the Bank to The Employer in terms hereof.
7. This guarantee shall be a continuing guarantee and shall remain valid and irrevocable for all claims of the Employer and liabilities of the Contractor arising upto and until midnight of\_\_\_\_\_.
8. This guarantee shall be in addition to any other guarantee or Security whatsoever that the Employer may now or at any time anyway may have in relation to the Contractor's obligations/or liabilities under and/or in connection with the said Contract, and the Employer shall have full authority to have recourse to or enforce this Security in preference to any other guarantee or Security which the Employer may have or obtain and no

forbearance on the part of the Employer in enforcing or requiring enforcement of any other Security shall have the effect of releasing the Bank from its full liability hereunder.

9. It shall not be necessary for the Employer to proceed against the said Contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank notwithstanding that any Security which The Employer may have obtained or obtain from the Contractor shall at the time when proceedings are taken against the said bank hereunder be outstanding or unrealised.
10. We, the said Bank undertake not to revoke this guarantee during its currency except with the consent of the Employer in writing and agree that any change in the constitution of the said Contractor or the said bank shall not discharge our liability hereunder.
11. We, \_\_\_\_\_ the said Bank further that we shall pay forthwith the amount stated in the notice of demand notwithstanding any dispute/difference pending between the parties before the arbitrator and/or that any dispute is being referred to arbitration.
12. Notwithstanding anything contained herein above, our liability under this guarantee shall be restricted to Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) and this guarantee shall remain in force till \_\_\_\_\_ and unless a claim is made on us within 3 months from that date, that is before \_\_\_\_\_ all the claims under this guarantee shall be forfeited and we shall be relieved of and discharged from our liabilities there under.

Dated \_\_\_\_\_ day of \_\_\_\_\_ 20

For and on behalf of Bank.

Issued under seal :

**CONTRACT AGREEMENT FORMAT**

This Agreement made the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_ at between All India Institute of Medical Sciences (AIIMS), New Delhi (*hereinafter* called "The Employer") represented by M/s HSCC (India) Ltd who enters into this Agreement of the one part and M/s ..... (hereinafter called "The Contractor") of the other part.

Whereas the Employer is desirous that certain works should be executed by the Contractor, viz \_\_\_\_\_ ("the Works") and has accepted a Bid by the Contractor for the execution and completion of the works and the remedying of any defects therein.

Now this Agreement witnessed as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz :

1.	Notice Inviting Tender & Instructions to Tenderers	
2.	General Conditions of Contract	
3.	Particular conditions of Contract along with Enclosure I, II, III & IV	
4.	Specifications	

3. In consideration of the payments to be made by the HSCC (India) Ltd. acting as Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity with the provisions of the Contract in all respects.
4. The Employer hereby covenants to pay the Contractor through HSCC (India) Ltd. in consideration of the execution and completion of the Works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written.

Signed, Sealed, and Delivered by the Said

---

Binding Signature of HSCC (India) Ltd. for and on behalf of All India Institute of Medical Sciences (AIIMS), New Delhi.

Binding Signature of Contractor

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In the presence of

Witness (1) :

Witness (2) :

**ANNEXURE-A**

**SPECIFICATIONS FOR OPERATION OF HVAC SYSTEM, AND ALLIED ACCESSORIES INSTALLED IN CONVERGENCE BLOCK, AIIMS, NEW DELHI**

**1.0 LIST OF MAJOR EQUIPMENTS OF THE HVAC PLANT AND SYSTEMS**

<b><u>Sl.No.</u></b>	<b><u>Major Items</u></b>	<b><u>Qty.</u></b>	<b><u>Manufacturer</u></b>	<b><u>Capacity</u></b>
1.	Chilling machines	03 nos	Daikin	350 TR
2.	Cooling Towers	03 nos	Advance	450 TR
3.	Hot water Generator	04nos	Khokkar	150/200KW
4.	Chilled water pump (Primary)	03 nos	Becon	840 usgpm
5.	Chilled Water pump (Secondary)	03 nos	Xylum	1000 usgpm
1.	Condenser water Pump	03nos	Becon	1400 usgpm
2.	Hot Water pump	02 nos	Becon	255 usgpm
8.	Double Skin AHU with accessories(FM)	27 nos	Zeco	Various Capacities
9.	Double Skin AHU with accessories(CSU)	61 nos	Zeco	Various Capacities
7.	Fan coil Unit	39 nos.	Hitech	Various Capacities
9.	Ventilation Fan	51 nos	Kruger	Various Capacities
10.	Pressurization fan	08 nos	Edgetech	Various Capacities
11.	Toilet exhaust fans	34 nos	Kruger	various capacities
12.	Precision A.C	04 nos		
13.	LT panel, MCC panel Distribution Panel,	01 Lot	KEPL	

Starter panels for HVAC

14. Air-conditioning ducting covered with different thickness of insulation boards Aluminum sheet etc & its accessories like galvanized sheet metal fire dampers with solenoid valves & outlets, air grilles etc 01 Lot
15. Piping (MS) network for water circulation, insulated with polyurethane insulation along with necessary fitting i.e. bends, tees, reducer flanges, butterfly valves, balancing valves, non return valves, gate valves & Y- strainers etc. and expansion tanks. 01 Lot
16. Desk type control console with indicating lamps with internal wiring and control wirings 01 Lot

**2.0 SCOPE OF WORK FOR HVAC**

**The Scope of work as mentioned below are the minimum expected from the contractor. Any other work required for operation (Not covered under DLP) in proper way as per the operation and maintenance manuals of respective equipments and as per good engineering practices will be required to be done under this scope of work. Ensure the safety of the equipments and personals using it.**

**Successful bidder will make Performa for recording the following minimum work schedule / parameters and show to HSCC/ Client to ensure proper accomplishment of these tasks.**

The scope of work shall include but not limited to smooth running, Operation and Maintenance of Heating Ventilation and Air conditioning systems (HVAC) as given in brief as above in 1.0. This shall include smooth running of the plants in three shift (or as specified), starting up of the plants, changeovers, shutdowns, inspection and record keeping, checking of refrigerant, Air distribution, purging operations, adjusting fresh air, operating

pumps, valves, cooling towers, operation of individual Air Handling Units (AHU), Ceiling Suspended Units (CSUs), FCUs, motor control centers etc., inspection of filters/coils and their cleaning, topping up of oil, water, preventive maintenance & cleaning of all the equipments etc. in the systems as per the normal operating standards as specified by the manufacturer and as directed by Engineer-In-Charge to maintain operating conditions of the systems.

**A. WORK TO BE DONE ON EVERY DAY BASIS:**

1. The readings of the suction and discharges pressure, oil pressure, oil & gas level, suction and discharges pressure of pumps, Voltmeters & Ammeters etc shall be checked and recorded in the LOG-BOOK (provided by contractor as per Formats) on hourly basis. Necessary corrective actions are to be taken if the readings are not normal.
2. To check all the electrical motors and their bearings for abnormal noise / heating and to take necessary action if found abnormal.
3. To check the water level in the make-up water tank in the Cooling Towers and check functioning of float valve. See proper function of the Cooling Towers. Chemical dosing, water hardness checking, chloride checking and recording with remedial / corrective actions.
4. To drain out water and clean the AC Plant Room / Cooling Towers/AHU`s etc as and when required / scheduled.
5. The inside ambient conditions i.e. DB, WB & RH of all the AHU`s shall be recorded on hourly basis. Filters of the AHU`s/ Fresh Air inlet etc are to be cleaned regularly as per schedule. The FINE/ HEPA Filters installed at different places are to be given special attention.
6. The temperature of each room shall also be measured for any corrective action and these are to be recorded in log-book.
7. To keep the machine rooms equipment such as chilling plant area, AHU`s, Exhaust fans neat and clean including their room floor, wall ceiling etc. in an orderly manner.
8. Any other work required by the equipment manufacturer/supplier/client for proper functioning.
9. All the complaints shall be attended within stipulated time after receiving it by phone / SMS or in complaint register format and rectified in totality to the entire satisfaction of the complainant and engineer or his representative. However complaint related to any emergency work has to be attended immediately without loss of time.

**B. WORK TO BE DONE ON WEEKLY BASIS:**

1. To check the refrigeration system.
2. To clean all the strainers and the filters of the Cooling Towers.
3. To check the lugs/thimbles/ terminal points of the electrical motor, switches, starters single phase preventors and the indication lights .etc
4. To check the alignment / looseness of all the belts driven equipment and rectify if required.
5. Filters of AHU`s/ Fresh Air inlet etc. are to be cleaned regularly as per services maintenance schedule.



6. Check water distribution.
7. Check float valve operation in water tank and expansion tank.
8. Check and clean air filters.
9. Check belt tension and alignment.
10. Check pump gland.
11. Check solenoid valve.
12. Clean water strainers.

**C. WORK TO BE DONE ON MONTHLY BASIS:**

1. To check the gland / seal, coupling of Pumps and Cooling Towers.
2. To check the solenoid valve, safety controls Mechanical, Electrical/ Electronics and the inter-locking of the various equipments.
3. To check and clean the nozzles of the Cooling Towers and to clean the basin and sump of Cooling Towers. Look for water escaping from sides or from overflow and take remedial measures.
4. Blow out motor dust.
5. Check all settings and test operation of all safety controls.
6. To check the Drain pan of AHUs and clean.

**D. WORK TO BE DONE AFTER EVERY THREE MONTH:**

1. To check and lubricate (if required) the bearing of the motors and keep the proper record.
2. To check the foundation bolts of the Pumps and motors and to take the necessary action if required.
3. To check and reset the relays and controls, and to maintain the proper record. Carry out servicing of the main switches/ACBs as required. To tighten all screws, nuts, bolts of the Electrical Power / control system.
4. Check the quantity of Air flow from various outlets in each Room/ Area as per drawing and do adjustments of dampers etc as and when required.

**E. WORK TO BE DONE HALF YEARLY:**

1. Clean water strainer in chilled water circuit.
2. Check the overload by measuring the amperage, check anti-recycle timer and operation of the electrical interlock, and voltage across the compressor terminal.
3. To tighten the clamps of cooling tower blades.
4. Cleaning of starters of all motors during winter shutdown.
5. De-scale water tubes in condensers.
6. Check the functioning of all controls and reset if requires.
7. Clean the cooling tower fills.
8. Check all strainers.
9. Clean cooling coil fins.

**F. WORK TO BE DONE YEARLY:**

1. Check dampers operation for freeness in operation clean and lubricate.

2. Check for obstructions loose boards fallen insulation on air ducts.
3. Check all wirings for loose contacts and rectify.
4. Clean baskets of pot strainers and "Y" strainers for AHU's.
5. Drain all water from pipe lines and fill fresh water. Do not keep water lines without water.
6. Change the oil in oil sump. Change filters and check oil temperature controls.
7. Inspect starter contracts are shield, transformer, and motor terminals, check connection in starter, tighten motor terminal control circuit terminals.
8. Inspect, calibrate and adjust all safety and operating controls including low temperature and high- pressure cut outs, motor protector, oil pressure control, and fan temp control to original specifications.
9. Chemical cleaning of cooling coils twice in a year during winter shutdown after six months.
10. Meggar all the motors & electrical panels during winter shutdown.
11. Calibration of all temperature gauges, pressure gauges, RTDs and sensors and submitting of certificates for record.
12. Cleaning the evaporator if required.

#### **H. SPECIAL REQUIREMENTS:**

Where ever required specialized filters have been used in the inlet air systems of the HVAC Plant. Special maintenance and cleaning has to be done on it. These filters have to be changed (filters included in scope) as per schedule/ system requirement, as and when required.

At a minimum, the following tests should be performed:-

1. Hepa Filter Media
2. Filter Frame Leak Test
3. Air flow velocities, Air changes, Pressure differential.

It is recommended these tests be performed by a qualified technician who is the familiar with the methods.

After the initial certification and recommendations these tests of calibration/ Validation shall be re-certified at a minimum on an annual basis and the contractor will submit the calibration/validation reports to HSCC /Client for record.(for HEPA Filters only)

- I. **LOG-BOOK** for recording of parameters related to HVAC systems shall be provided and maintained by the contractor showing the complete working done on the HVAC systems and it should be made available to the engineer-in-charge of HSCC.
- J. **All maintenance materials** such as Lube oil, Refrigerant / Gas, oil filter, fuel filter, electric contactor, indicating lamps, HRC fuse, relays and all spares of chillers, AHU`s different type of Air filters, water chemicals, water

- testing chemicals etc shall be provided by the contractor for the HVAC Plant system. All spares parts and materials used shall be genuine and of same make and type as installed and a minimum quantity of spares, refrigerants and materials for routine maintenance shall be kept at site to minimize time of maintenance. The contractor has to keep all equipment well maintained of whole HVAC Plant system so as to give proper output at all times.
- K. Tools and equipments** required for proper operation for whole systems with their allied accessories etc. shall be provided by the contractor.
- L. Deployment of manpower:-** As per manpower deployment schedule i.e. FORMAT III. The manpower should be technically qualified and well experienced to operate the systems and attend to the related works of these systems. Any other manpower required shall also be made available by the contractor for proper functioning and will be in the scope of contractor. Proper supervision of contractor's senior engineers has to be provided to oversee the whole work for the smooth operation and maintenance services as and when required but at least monthly which shall be recorded in the Log-Book.
- M. Qualification of Manpower:-**The contractor should deploy the manpower as per the following qualifications:-
- a) Supervisor diploma in mechanical / HVAC with 3 years experience in operation and maintenance of HVAC system.
  - b) Operator cum mechanic ITI in 'Air-conditioning and refrigeration' or Mechanical with min 3 years Experience in this field.
  - c) Electrician ITI in electrician with min 3 years experience in same field.
  - d) Helper – with 1 years experience in relevant field.
- N.** The HVAC Plant systems, which are installed, will be required to run in three shifts (including Saturdays, Sundays and Public holidays etc) depending upon requirements.
- O.** Care shall be taken so that the HVAC Plant systems do not lead to major breakdown. If any breakdown takes place the whole component has to be replaced/ rectified to bring it to the original condition immediately.
- In the event of any breakdown, the same will be rectified immediately as per response time failing which such rectifications will be done at the risk and cost of the contractor including all incidental expenses at actual without any justification of items. Engineer In-charge decision shall be final.
- P. List of Spares/ consumables which are to be kept in stock by the contractor at Site.**

1. HRC Fuses of all the rating required.
2. Contactors and relays.
3. V-belt of various sizes as per site requirement.
4. Indicators Lamp including holders for various electrical panels/D Bs etc.
5. Grease and lubricating oil required for lubrication of mechanical parts of the equipments.
6. A minimum stock of the various size/ rating filters and HEPA-filters.
7. A minimum stock of the refrigerant is to be kept at site.
8. Different sizes of ball bearings for the motors, blowers etc to be kept at site.
9. Lugs/thimbles/brass compression glands/cable jointing kits etc required for the cables of any size.
10. CTC/contact cleaning compounds required for cleaning of contacts periodically.
11. Handle/Knobs of the switch fuse/fuse switch units.
12. Toggles switches of the panels.
13. Important motors of different sizes for AHUs in critical areas to be kept as spare or as decided by HSCC / Client.
14. Pressure gauges / temperature gauge.
15. RTDs, Pressure transducers and various Sensors.
16. Water testing and treatment chemicals for maintenance of water quality in both the water circuits.

**NOTE:** This list of consumables/ spares can be extended based on experience during operation and maintenance services as per site requirements.

- Q.** Bidder has to maintain the equipments installed at site in good working conditions. In case the equipments / component get defective same shall be repaired /replaced in accordance with performance standards/specified response time mentioned in the contract. Also entire installation shall be handed to the new agency in good working condition when directed by Client / Engineer. The details of items to be repaired /replaced under this scope of HVAC works are indicated as below. Engineer In-charge decision will be final.-:

<b>Sl. No.</b>	<b>Name of Equipment/Capacity.</b>	<b>Qty</b>	<b>Repairable Items</b>	<b>Replacement items wherever required</b>
1.	Chiller machines (350 TR)	3	Motor rewinding, Compressor repair	Electrical cards, Sensors, solenoid valves, flow switch, Gas pump, Refrigerant and oil, display cards, connectors, RTD, pressure sensor, temp sensor, oil level sensor, fuses, contactors, relays, SPP, fasteners, safety controls and safety valves, Insulation, switchgears, refrigerant piping and fittings, .
2.	Condenser pumps	3	Motor rewinding.	Seal, bearing, coupling, Impeller, connection plate, fuses, contactor, relays, SPP, fasteners, vibration isolators, pressure gauge, painting.
3.	Chilled water pumps (primary)	3	Motor rewinding, strainers, Insulation	Seal, bearing, coupling, Impeller, connection plate, fuses, contactor, relays, SPP, fasteners, vibration isolators, pressure gauge, painting. .
4.	Chilled Water Pump (Secondary)	3	Motor rewinding, strainers, Insulation	Seal, bearing, coupling, Impeller, connection plate, fuses, contactor, relays, SPP, fasteners, vibration isolators, pressure gauge, painting. .
5.	Cooling Towers (450 TR)	3	Motor rewinding, strainers, fan balancing,	Fan blades, bearings, gear box, Sprinkler, Fills, Nozzles, float valves, treatment chemicals, water hardness and chloride checking kit, Isolator switch, fasteners, gear Oil, lubrication oil, painting.

6.	Air handling Units.( Double skin/ unitary/ CSU )	88	Motor rewinding, VCD, Fire Damper.	Fan blades, valves, actuators, Shaft, bearing, cooling coil, V – belts, double skin filter, VFD, VCD, canvass connection, nut bolt, thermostat, control wiring, fresh air damper, bird screen , louvers, mixing / diverting / modulating valve, humidifier element, humidistat, geysersstat, contactor , strip heaters, fasteners, vibration isolators, suspension arrangement.
7.	FCU	39	Motor winding	Motor, shaft, cooling coil, solenoid valves, actuators, thermostat, control wiring, fasteners.
8.	150/200 KW hot water Generators.	4	Any contact point.	Element, Electric circuit, Switch thermostats, safety valves, ammeter, voltmeter, control relays, contactors, painting.
9.	Propeller/ Inline / Centrifugal / Axial/ ventilation/ smoke extraction fans.	87	Motor rewinding, fan Balancing	Capacitors, mounting plate, Fan blades, louvers, bird screens, shaft, bearing , V – belt, damper, fda interlocking relays, contactors, starters, pulley, painting, FDA system interlocking relays, actuator and control panel.
10.	Pressurization fans	6	Motor rewinding, fan Balancing	Fan blades, louvers, bird screens, shaft, bearing , V – belt, damper, fda system interlocking relays, contactors, starters, pulley, painting.
11.	Precision	4	Motor rewinding	Compressor, Thermostat, filters, relay, contact point, copper pipe, refrigerant , insulation, electric circuits, fan condenser and evaporator coils, switches, knobs, grilles, stabilizer, wiring.

12.	AC Panel, MCC PANELS, Starter Panels, Control console	01 Lot	ACBs	Push buttons, Contactors, fuses, lugs, relays, thermal over load relays, indicator lamp, holder, connector, SPP, compression gland, cables and jointing kit of various sizes, CTs, voltmeter, ammeter, selector switch, TPN FCU, MCCB, control wiring, door handle, knob, door lock arrangement, Insulators, screws, fasteners, flexible cables, control wiring, door gaskets.
13.	Air-conditioning duct complete with all accessories	01 Lot		All the required works with spares such as damper, VCD, grilles, diffusers, air registers, vanes, GSS sheets.
14.	Piping network complete with expansion tanks	01 Lot		All the required works with spares, valves, Strainers, pressure gauges, temp gauges, RTDs, Butterfly, ball valve, and balancing valves, NRVs, Y-strainers, air vents, pressure gauges, temperature gauges, hangers, supports, flanges, gaskets, bends, Tee, reducers, welding works, patch painting

**Note:** The items mentioned above (s.no.1 to14) are just indicative. However, the contractor has to repair / replace items which are required for operation & maintenance of equipments in working condition without any extra cost.

The contractor shall ensure proper temperature in air-conditioned space as per season (Summer / Winter/Monsoon), periodical maintenance and cleaning of grilles/diffusers at all floors/cooling towers/AHU filters, AHU rooms etc and periodical painting of all equipments pipe lines etc as per requirement or as directed by Engineer –in-charge.

**S)** The Contractor will submit the detailed preventive maintenance schedules in accordance with the above mentioned guidelines, within one Week of award of contract, for the approval of Engineer-In-Charge. The approved schedule has to be followed in true spirit and deviation, if any, will be decided by the

Engineer-in-Charge.

Operational requirement, in brief, includes plant start up, plant change over, plant shut down, routine inspection, record keeping, checking and adjusting the air distribution system as per normal optimum operating standards as specified by manufacturer and as directed by Engineer-in-charge.

## **Annexure-B**

### **TECHNICAL SPECIFICATION: ELECTRICAL WORKS**

#### **1. Scope of work: -Electrical**

The agency will be responsible for operation/ maintenance of following electrical items/ works:

- Operation of Internal Electrification works including all light fixtures, switches, Power Points (5A, 15A Sockets & 20A Industrial Sockets), MCB Distribution Boards, MCBs, Ceiling Fans, Wall Bracket Fans, Exhaust Fans, Wiring, Cabling



- etc. complete
- Operation of External Lighting including External Poles, Light Fixtures, Control Box, Cabling, feeders pillars, bollard light fixtures, gate light (post top lanterns) etc. complete
  - Operation of 500 KVA Diesel Generator Sets- 2 numbers with Synchronizing cum AMF Panel. Engine Make : Greaves Power.
  - Operations of 16 Passenger Lifts – 3 Nos Passenger and 1 Equipment (12 Stops and 12 landing). Make: Johnson.
  - Operation of Transformer (11/0.433kV, 1.6 MVA – 1 nos) , Make: Crompton Greaves
  - Operation of HT Panel single panel of 630 A 11kV VCB of Crompton Greaves.
  - Operation of LT Panel having 1 no incomer of 4000 A, two incomer of 1250 Amp each all are FP ACB having microprocessor based O/L, S/C, E/F & instantaneous trip, two nos bus coupler of 1250 Amp and different out goings in the form of ACB and MCCB as installed at site. Components of panel are of ABB make.
  - Operation of Capacitor Panel: 750 KVAR with APFC relay, capacitors, timers, MCCBs etc complete as installed at site
  - Operation of other MV panels as installed at site at different locations.
  - Operation of Fire Alarm System including microprocessor based 6 numbers two loop control panel, Smoke detectors, heat detectors, manual call points, isolator modules, control modules as installed at site. Make: Honeywell- Morlay IAS.
  - Operation of Public address system speakers, volume control switch, three zone controller, mixing amplifier, table type microphone, DVD player etc complete as installed at site. Make: Bosch.
  - **Material required for the maintenance of all the items will be provided by the client/ AIIMS, not covered under defect liability period (DLP)**
  - Tools and tackles to carry out the maintenance will be provided by the contractor.
  - Printed log books to be provided by the contractor.
  - The contractor should keep all the equipments in good working condition.

Scope of the work as mentioned below is the minimum expected from the contractor in order to keep the equipments in good working condition:

**1. Fire Detection and Alarm & Public Address System.**

**1.1. Work to be done on daily basis:**

1. Checking of battery
2. General check-up of the entire system
3. Checking of current & voltage of the panel
4. General checking of all Manual Call points.
5. Testing of fire detector system
6. Replacement of defective parts in the fire panels.
7. Replacement of detector, RI Hooter, New battery as required.

**1.2 Work to done on half yearly basis:**

1. Checking of functioning of entire FDA system including PA system.
2. Checking of MCP against proper functioning.
3. Cleaning & checking of each & every detector
4. Replacement of defective parts in the panel
5. Replacement of detector, RI Hooter etc
6. Any other checking required as per manufacturer's recommendations

**1.4 Work to be done on yearly basis**

- a. Replacement of battery if required.
- b. All the checks as mentioned in half yearly basis.
- c. Any other checking required as per manufacturer's recommendations

## **2.0 D.G SETS.**

### **2.1 Work to be done on daily basis:**

1. Specific gravity, water level and voltage of batteries.
2. Cleaning of battery terminal, if required
3. Running of DG sets at least for 5 minutes every day in winter season
4. Checking of oil level in day tank
5. Physical inspection of DG set & AMF panel
6. Lub oil level in the DG set.
7. General cleaning of DG set if required.
8. General inspection of cooling towers, pumps etc.
9. Temperature of inlet & out let water in CT.
10. Ph of CT water.

### **2.2 A log Book is to be maintained on regular basis by the contractor duly signed by Engineer Incharge. The log book should contain minimum following data entry or as specifies by the manufacturer.**

1. Specific Gravity of battery
2. Voltage of battery
3. Electrical parameter of the DG set like Current, voltage, frequency, p.f, KW, KWh, KVA etc
4. Diesel level in day tank
5. lube oil level.
6. Running hours of the DG set
7. Water temperature.
8. Room temperature
9. Noise level
10. Lube oil pressure
11. Consumption of diesel

### **2.3 Work to be done on monthly basis:**

1. 'B'/ 'C' checks as per manufacturer's instructions.
2. Cleaning of strainers in the fuel line.
3. Watering of earth pits.

### **2.4 Work to be done on half yearly basis:**

1. Safety checks of the DG sets
2. Operation of all the relays
3. Checking of electrical panels
3. Checking & cleaning of contacts of ACB, relays etc.
4. Checking of safety interlocks
5. Checking of functionality of relay and calibration if required.
6. Checking of insulation resistance
7. Checking of earth resistance.
8. Cleaning of cooling tower

9. Tighten the blades of cooling tower.
10. Any other checking required as per manufacturer's recommendations

### **2.5 Work to be done on yearly basis:**

- 1 Repeat half yearly work
- 2 Change the battery, if required.
- 3 Any other checking required as per manufacturer's recommendations

## **3.0 ELECTRICAL INSTALLATION OF SUBSTATION:**

### **3.1 Work to be done on daily basis:**

General inspection of HT panel, transformers and related equipments including the following:

1. Level of oil in conservator of the transformer
2. Colour of silica gel in the breather of the transformer.

### **3.2 Work to be done on yearly basis**

1. The dielectric strength of the transformer oil to be checked once in a year.
2. Function/ tripping through the relays to be checked once in a year.

3.3 A log Book is to be maintained on regular basis for **HT sub-station** duly signed by the Engineer. The log book should contain minimum following data entry:

- 1 HT voltage
- 2 Current
- 3 Frequency
- 4 Winding temperature of transformer
- 5 Level of the oil in the conservator of the transformer
- 6 Colour of the silica gel in the breather of the transformer
7. Remarks

3.4 A separate log Book is to be maintained on regular basis for **LT panel** duly signed by contractor and Engineer of the client. The log book should contain minimum following data entry to be filled up **on hourly basis:**

1. Total current on incomer
2. Voltage on incomer
3. Current of different out going feeders in R, Y & B phase
4. Power Factor

### **3.4 Work to be done on half yearly basis:**

1. Safety checks of the Panels

2. Operation of all the relays
3. Checking of electrical panels
4. Checking & cleaning of contacts of ACB, relays etc.
5. Checking of safety interlocks
6. Checking of functionality of relay and calibration if required.
7. Checking of insulation resistance
8. Checking of earth resistance.
9. Any other checking required as per manufacturer's recommendations
10. Watering of earth pits

### **3.5 Work to be done on yearly basis:**

1. Repeat half yearly work.
2. Thorough cleaning of panels after arranging the shut down of the panels.
11. Any other checking required as per manufacturer's recommendations

## **B) RELATING TO ELECTRICAL INSTALLATIONS**

### **1.0 General**

1.1 The following Additional Specific Conditions shall be read in conjunction with General Conditions of Contract and Specific Conditions of Contract. If there are any provisions in these Additional Specific Conditions which are at variance with the provisions in the above mentioned documents, the provisions in these Additional Specific Conditions shall take precedence.

### **2.0 Regulations and Standards**

2.1 The installations shall conform in all respects to Indian Standard Code of Practice for Electrical Wiring Installation IS : 732-1989 amended up to date and as per CPWD General Specification for Electrical Works (Part I, II, IV & VII). It shall also be in conformity with the current Indian Electricity Rules and regulations in so far as these are applicable to the installations. Wherever these Additional Specific Conditions calls for a higher standard of material and/or workmanship than those required by any of the above regulations, then this Additional Specific Conditions shall take precedence over the said Regulation and Standards. External works & fire detection & alarm system works to be done as per CPWD specification & relevant IS codes.

**3.0 Rates**  
Deleted

**4.0 Completeness of rate quoted**  
Deleted

### **5.0 Works to be done by the Contractor**

5.1 Unless and otherwise mentioned in the Bid documents, all the works defined in the "Scope of works" mentioned in the Technical Specifications of Electrical Works and therefore their cost shall be deemed to be included in their rates and prices:

### **6.0 Tools for Handling and Erection**

6.1 All tools and tackles required for maintenance & handling of equipments at Site of work and also necessary test instruments shall be the responsibility of the Contractor.

### **7.0 Terminology & Scope**

7.1 Terminology & scope for this project shall be as per CPWD Specification for Electrical Works (Part I - Internal) - 2005 & External Works - Part II - **Latest and relevant IS codes amended up to date.**

7.2 Measurement

Measurement shall be as per CPWD specifications Part – I ( Internal ) &

Part - II ( External) unless otherwise specified in the technical specifications / BOQ.

**8.0 Drawings:**

Deleted

**9.0 Conduit/ Trunking Layout**

Deleted

**10.0 Shop Drawings**

Deleted

**11.0 Manufacturer's Instruction**

11.1 Where manufacturers' have furnished specific instructions, relating to the materials used in this job, covering points not specifically mentioned in these documents, these instructions shall be followed in all cases.

**12.0 Materials & Equipment**

12.1 All materials and equipment shall be ISI marked and shall be of the approved make and design. Unless otherwise called for, only the best quality of materials and equipment shall be used. The Contractor shall be responsible for the safe custody of all materials till these are taken over by client and shall insure as against theft, damage by fire, earth quake etc. An inventory list of all the equipments/ items shall be prepared which shall be handed over as it is on completion of period except for normal wear & tear.

**13.0 Scale**

Deleted

**14.0 Brochures and Data**

14.1 The Contractor shall submit four copies of all brochures / manufacturer's description data and similar literature.

**15.0 Approval of Shop Drawings**

Deleted

**16.0 Samples & Catalogues**

For HSCC approval, Contractor shall submit the samples & catalogue of the material, which are used at Site as per the approved makes.

## **17.0 Approval of Materials**

17.1 All materials used on the Works shall be new and of the best quality available, conforming to the relevant specifications and as per good Engineering practice. Prior approval shall be obtained in writing from the Engineer for all materials proposed and when necessary, approved sample duly identified and labelled shall be deposited with the Engineer and shall be kept at Site. List of approved make indicates make/ manufacturer generally acceptable. Contractor shall submit the detail drawings for HSCC approval.

## **18.0 Inspection, Testing and Inspection Certificate**

18.1 HSCC and authorised representative of HSCC shall have at all Reasonable times access to the Contractor's premises or Works and shall have the power at all reasonable time to inspect and examine the materials and workmanship during its manufacture or erection or if the part of works is being manufactured or assembled at other premises or works.

18.2 The Contractor shall arrange all the materials and labour required for inspection of equipment or for any testing to be carried out at his/ manufacturer's works or at Site. Notice for such inspection/ presence for testing shall be given to the Engineer by the Contractor at least fifteen (15) days in advance together with the routine test certificates of the equipments/ materials given by the manufacturer.

18.3 Notwithstanding approval of tests or equipment by the Engineer, the Contractor shall be required to perform site tests and prove the correctness of ratings and performance of equipment/ machinery and materials supplied and installed by the Contractor as per the Contract specifications and conditions. Engineer shall have full power to order the material or work to be tested by an independent agency at the electrical Contractor's expense in order to prove soundness & adequacy.

## **19.0 Schedule & Manner of Operation**

19.1 Time being the essence of this Contract, Contractor shall be expected to furnish all labour & material in sufficient quantities at appropriate time, expedite and schedule the work to meet the Engineer's requirement and so manage the operations that the work shall be completed in time as stated else where. In case of shut down of power supply, Contractor shall coordinate with Engineer and shall carry out essential works during the shut down period allowed by the Engineer. In case Engineer allows for such period during night or early morning hours, Contractor shall make all provisions to avail such account. Contractor shall not be entitled for any extra claims on such account. Contractor shall programme his work in such a way that items of work requiring presence of Engineer are carried out between 9 A.M. & 5 P.M. on working days.

## **20.0 Deleted**

## **21.0 Conformity with Statutory Acts, Rules and Standards**



- 21.1 The installation shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities applicable to the installations. But if the specifications and drawings call for a higher standard of material and/or workmanship than those required by any of the above Regulations and Standards, then the specifications and drawings shall take precedence over the said regulations and standards.
- 21.2 However, if the drawings or specifications required something which violates the Bye-laws and Regulations, then the Bye-laws and Regulations shall govern the requirement of this installation.
- 21.3 Indian Electricity Act and Rules : All electrical works in connection with installations of the system shall be carried out in accordance with the provision of the Indian Electricity Act, 1910 and the Indian Electricity Rules 1956, both amended upto date.
- 21.4 CPWD Specification :The Electrical installation work shall conform to CPWD General specifications for Electrical Works Part I (Internal) 2005 and Part II (External) 1995, both amended upto date.
- 21.5 Indian Standard: The system / components shall conform to relevant Indian Standards wherever they exist and to the latest National Building Code-2005 amended up to date.
- 21.6 Nothing in these specifications shall be construed to relieve the Contractor of his responsibility for the design, manufacture and installation of the equipment with all its accessories in accordance with applicable Statutory Regulations and safety codes in force.
- 22.0 Completion Drawings:**
- The contractor shall maintain the record of changes made during the contract.
- 23.0 Confirmation of Quantities**  
Deleted
- 24.0 Terms of Payment (Only for items of major electrical equipments)**  
Deleted
- 25.0 Training of Personnel**
- The Contractor shall arrange on the job training to the personnel through the Annual Maintenance contractors.
- 26.0 Completion Certificate**
- 26.1 On completion of the installation if carried out at site during the contract, a certificate shall be furnished to the Engineer, by the Contractor, countersigned by the licensed supervisor under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority. On the basis of this certificate,

**27.0 Check List**

27.1 The Contractor shall provide to the Engineer 4(four) copies of a comprehensive maintenance checklist and shall paste a copy of it in the Substations & Plant Room. The checklist shall be a list of each piece of equipment in this Contract, and shall provide a space for each of the next fifty-two weeks to record the maintenance provided to and status of various equipment. Each month, at the time of inspection, the Contractor shall certify on this check list that he has examined each piece of equipment and that, in his opinion, it is operating as intended by the manufacturer, and that all necessary tests have been performed.

**28.0 Repairs**

All equipment that requires repairing shall be immediately serviced and repaired during the maintenance period.

**29.0 Safe Custody and Storage**

Safe custody of all machinery and equipment dismantled & shifted by the Contractor shall be his own responsibility till the final taking over by the Employer.

**SUGGESTED MINIMUM MANPOWER FOR THE OPERATION OF ELECTRICAL SERVICES AT P C TEACHING BLOCK for AIIMS within AIIMS Campus, Ansari Nagar, New Delhi**

Manpower deployment timings

G shift	9:00	17:00
A Shift	6:00	14:00
B Shift	14:00	22:00
C Shift	22:00	6:00

S.N.	Designation	Number of person During Working Days				Total
			A Shift	B Shift	C Shift	
		G shift				
1	J.E./ Supervisor (Electrical)	1	0	0	0	1
2	Electrician cum DG Operator	0	1	1	1	3
3	Lift operator	0	1	1	0	2
4	Technician	1	0	0	0	1

Qualification and experience of manpower

J.E./ Supervisor      Three year full time diploma in Electrical Engineering with 5 year experience of maintenance of 11 KV/ 0.433 KV Sub-Station, DG sets, Lifts, FDA & PA system etc

Electrician Cum DG Operator      Two year ITI certificate in Electrical trade having 3 year experience of maintenance of 11 KV/ 0.433 KV Sub-Station DG sets, Lifts, FDA & PA system etc

Helper      Class XTH pass with some experience.

Technician      Two year ITI certificate in Electrical/ Electronics trade having 5 year experience of maintenance of FDA & PA system etc

Note: Lift operation will be half an hour prior to institute working time to half an hour after institute working time.

**“ANNEXURE-C”**

**SPECIFICATIONS FOR OPERATION OF WHOLE FIREFIGHTING SYSTEM/PLUMBING SYSTEM WITH THEIR ELECTRIC AND DIESEL PUMPS & ALLIED ACCESSORIES Etc. INSTALLED IN P C Teaching BLOCK,AIIMS, NEW DELHI.**

1. The bidders are required to visit the site to see the actual installations for themselves to assess the quantum of work involved before submitting the tender. Once the tender is submitted, it will be presumed that the bidder has seen and understood the complete work involved for each of the system.
2. **Applicable Law:**
  - 2.1 The contract shall be interpreted in accordance with the Laws of the Union of India. Contractor shall be solely responsible for compliance of all labour laws, payment of fair wages/ salaries and allowances to his personnel that might become applicable under any new act, law or order of Government of State / Centre. HSCC/Client shall have no liability whatsoever in any manner. The Contractor has to show the proof of payment of fair wages to his workers as and when asked for the same by HSCC/ Client.
  - 2.2 Minimum wages act to be complied with - The contractor shall comply with all the provisions of the Ministry Wages Act, 1948, and Contract Labour (Regulation and Abolition) Act, 1970, amended from time and rules framed hereunder and other labour laws affecting contract labour that may be brought into force from time to time.
- 3.0 **LIST OF MAJOR FIRE FIGHTING AND PLUMBING SYSTEM TO BE OPERATED**

SI.No.	Major Items	Qty.	Unit
1.	Water closet(IWC & EWC),vitreous china wash basin, counter wash basin, beveled edge mirror of superior glass, towel rail, C.P. brass liquid soap container, toilet paper holder, CP brass twin coat hook, stainless steel grab bar, urinal, Infra red controlled electrically operated automatic flushing cistern urinals and touch hand drier, flushing cistern, Lab sinks etc.	1	Set
2.	Soil, Waste, Rain water and vent pipes-Centrifugally cast (spun) iron S&S pipes and fittings, Lab waste pipes- HDPE pipes class-PE 110/90 mm dia/ Lab floor traps	1	Set
3.	Water Supply- CPVC/GI and SS pipes complete with fittings and accessories	1	Set
4.	Sewerage and Drainage- i) Gully trap ii) Brick masonry manhole iii) Non-pressure NP2 pipe/SW pipe	1	Set

5.	<p>External water supply, water treatment</p> <ul style="list-style-type: none"> <li>i) DI/G.I. pipes complete with G.I. fittings(25 to 100mm dia)</li> <li>ii) Multi-level indicator cum controller for automatic operations of various pumps-(with appropriate size)</li> <li>a) Vertical Online/ Horizontal Centrifugal pumps <ul style="list-style-type: none"> <li>1. Treated water and Raw Water transfer pump- 100LPM&amp; 70 M Head- 4 nos.</li> <li>2. Softner feed pump- 260 LPM &amp; 35 M Head – 2 nos.</li> <li>3. Filter feed pumps- 90LPM &amp; 35M Head- 2 nos.</li> </ul> </li> <li>b) Submersible drainage pump (8 nos.)</li> <li>c) Tubewell (1 nos.)</li> <li>iii) RO- 25LPH(20 nos) &amp; 400 LPH (1 no.) &amp; water cooler (20 nos)</li> <li>iv) Solar hot water system with recirculation system- 1500 LPD capacity (6 nos.)</li> <li>v) Soft water generation system- 260 LPM capacity, Water filtration system- 90LPM capacity, SS pipe lab water supply system, HDPE lab waste disposal system</li> </ul>	1	Set
6.	Rain water harvesting	2	Set
7.	<p>Fire fighting system with</p> <ul style="list-style-type: none"> <li>i) Wet riser(4 nos.)</li> <li>ii) Yard hydrant(8 nos.)</li> <li>iii) Terrace tank of 5000ltrs. (4 nos.)</li> <li>iv) UGT(1 no.)</li> <li>v) Landing valve (34 nos.)</li> <li>vi) sprinkler system (entire building)</li> <li>vii) Fire extinguisher -78 nos.</li> <li>a) Electric driven fire pump of 1620LPM and 85 M head(2 no.)</li> <li>b) Diesel engine driven pump of 1620LPM and 85 M head(2 no.)</li> <li>c) Centrifugal Jockey pump of 280LPM and 85M head (2 no.)</li> <li>d) Terrace pump of 900LPM and 35M head (2 no.)</li> <li>viii) fire alarm system</li> <li>ix) Glowing exit sign board single</li> <li>x) Fire alarm and detector system</li> </ul>	1	Set

The contractor shall ensure proper maintenance of existing plumbing and fire fighting system, periodical cleaning of water tank, change of washer, rain water harvesting structure, manhole, basement sump drain, fire fighting system etc and periodical painting of all equipments as per requirement or as directed by Engineer –in-charge.

## **SCOPE OF WORK FOR FIRE FIGHTING AND PLUMBING WORK**

The Scope of work as mentioned below are the minimum expected from the firm / agency / contractor including necessary assistance during break down maintenance. Any other work required for operation in proper way as per the operation and maintenance manuals of respective equipments and as per good engineering practices will be required to be done under this scope of work while ensuring the safety of the equipment and personal using it. Successful bidder will make Performa for recording the following minimum work schedule / parameters and show to HSCC/ Client to ensure proper accomplishment of these tasks. For plumbing work internal water supply and sewerage will be maintained by appointing his specialized staff. The scope cover all work related to operation and functioning of all PHE & fire fighting system and assistance Coordination with maintenance agency for proper functioning of systems .

### **A. WORK TO BE DONE ON EVERY DAY BASIS:**

1. The readings of the suction and discharges pressure, oil pressure, oil & gas level, Voltmeters & Ammeters etc shall be checked and recorded in the LOG-BOOK (provided by firm/agency/contractor) on hourly basis. Necessary action is to be taken if the readings are not normal.
2. To check all the electrical motors and their bearings for abnormal noise / heating and to take necessary action if found abnormal.
3. To check the water level in the water tanks and check functioning of float valve.
4. To drain out water and clean the Basement/Pump Room etc as and when required / scheduled.
5. The functioning of each toilet shall also be checked for any corrective action and these are to be recorded in log-book.
6. To keep the pump rooms equipment neat and clean including their room floor, wall ceiling etc. in an orderly manner.
7. Any other work required by the equipment manufacturer/supplier/client for proper functioning.
8. Operation of pump, filters, softner, Backwash of filters, regeneration of softner by suitable chemical & UV maintenance

### **B. WORK TO BE DONE ON WEEKLY BASIS:**

1. To check the battery of hand drier, sensor, hand drier, loose screws etc.
2. To clean all the strainers on plumbing fixtures/fittings.
3. To check the lugs/ thimbles/ terminal points of the all electrical motor, switches, starters single phase preventers and the indication lights .etc
4. To check the alignment / looseness of all the belts driven equipment etc. if required.
5. Yard hydrant, fire hose cabinet etc. are to be cleaned regularly as per services maintenance schedule and pump shall be operated at least once in a week.
6. Listing of broken and misplaced plumbing and fire fighting item if any. Check the functioning of all plumbing and fire fighting fixtures and fitting/system and record the same.

**C. WORK TO BE DONE ON MONTHLY BASIS:**

1. To check the gland / seal, coupling of Pumps and engine.
2. To check the solenoid valve, safety controls Mechanical, Electrical/ Electronics and the inter-locking of the various equipments and fire fighting systems.
3. To check and clean the sprinkler head, solar panel & effectiveness of solar system.
4. To manually inspect the leakage inside the building and in the soil/waste/vent pipes.

**D. WORK TO BE DONE AFTER EVERY THREE MONTH:**

1. To check and lubricate (if required) the bearing of the motors and keep the proper record.
2. To check the foundation bolts of the Pumps and motors and to take the necessary action if required.
3. To check and reset the relays and controls, and to maintain the proper record. Carry out servicing of the main switches/ACB,s as required. To tighten all screws, nuts, bolts.
4. Check the quantity of flow rate of various equipments such as R.O., water cooler etc., testing of raw and treated water from approved laboratory as per drawing/technical specification of system and do adjustments in the system to meet the requirement.
5. Check/clean the probe of level controller. Replace the battery of all sensors fitting if required.

**E. WORK TO BE DONE HALF YEARLY:**

1. Clean water strainer from plumbing and fire fighting system.
2. Check the overload of functioning of all pumps by measuring the amperage, check anti-recycle timer and operation of the electrical interlock.
3. To tighten the clamps/nut bolt of the system.
4. Change the filter/cartridge, membrane of R.O. system and clean the water cooler tank.

**F. WORK TO BE DONE YEARLY:**

1. Check the water quality from RO etc. for its requisite quality.
2. Check the condition of all plumbing and firefighting equipment for its operation life and functioning.
3. Clean all wirings for loose contacts.
4. Clean baskets of pot strainers and "Y" strainers for pumps.
5. Drain all water from pipe lines of fire fighting system and fill fresh water. Do not keep water lines without water.
9. Chemical cleaning of all tanks (water storage), twice in a year.
10. Painting of all exposed pipe fitting, fixture for weather protection.

**G. OTHER WORK:**

1. Oil/ chemical to be provided as and when required for proper functioning of water treatment system.
2. Any other requirement to keep the whole plumbing and fire fighting systems in proper, healthy running condition as per operation and maintenance manual of various equipments.

**H. SPECIAL REQUIREMENTS:**

The water supply shall be operational even during maintenance period. Leakages/seepage if any shall be attended within two hour of report. Flooding and back flow and blockage in sewers, waste water line, and storm water drain shall be attended within one hour.

It is recommended these performed by a qualified technician who is the familiar with the methods.

The fire fighting system shall be remained operational for 24 hour on automatic operation mode. For maintenance only part shut down will be allowed for very short time for which maintenance agency has to obtain the written permission for changing part system from auto mode to manual mode, the permission will be only for limited time to attend the same.

- I. LOG-BOOK for recording of parameters related to the functioning of plumbing and fire fighting system, water quality test shall be provided and maintained by the firm/ agency /contractor showing the complete working and maintenance done and it should be made available to the engineer-in-charge of HSCC / Client. Formats for keeping the operation and maintenance record may be prepared after discussion with Engineer-in-charge/client in line with CPWD.
- J. Tools and equipment required for proper operation for whole plumbing/fire fighting systems.
- K. **Deployment of manpower:-** As per manpower deployment schedule i.e. FORMAT III. One operator for plumbing system and firefighting system and pump etc shall be available along with the helper.
- L. Care shall be taken so that the plumbing and fire fighting systems do not lead to major breakdown. In the event of any breakdown, the same will be rectified immediately failing which such rectification will be done at the risk and cost of the firm/ agency/ contractor. Similarly, if any breakdown takes place due to negligence of firm/ agency/ contractor, the whole component has to be replaced/ rectified to bring it to the original condition immediately at the contractor's cost.
- M. For maintaining record/plumbing and fire fighting system, agency will have proper qualified adequate manpower along with all supporting equipment otherwise a deduction of 2000/- per day will be made for not proved the same.



## ANNEXURE D

## RESPONSE TIME

Sl. No.	Type of complaint	Max permissible time for attendance of complaint from notice of complaint
<b>1.0</b>	<b>HVAC</b>	
1.1	Minor nature of complaint e.g. replacement of fuses, indicators, contact cleaning, lubrication of bearings, etc.	2 Hr
1.2	Temp- humidity not proper in any room/zone, sound in grilles/diffusers, adjusting of dampers, Air balancing in one room	3 days
1.3	Medium rectification works like AHU belt replacement, pressure and temp gauge replacement, sensors replacement, coupling replacement of pumps, replacement of shaft seal of pumps, bearing replacement, impeller replacement, relay contact point change, electric circuits rectifications of panels, elements or hot water generator, filter changing.	1 day
1.4	Major rectification works like rewinding of motors, blower shaft replacement, cooling coil replacement, overhauling of equipments, balancing of entire HVAC system.	2 days
1.5	Non functionality of HVAC system due to major break down in chillers.	7 days or as specified by the manufacturer
<b>2.0</b>	<b>Electrical</b>	
2.1	Evacuation of person from the lift	1/2 hrs

2.2	Minor nature of complaints like replacement/repairing of tubelight,choke, power points,light points , switch, indicators of panels,socket,MCB, electronic regulators, capacitors of ceiling fans etc.	3 Hrs
2.3	Medium rectification works like street light replacement,Circuit breaker maintenance etc.	4 Hrs
2.4	Major rectification works like rewinding of motors, ceiling fans replacement, D G set maintenance, lift maintenance, FDA , PA system and specialised auditorium services	48 Hrs or as specified by the manufacturer

### 3.0 PHE

3.1	Minor nature of complaint e.g. replacement of washers,bib cock,,entire tap, Jali for waste pipe,changing of small parts and repair parts.	Complaint received upto 10.00 AM by close of shift,other by forenoon next day
3.2	Medium rectification works like urinal sensors,replacement of sanitary fixtures,valves,unions,manhole cover,towel rail, plumbing leaks and clogging	1 day
3.3	Major rectification works like replacing soil, waste, rain water, vent pipes and water supply pipes,overhauling of pumps,motor winding etc.	1 day or as specified by the manufacturer

### 4.0 CIVIL

	Minor nature of complaints like rectification repairing of door closers, renewing of putty of glass panes,	3 Hr
	Medium rectification works like replacement of glass panes with wooden fillets, renewing glass panes with putti and nails, alluminium handles, door hinge repairs,	2 days
	Major rectification works like repairing of auditorium chairs, sand stone replacement,	7 days or as specified by the manufacturer