

## NOTICE INVITING TENDER

No. TC/HVAC/01/2018-19

**Name of Work:** Annual Operation & Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu University

1. Estimated cost: 36,28,680/-
2. Earnest Money: 72,574/-
3. Security Deposit: 2.5% of the Tendered Value
4. Performance Guarantee: 5% of the Tendered Value
5. Time Allowed: 12 Months

Certified that this NIT contains pages marked as 1 to 28

**Professor In charge**  
Trauma Centre, IMS,  
BHU, Varanasi.

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**Name of Work: - Annual Operation & Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu University**

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**Professor In charge**  
Trauma Centre, IMS,  
BHU, Varanasi.

**INFORMATION AND INSTRUCTIONS FOR CONTRACTORS FOR e-TENDERING FORMING PART OF NIT AND TO BE POSTED ON WEBSITE**

The **Professor In charge, Trauma Centre, IMS, BHU** invites the online Item Rate Bids from OEM 'DAIKIN' / It's authorized Agencies Under HVAC System for the following works:

NIT No.	Name of work and location	Estimated cost put to tender	Earnest Money	Period of Completion	Last date & time of Submission of bids	Time & date of opening of bid.
1	2	3	4	5	6	7
<b>TC/HVAC/01/2018-19</b>	<b>Annual Operation &amp; Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu University.</b>	36,28,680.00	72,574.00	<b>12 Months</b>	<b>15-07-2018 (15.00)</b>	<b>16-07-2018 (15.00)</b>

- The tender document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen from website [www.eprocure.gov.in](http://www.eprocure.gov.in) or [www.bhu.ac.in](http://www.bhu.ac.in) free of cost.
- Agreement shall be drawn with the successful bidder on prescribed Format.
- The time allowed for carrying out the work will be 12 months from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.
- The site for the work is available for start of the work.
- After submission of the tender the bidder can re-submit revised tender any number of times but before deadline time and date of submission of tender as notified.
- While submitting the revised bid, bidder can revise the rate, but before last time and date of submission of tender as notified.
- a) Earnest Money of **Rs. 72,574.00/-** can be paid in the form of Banker's cheque/ Demand Draft / Fixed Deposit Receipt (**drawn in favor of Registrar, Banaras Hindu University, Varanasi, payable at Varanasi**) of any Scheduled Bank, the same shall be scanned and uploaded to the e-tendering website within the period of tender submission.

**b) e-Tender processing fees – 500/- can be paid in the form of Banker's Cheque/Demand Draft drawn in favor of Registrar, Banaras Hindu University, Varanasi, payable at Varanasi.**

Tender fees & Eligibility criteria document like work experience, financial turn over certificate, Solvency certificate and any other documents mentioned in relevant clauses, shall be placed in single sealed envelope superscripted as (Cover1- "Eligibility criteria document") with name of work and due date of opening of the tender mentioned thereon.

e-Tender processing fees & and EMD document shall be scanned and uploaded to the e-tendering website within the period of tender submission and certified copy in original shall be placed in single sealed envelope superscripted as (Cover2- "Tender fees & EMD") with name of work and due date of opening of the tender mentioned thereon.").

Conditions of contract/Technical bid and Eligibility criteria document like copy of Completion/performance certificate of work experience issued by competent authority like government/semi government/PSU otherwise for private projects bidder's have to submit TDS certificate's with respect to the projects they have claimed, Audited Balance Sheet for the last three financial years duly certified by the C.A, Bank Solvency Certificate an equivalent to 40% of the total estimated cost of the Project as mentioned above, Affidavit and other documents mentioned in the PQ Document shall be scanned and uploaded to the e-tendering website within the period of tender submission and certified copy of each shall be placed in single sealed envelope superscripted as (Cover 1- "Eligibility criteria document") with name of work and due date of opening of the tender mentioned thereon.

**Both the envelopes shall be placed in another envelope with due mention of Name of work, date & time of opening of tenders and to be submitted in the office of Professor In-Charge, Trauma Centre, IMS, BHU, Varanasi on or before 15:00 Hrs. 15/07/2018. The documents submitted shall be opened at 15:00 Hrs on 16/07/2018**

**Online Bid Documents submitted by intending bidders shall be opened only of those bidders, whose Earnest Money deposit, tender processing fees and other documents placed in the envelope are found in order.**

8. The bid submitted shall become invalid and cost of bid & e-Tender processing fee shall not be refunded if:
  - (i) The bidder is found ineligible.
  - (ii) The bidder does not upload all the documents (including G.S.T. registration/ VAT registration/ Sales Tax registration) as stipulated in the bid document.
  - (iii) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically in the office of tender opening authority.
  
9. Criteria of eligibility for submission of bid documents:
  - a. Should have satisfactorily completed Three similar works each of value not less than 14.52 Lacs or Two similar works each of value not less than 21.78 Lacs or One similar work of value not less than 29.03 Lacs during last seven years ending 31<sup>st</sup> March 2018.

**Explanation:-**

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to last date of receipt of applications for tenders.

Similar work means “**Annual Operation & Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu University.**”

- b. Should have had average annual financial turnover of 10.89 Lacs of the estimated cost on works during the last three preceding financial years ending 31<sup>st</sup> March, 2018, duly audited by a Chartered Accountant (**Scanned copy of certificate from CA to be uploaded**). The year in which no turnover is shown would also be considered for working out the average.
- c. Should not have incurred any loss in more than three years during the last five years ending 31<sup>st</sup> March, 2018.
- d. Should have a solvency certificate of 14.52 Lacs of the estimated cost issued by Bank during the last six months.

**(Scanned copy of original solvency certificate to be uploaded).**

***List of Documents to be scanned and uploaded within the time of submission of tender on Website:***

- I. All supporting documents substantiating claim for qualification to participate in the bidding.
- II. Copies of original documents defining the constitution or legal status, written power of attorney of the signatory.
- III. Registration with Govt. /Semi Government Organizations, if any.
- IV. Qualifications and experience of key site management, technical personnel proposed for the Contract.
- V. Audited Balance sheet for the last three preceding years ending 31<sup>st</sup> march 2018.
- VI. Solvency certificate from the bankers. Copy of PAN, Registration Certificate of VAT etc.
- VII. Copy of G.S.T. (Goods & Services Tax) registration certificate.
- VIII. Valid Electrical License of the contractor.
- IX. Details of Electrical work completed during last five years.
- X. Information regarding any litigation or arbitration resulting from contracts executed by the Bidder in the last five years.
- XI. *Any other Document as specified in the press notice*

**Professor In charge  
Trauma Centre, IMS, BHU,  
Varanasi.**

**Banaras Hindu University  
Institute of Medical Sciences  
Trauma Centre & Super Specialty Hospital**

**NOTICE INVITING TENDER**

The **Professor In charge, Trauma Centre**, IMS, BHU invites the online Item Rate Bids from OEM 'DAIKIN' / It's authorized Agencies Under HVAC System for the following works:

**Annual Operation & Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu University.**

- 1 The work is estimated to cost **Rs. 36,28, 680.00** This estimate, however, is given merely as a rough guide.
- 2 The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the tenders.
- 3 Agreement shall be drawn with the successful tender on prescribed Form No. 8 (or other Standard Form as mentioned) which is available as a Govt. of India Publication. Tender shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
- 4 The time allowed for carrying out the work will be **12 Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.
- 5 The site shall be made available in parts as per progress of civil work.
- 6 The tender document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen from website [www.eprocure.gov.in](http://www.eprocure.gov.in) or [www.bhu.ac.in](http://www.bhu.ac.in) free of cost.
- 7 After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of tender as notified.
- 8 While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of time (he need not re-enter rate of all the items) but before last date and time of submission of tender as notified.
- 9 When tenders are invited in two/ three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the tender submitted earlier shall become invalid. The bid submitted shall be opened at 15:00 Hrs **on 16.07.2018**
- 10 The bidder whose bid is accepted will be required to furnish performance bank guarantee of 5% (Five Percent) of the tendered amount within the 15 days of issue of letter of acceptance. This guarantee shall be in the form of Demand Draft

of any scheduled bank or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the bidder fails to deposit the said performance guarantee within the period as indicated, the Earnest Money deposited by the bidder shall be forfeited automatically without any notice to the bidder.

- 11 Intending bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent upon any misunderstanding or otherwise shall be allowed. The bidder shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the university and local conditions and other factors having a bearing on the execution of the work. Cost of site visit shall be borne by the bidder.
- 12 The competent authority on behalf of the University does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidder shall be summarily rejected.
- 13 Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the tenders submitted by the bidders who resort to canvassing will be liable to rejection.
- 14 The competent authority on behalf of University reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.
- 15 The bidder shall not be permitted to tender for works in the University, if his near relative is posted as an officer in any capacity between the grades of Professor In-Charge, Superintending Engineer and Junior Engineer (both inclusive).. Any breach of this condition by the bidder would render him liable to be removed from the tendering process.
- 16 The tender for the works shall remain open for acceptance for a period of **One Eighty Days (180 days)** from the date of opening of financial bid. If any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the Trauma Centre, IMS, then the University shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.
- 17 The notice inviting bid shall form part of the contract document. The successful bidder, on acceptance of his bid by the Accepting Authority, have to sign the contract consisting of "The Notice Inviting bid, all the documents including



Special Conditions, General Specifications/ Particular Specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto. Within 15 days from the stipulated date of start of the work.

a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming part of the tender as uploaded at the time of invitation of tender and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.

b) Standard Form 8 or other Standard C.P.W.D. Form as mentioned

19. In case any discrepancy is noticed between the documents as uploaded at the time of submission of the bid online and hard copies as submitted physically in the office of Professor In-Charge, Trauma Centre, IMS, BHU, then the bid submitted shall become invalid and the University shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.

20. **PAYMENT OF WAGES**

(i) Wages due to every worker shall be paid to him direct by contract through **Bank or ECS or online transfer to his bank account.**

(ii) All wages shall be paid **through Bank or ECS or online transfer.**

(iii) It shall be the duty of the contractor to ensure the disbursement of wages **through Bank account of labour.**

(iv) The contractor shall obtain from the Junior Engineer or any other authorized representative of the Engineer-in-Charge as the case may be, a certificate under his signature at the end of the entries in the "register of Wages" or the "Wage cum-Muster Roll" as the case may be in the following form :-

Certified that the amount shown in column No..... has been paid to the workman concerned **through bank account of labour** on ..... At .....

**Professor In charge  
Trauma Centre, IMS,  
BHU, Varanasi.**

**Banaras Hindu University  
Institute of Medical Sciences  
Trauma Centre & Super Specialty Hospital**

## ITEM RATE TENDER AND CONTRACT FOR WORKS

(A) Tender for the work of: **Annual Operation & Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu University.**

(Time)

(Date)

(i) To be submitted by **15:00 Hrs.** on **15.07.2018**

to the: **Professor In charge, Trauma Centre, IMS, BHU Varanasi**

(ii) To be opened in presence of tenderers who may be present at **15:00 Hrs.** on **16.07.2018** in the office of the: **Professor In charge, Trauma Centre IMS, BHU Varanasi** Issued to

**(Contractor)**

**Signature of officer issuing the documents:**

**Designation:**

**Professor In charge,  
Trauma Centre, IMS,**

**Date of issue:**

## **TENDER**

I/We have read and examined the Notice Inviting tender, schedule, A,B,C,D,E & F. Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rate & other documents and rules referred to in the conditions of contract and all other contents in the tender document for the work.

*I/We hereby tender for the execution of the work specified for the President of India within the time specified in Schedule 'F', viz., schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respects in accordance with, such conditions so far as applicable.*

**We agree to keep the tender open for One Eighty Days (180) days from the date of opening of tender and not to make any modifications in its terms and conditions.**

Earnest Money of **Rs. 72,574.00/-** can be paid in the form of Banker's cheque / Demand Draft / Fixed Deposit Receipt (**drawn in favor of Registrar, Banaras Hindu University, Varanasi, payable at Varanasi**) of any Scheduled Bank as earnest money. If I/we, fail to furnish the prescribed performance guarantee or fail to commence the work within prescribed period I/we agree that the said President of India or his successors in office shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely. Further, if I/we fail of commence work as specified, I/we agree that University or his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, up to maximum of the percentage mentioned in Schedule 'F' and those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

Further, I/We agree that in case of forfeiture of earnest money or both Earnest Money & Performance guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of the work.

I/We undertake and confirm that eligible similar work(s) has/ have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for tendering in Banaras Hindu University in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/we shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information derived therefrom to any person other than a person to whom I/we am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Signature of contractor  
Postal Address

# ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the University for a sum of

Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_)

*The letters referred to below shall form part of this contract Agreement:-*

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_

*For & on behalf of the University*

*Signature* \_\_\_\_\_

*Dated* \_\_\_\_\_

*Designation* \_\_\_\_\_

**Operative schedules shall be supplied separately to each intending tenderer)**

**SCHEDULE 'A'**

Schedule of Quantities (As per PWD -3) (As per sheets attached)

**SCHEDULE 'B'**

Schedule of materials to be issued to the contractor:

S. No.	Description of item	Quantity	Rates in figures & words at which the material will be charged to the contractor	Place of issue
1	2	3	4	5
-----NIL-----				

**SCHEDULE 'C'**

Schedule of Tools and Plants to be hired to the contractor

S. No.	Description	Hire charges per day	Place of issue
1	2	3	4
-----NIL-----			

**SCHEDULE 'D'**

Extra schedule for specific requirements/document for the work, if any:

Addl. Specifications attached.

**SCHEDULE 'E'**

Reference to General Conditions of contract.

<b>Name of Work:</b>	<b>Annual Operation &amp; Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu</b>
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	<b>University.</b>	
<b>Estimated cost of the work:</b>		<b>36,28,680.00</b>
<b>Earnest money</b>	<b>72,574.00</b>	
<b>Performance Guarantee</b>	5% of the tendered value of the work	
<b>Security Deposit</b>	2.5% of the tendered value of the work	

### **SCHEDULE 'F'**

#### **General rules and direction**

Officer inviting tender	<b>Professor In charge Trauma Centre IMS, BHU, Varanasi.</b>
Maximum percentage of quantity of items of work to be executed beyond which rates are to be determined in accordance with Clause 12.2.& 12.3	See at appropriate clause under definitions

#### **Definitions:**

2(v) <b>Engineer-in-Charge</b>	<b>Executive Engineer EWSS, BHU, Varanasi.</b>
2(vii) <b>Accepting Authority</b>	<b>Professor In charge Trauma Centre IMS, BHU, Varanasi</b>
2(x) <b>Percentage on cost of materials and labour to cover all overheads and profits</b>	<b>15%</b>
2(xi) <b>Standard Schedule of Rates:</b>	<b>Market Rates</b>
2(xii) <b>Department:</b>	<b>Trauma Centre, IMS, BHU , Varanasi</b>
9(ii) <b>Standard CPWD contract Form:</b>	<b>GCC 2014, CPWD form 8 as modified &amp; corrected up to date (Whether correction vide latest circulars are incorporated or not in this document).</b>

#### **Clause 1**

- i) Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance **15 Days**
- ii) Maximum allowable extension beyond the period as provided in i) above **7 Days**

<b>Clause 2</b>	Authority for fixing Compensation under Clause 2	<b>Professor In charge Trauma Centre IMS, BHU, Varanasi. Or successor thereof</b>
<b>Clause 2 A</b>	Whether Clause 2A shall be applicable	<b>No</b>
<b>Clause 5</b>	Number of days from the date of issue of letter of acceptance for reckoning date of start	<b>10 Days</b>
<b>Authority to decide</b>	<b>Extension of time</b>	<b>Professor In charge Trauma Centre IMS, BHU, Varanasi.</b>
	<b>Rescheduling of milestone</b>	<b>Professor In charge Trauma Centre IMS, BHU, Varanasi.</b>
Time allowed for execution of work		<b>12 Months</b>
<b>Clause 6, 6A</b>	Clause applicable	<b>Clause 6A</b>
<b>Clause 7</b>	Gross work to be done together with net payment/Adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment	<b>6.0 Lac</b>
<b>Clause 10A</b>	List of testing equipment to be provided by the contractor at site lab.	1. Earth Tester, 2. Insulation Tester, 3. LT/HT, Tong Tester, 4. Multimeter 5. Lux Meter 6. Vernier Caliper 7. Wire Gauge 8. Cable Jacks. 9. Screw Driver Set 10. Spanner Set 11. Allen keys Set 12. Testing Lamp 13. P & P Tools etc.

<b>Clause 10 B (ii), (iii)</b>	Whether clause 10-B (ii) and 10-B (iii) shall be applicable.	No
<b>Clause 10 C</b>	Component of labour expressed as percentage of value of work	25%
<b>Clause 10 CA</b>	Materials covered under this clause.	<b>Nearest material (other than cement, reinforcement bars and structural steel) for which All India Whole sales price Index is to be followed.</b>
	Nil	Nil
<b>Clause 10 CC</b>	Clause 10CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column	<b>NA</b>
<b>Clause 11</b>	<b>Specification to be followed for execution of work:</b>	CPWD General Specifications for HVAC with up to date correction slips.
<b>Clause 12</b>		
12.2 & 12.3	Deviation limit beyond which clause 12.2 & 12.3 shall apply for building work	<b>30%</b>
12.5	Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation work	<b>NA</b>
<b>Clause 16</b>	<b>Competent Authority for Deciding reduced rates:</b>	<b>Professor In charge Trauma Centre IMS, BHU, Varanasi Or successor thereof.</b>
<b>Clause 18</b>	<i>List of mandatory machinery, tools &amp; plants to be deployed by the contractor at site.</i>	<b>1. Drill Machine 2. Chase Cutting Machine 3. Crimping Tool Kit 4. Self Supporting Ladder-4 ft. 5. Ladder-20ft. 6. Electrical wiring drawing machine.</b>

<b>Clause 42</b>			
i)	a)	Schedule/ statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates 2007 printed by CPWD	<b>NA</b>



ii)		<b>Variations permissible on theoretical quantities</b>	
	b)	Cement for works with estimated cost put to tender not more than ` 5 lakhs.	<b>NA</b>
		For works with estimated cost put to Tender is more than 5 lakhs	<b>NA</b>
	c)	Bitumen all works	<b>NA</b>
	d)	Steel reinforcement and structural steel Sections for diameter, section and category.	<b>NA</b>
	e)	All other materials	<b>NA</b>

**RECOVERY RATES FOR QUANTITIES BEYOND PERMISSIBLE VARIATION**

Sl No	Description of items	Rates in figures and words at which recovery shall be made from the contractor	
		Excess beyond permissible variation	Less use beyond the permissible variation
1.	Cement (PPC)	<b>NA</b>	NA
2.	Steel reinforcement (TMT Bars)		NA

**GENERAL TERMS & CONDITION OF HVAC**

1. The work shall be carried out as per CPWD general specification of HVAC 2017 with up to date amendments and as per directions of Engineer-in-charge.
2. All the interested firms are requested to visit the site / installations before quoting the rate.
3. ***“The Maintenance/Comprehensive maintenance of high side of the Central Air Conditioning plant /HVAC System shall have to be carried out by successful firm through the OEM ‘DAIKIN’/ OEM ‘DAIKIN’ Authorized service agent only”, as per requirement. Undertaking in this regard is required to be submitted.***
4. The contractor will have to maintain all installations/ equipments as per Annexure-III (enclosed) in schedule of work in proper working condition and hand over the same in similar condition at the time of hand over of plant and improvement in plants subsequently carried out by the department from time to time which are not within the scope of the work.
5. Log book, cleaning material like broom, soft broom, soap & duster, gland packing, grease, mobil oil, PVC tape, nut bolts, screws, Teflon, tape, etc. will be provided by the firm with in scope of work nothing extra will be paid on this account.
5. The contractor will have to depute the following skilled, experienced, AC&R qualified and all staffs having appropriate certificate for operation & maintenance of A.C. plant in here in following shifts ( shift may change as per requirement)

from 6 AM to 2 PM , 2 PM to 10 PM & 10 PM to 6 AM

a)	Engineer	1 No.(In General Shift)
b)	Supervisor	1 No. (In General Shift)
c)	Operator /Skilled	4 Nos. in 3 Shift
d)	Helper/ Semi-Skilled	4 Nos. in 3 shift

- i) Specialized highly technical extra man power for works such as checking / adjusting the relays or any other works, which shall be required to keep the plant in good condition, will also be arranged by the contractor without any extra cost for the same.
  - ii) Engineer Shall be Degree/Diploma in the respective branch and must have atleast 5 year experience in HVAC system with BMS specialized.
  - iii) Supervisor Shall be Diploma in the respective branch and must have atleast 5 year experience in HVAC system with BMS specialized
6. After award of work the contractor will declare his staff to be deputed for work, their names, Qualification, Experience, Local address with 2 nos. photograph for bldg. entry pass etc. will have to be intimated to Engineer-in-charge and staff shall be deployed only after approval of Engineer-in-charge. In case of any change is required, the same shall be intimated and got approved from the Engineer-in-charge.
  7. The Engineer-in-charge reserve the right to ask contractor to remove any of the staff without assigning any reason whatsoever decision of Engineer-in-charge will be final and binding at the contractor.
  8. The contractor will be fully responsible for the conduct of staff deputed by him.
  9. The contractor will maintain attendance register for his staff at site, which will be checked by the Engineer-in-charge of the Department.

The staff always be deputed as per condition no. 5 above. In case of any unforeseen absence from duty of the operation staff, the same will have to be filled in by making suitable arrangements immediately. However, for not employing of the required staff as per condition no. 5, the recovery will be made from their bill at the following rates, the

decision of Engineer-in-charge shall be final and binding on the firm.

a)	Engineer	Rs.1612/-per day	(per Shift)
a)	Supervisor	Rs. 1224/-- per day	(per Shift)
b)	Skilled	Rs. 1224/-- per day	(per Shift)
c)	Semi-Skilled	Rs. 1044/-- per day	(per shift)

10. The contractor have to ensure that all the AHU's and AC plants are maintained in proper working condition. In case of any break down in plants, electrical panel etc. the same shall have to be attended immediately on the same day.
11. The contractor will make his own arrangements of all type tools for electrical and mechanical work for use of their staff. No T & P will be supplied by the department.
12. Water and power will be supplied free of cost for bona-fide use of work only.
13. The spares of equipment pertaining to AHU's cooling tower pump sets and also topping up of refrigerant gas in the chiller will be supplied by the department free of cost for the bona-fide use of work. However logbook and cleaning chemicals i/c grease, gasket etc. will have to be arranged by the contractor for which nothing extra shall be paid on this account.
14. In case, if it established that any of the spares and materials supplied by the Department i/c refrigerant, gases etc. are misused or have been wasted by the contractor's staff on account of due to their negligence, inefficiency or any other reasons, recovery will be made from the contractor's bill towards the cost of such spares/materials (at the double rate of present market rates). Decision of the Engineer-in-charge will be final and binding on the contractor.
15. During the running of the contract, the responsibility of physical custody of the plants and its associated equipments as per Annexure-I will rest on the contractor. If any item missing during the surprise visit of Engineer-in-charge the recovery shall be made from the contractor bill. The decision of Engineer-in-charge shall be final and binding on the contract.
16. In case of any damage to any equipment due to negligence of contractor's staff the same will have to be made good by the contractor. Failure to which suitable recovery will be made from the contractor's bills.
17. Logbook as per standard Performa will have to be filled in by the contractor's staff. The logbook shall be kept in the plant room, which will be checked by the Engineer-in-charge. The contractor's staff will have to take action as per direction of Engineer-in-charge from time to time. The logbook shall be supplied by the contractor free of cost.
18. Earth/Insulation test of all equipments will be carried out quarterly and result recorded in the separate register.
19. The site (A.C. Plant room, Cooling Tower, AHU's Centrifugal pumps etc.) will have to be kept clean.
20. The maintenance work as per maintenance manual of the OEM to be carried to be out in time bound manner for which proper records history cards of each chilling machine. AHU's and other equipments etc. will have to be completed/filled by the contractor's staff.
21. The firm has to get the chillers checked every month by OEM/authorized agency and submit healthy certificate of chillers / test reports to the department positively.

## SCHEDULE OF MAINTENANCE

### Annexure-I

Chiller	<ol style="list-style-type: none"> <li>1. Check refrigerant level, leak test with electronic leak detector. If abnormal, trace and rectify as necessary, Inform department in writing on the rectification.</li> <li>2. Inspect level and condition of Oil. If abnormal, trace fault and rectify as necessary. Inform department in writing on the rectification.</li> <li>3. Check the liquid line sight glasses for proper flow.</li> <li>4. Check all operating pressure and temperature.</li> <li>5. Inspect and adjust, if required, all operating safety controls.</li> <li>6. Check capacity control, adjust if necessary.</li> <li>7. Lubricate vane / linkage / bearings.</li> <li>8. Visually inspect machine and associated components, and listen for unusual sound or noise for evidence of unusual conditions.</li> <li>9. Check lock bolts and chiller spring mount.</li> <li>10. Review daily operating log maintained by operating personnel.</li> <li>11. Providing written report to Department, outlining services carried out, adjustment made, rectification carried out and if the deficiency is of a major nature, arrange with department for shut – down to rectify equipment.</li> </ol>
Chiller	<ol style="list-style-type: none"> <li>1. Perform all functions for monthly check</li> <li>2. Check all flanges for tightness</li> <li>3. Change oil in oil sump</li> <li>4. Replace filter</li> <li>5. Check oil temperature control</li> <li>6. Check motor terminals</li> <li>7. Check connections in starter</li> </ol>
	<p>Please note that oil filter, gasket replacement shall deem to be included in the contract.</p> <ol style="list-style-type: none"> <li>1. Check motor earthing meggar motor and connection wiring on each leg</li> <li>2. Check motor temperature cut-out, tighten motor terminals.</li> <li>3. Check starter contacts, arc shield, transformer.</li> <li>4. Check dashpot oil, clean dashpot and replace oil when necessary</li> <li>5. Test and calibrate overload setting.</li> <li>6. Inspect, calibrate and adjust to original specifications all gauges, safety and operating controls including low temperature and high pressure cutout, oil pressure switch load limit relay and electrical interlocks.</li> <li>7. For water cooled condenser systems, inspect condenser tubes for fouling. If fouling exceeds original specifications, the contractor shall carry out cleaning of the tubes at his own expense.</li> <li>8. For air-cooled condenser coils, dust should not be allowed to accommodate on the condenser coil surfaces. Cleaning should be as often as necessary (approximately every three monthly) to keep coil clean. Exercise care when cleaning the coil, so that the coil fins are not damages. Under no circumstances this unit be cleaned with acid based cleaner.</li> </ol>
Water pump	<ol style="list-style-type: none"> <li>1. Perform all function for monthly checks</li> <li>2. Check motor earthing, meggar motor and connection wiring on each</li> </ol>

	<ul style="list-style-type: none"> <li>leg.</li> <li>3. Tighten motor terminals.</li> <li>4. Check starter contacts.</li> <li>5. Test and calibrate overload setting.</li> </ul>
Expansion tank	<ul style="list-style-type: none"> <li>1. Inspect expansion tank, Drain, clean and flush out tanks as necessary.</li> </ul>
Air handling units and fancoil units	<ul style="list-style-type: none"> <li>1. Inspect all air handling and fan coil units.</li> <li>2. Check all air filters and clean or change filters if necessary.</li> <li>3. Check all water coils, seals and pipelines for leaks and rectify as necessary.</li> <li>4. Check and re-calibrate modulating valves and controls. Adjust and rectify as necessary to ensure compliance to the original specifications.</li> <li>5. Purge air from all water coils.</li> <li>6. Check all fan bearings and lubricate with grease as necessary.</li> <li>7. Check the tension of all belt drive and adjust as necessary.</li> <li>8. Check and clean all the condensate pans, trays and drains.</li> <li>9. Check measure and re-calibrate all sensors if necessary.</li> <li>10. Check, clean and service smoke detectors. Carry out a system test to ensure that the smoke detectors will trip the AHU's.</li> <li>11. Check spring vibration isolators for abnormal vibration. Rectify in necessary.</li> <li>12. Coil to be cleaned by (a) spray of high-pressure clean water (not exceeding 30 psi) (b) with chemical spray, if necessary.</li> </ul>
Air handling units and fan coil unit	<ul style="list-style-type: none"> <li>1. Perform all functions for monthly checks.</li> <li>2. Tighten motor terminals</li> <li>3. Check starter contacts.</li> <li>4. Test and calibrate overload settings.</li> </ul>
Air cooled packaged units and precision-computer air condition equipment	<ul style="list-style-type: none"> <li>1. Check condenser fan motor load ampere.</li> <li>2. Check fan and motor mounting brackets.</li> <li>3. Check shaft and bearing. Lubricate with grease as necessary.</li> <li>4. Check the tension of all belt drive and adjust as necessary.</li> <li>5. Check for refrigerant leaks with electronic leak detector.</li> <li>6. Check electrical terminals and contactors operation and connections for tightness.</li> <li>7. Check compressor motor current.</li> <li>8. Check refrigerant line driers and moisture indicators.</li> </ul>
Air cooled packaged units and precision-ac equipment	<p>Perform all functions listed in the monthly checks.</p>
Air distribution system	<ul style="list-style-type: none"> <li>1. Check operation of all modulating and fixed dampers controlling air flow through unit. Lubricate all damper bearings and linkages as necessary.</li> <li>2. Carry out space temperature checks on air-conditioned areas compliance with requirements of original specifications. These checks include the calibration of sensors, thermostat, etc.</li> <li>3. Check noise level or discharged air from diffusers.</li> </ul>
Ventilation	<ul style="list-style-type: none"> <li>1. Check adjust as necessary the air flow of all fans are in compliance</li> </ul>

	<p>with the original specifications.</p> <ol style="list-style-type: none"> <li>2. Check the tension of all belt drives and adjust as necessary.</li> <li>3. Check and lubricate all fan bearings.</li> <li>4. Tighten motor terminals.</li> <li>5. Check starter contacts.</li> <li>6. Test and calibrate overload settings.</li> <li>7. A system check shall be carried out for all mechanical ventilation (MV), Pressurization and Exhaust system to verify the performance of the system.</li> </ol>
Switch board	<ol style="list-style-type: none"> <li>1. Clean and adjust all switch gear, contactors, relays and associated electrical equipment at intervals not exceeding six months.</li> <li>2. Check and prove operation of thermal over load and protection devices.</li> <li>3. Check and ensure tightness of all equipment fastenings and cable terminations within switch boards.</li> <li>4. Vacuum clean all switch board cubicles.</li> </ol>
Piping system	<ol style="list-style-type: none"> <li>1. Check all piping system for leaks and repair these where they have occurred.</li> <li>2. Check for damage &amp; deterioration of insulation or sheathings. Rectify as necessary.</li> </ol>
	<p>The department shall supply the following consumable materials as and when required : -</p> <ol style="list-style-type: none"> <li>1. All oils and grease required for lubrication of compressors, fan bearings, motors bearings, pivots and other moving parts.</li> <li>2. All refrigerant required for topping up. Refrigerant loss if due to manufacturing defect or due to negligence shall be made good by the contractor.</li> <li>3. All consumable filter elements / rolls.</li> <li>4. All chemicals for the correct chemical treatment of the cooling lower and chilled water system.</li> <li>5. All carbon brushes required to replace brushes in electric motors.</li> <li>6. All electric contact points required to replace worn electric contact points in switchgears, motor starter gears, electronic control gears and electric relays.</li> <li>7. All electric fuses required to replace blown fuses.</li> </ol> <p>The contractor shall carry out a complete system operability test on all the systems or sub systems as called for in the contract.</p> <p>The purpose of the test is to verify that the performance of all the systems or sub-systems in the contract is in accordance to the specifications.</p> <p>All test shall be carried out in the presence of the Engineer-in-Charge or his representative.</p>

**WORKS TO BE DONE ON EVERY DAY BASIS:-**

1. The reading of the chiller and condenser pressure, oil pressure oil level, suction and discharge pressure of pumps, voltage and Amps. etc. shall be checked and recorded in the logbooks on hourly basis. Necessary action is to be taken if the readings are not normal.
2. To check all the electrical motors and bearings for abnormal noise/heating, contractor has to take necessary action if found noise abnormal.
3. To check the water level in make up water tank and in the cooling tower.

4. To drain out the water from A.C. Plant Room/ Cooling Tower, AHU's if required. To clear/sweep the areas of A.C. Plant Room/ AHU Room/Cooling Tower etc.
5. Filters of the AHU's, CSUs, Air washer units are to be made clean regularly as per requirement.
6. To check up all switch gear of electric control panels of AC plant, AHUs etc. for abnormal noise/heating, contractor has to take necessary action, if found abnormal.
7. Maintenance schedule of equipments as given in manufacture's O & M manual should also be carried by the contractor.

**WORKS TO BE DONE ON MONTHLY BASIS**

1. To check the coupling of pumps etc.
2. To check the safety controls and interlocking of various equipments.
3. To check and clean the nozzles of the cooling tower and to clear the water basin and sump of cooling tower.
4. To check all the piping, valves for leakage and to inform the department in case of failure for rectification.

**WORKS TO BE DONE EVERY THREE MONTHS**

1. To check the refrigerant system for leak test and to inform the department in case of leakage for rectification by the department.
2. To dust off the inside of all the electrical panels.
3. To check the lugs/Terminals points of the electrical motors switches, starters, single phase preventers and indication light fuses etc.
4. To check the alignment of all the belt driven equipment and to rectify if reqd.

## **Annexure-II**

### **Monthly Checks**

- To check the Oil levels & Refrigerant Pressures of the A.C. Plants.
- To clean all the Air- Filters of AHUs of all floors by compressed air or by water depending upon the material of the filters.
- Routine Cleaning of Cooling Tower sump and pot strainer as and when required.
- To check the Electrical panels
- To check maintain appropriate belt tension.
- To clean water line strainers
- To lubricate the bearings wherever it is applicable
- Check the thermostat setting and reset, if required.
- To take the control test.
- Checking the operating pressures.
- To check the log book reading and advising the operators for better performance of the machine.

### **Quarterly periodical inspection and services of the plant as detailed below:**

- Lubrication of all bearings wherever found necessary.
- Checking/rectification of alignment of couplings in direct driven components.
- Inspection of the safety and operating controls for proper and safe .
- Leak testing and rectifying leaks in the refrigeration system.
- Cleaning/de scaling of condenser as and when required
- Cleaning of chilled water strainers.
- To check and clean the compressor and fan motor contactors.
- To check the lubrication oil in the crankcase.
- To check the overall performance of the plants.

### **Providing Yearly Preventive Inspection & Maintenance that includes:**

- Chemical cleaning/de-scaling of shell and tube condenser in water cooled chiller .
- Chemical cleaning/De-scaling of cooling Tower sum, nozzles and louvers.
- Changing of filter drier core if found necessary.
- Cleaning of suction strainer, if found necessary
- Changing of compressor oil if found necessary.
- Oil & water analysis if required.

In case of any rewinding job of the compressors, the total material, refrigerant gas, required nitrogen gas for testing, gaskets and other spares inside the compressors with labour charges for repair of the same, shall be supplied by the Department.



### **ADDITIONAL TERMS AND CONDITIONS**

1. Maintenance is to be carried out in Trauma Centre, at BHU, Varanasi.
2. The contractor shall obtain all necessary approval from State/Local Body as per law in vogue.
3. The installation shall be handed over on as is where basis nothing extra shall be paid toward pre-maintenance as the equipments are in running condition.
4. After the expiry of the contract, the firm shall have to hand over complete installation to the department in proper working order. However if any repair/parts is reqd. after defect liability period, the same shall be provided by the department.
5. The Contractor shall employ their regular staff in the works and related names of employees shall have to be given by the contractor.
6. No claim of their employees/ staff employed for subject work in any from shall be entertained by the department.
7. The contractor shall employ supervisor having required experience in maintenance of HVAC plants.
8. All T&P required for operation shall be arranged by the contractor. No T&P shall be issued by the department.
9. All installations of Trauma Centre, at BHU, Varanasi are in complete operational / Healthy condition shall be handed over to the contractor. & it will be his responsibility to keep installation in operation & Healthy condition all the time including take all precautions against theft also.
10. Any prevailing taxes, duties etc. imposed by the Central/State government during the contractual period will not be payable but any new such taxes shall be governed by clause 38 of GCC for CPWD work, 2014.
11. Payment shall be made on quarterly basis subject to the availability of funds. Delays cannot be ruled out; as such on claim on this account will be entertained by department.

**ANNEXURE – III**  
**HVAC INVENTORY DETAILS**  
IMS TRAUMA CENTRE BHU, VARANASI

SL	ITEM DESCRIPTION	MAKE	CAPICITY	QTY
A	<b>EQUIPEMENT</b>			
a)	CHILLERS			
	CHILLER MACHINE	MCQUAY	325 TR	3 Nos
	HOT WATER GENARATOR	EMERALD	150 KW	3 Nos
b)	PUMPS			
	CONDENSER WATER PUMP -	BEACON	24MTR HEAD	3 Nos
	INDUCTION MOTOR-	ABB	40 HP	3 Nos
	PRIMARY CHILLED WATER PUMP -	BEACON	12MTR HEAD	3 Nos
	INDUCTION MOTOR-	CROMPTON	12.5 HP	3 Nos
	CHILLED WATER SECONDARY PUMP	ARMSTRONG, Danfoss VFD	22MTR HEAD	3 Nos
	INDUCTION MOTOR (VARIABLE SPEED PUMPING SYSTEM)		25 HP	
	HOT WATER PUMP	BEACON	25 MTR HEAD	3 Nos
	INDUCTION MOTOT		5 HP	
d)	COOLING TOWER FAN			
	COOLING TOWER FAN	BELL	350 TR	3 Nos
e)	AIR WASHER FOR AC PLANT	EMERALD	25000 CFM	1No
	MOTOR	ABB	20 HP	1No
	PUMPS	CROMPTON	1/2 HP	2 Nos

	<b>ELECTRICAL</b>			
1)	<b>M.C.C FOR</b>	ADVANCE Make	400 A X 2	1Set
a)	Primary CHW pump set - 03 nos			
b)	Secondary CHW pump set - 03 nos			
c)	CDW pump set - 03 nos			
d)	Cooling tower - 03 nos			
e)	Hot water pump set - 03 nos			
2)	AC PLANT ROOM AIRWASHER PANEL	ADVANCE Make	100A	1No

<b>SL</b>	<b>ITEM DESCRIPTION</b>	<b>CAPACITY</b>
3	Various AHUs	(3000 CFM / 3500 CFM / 4000 CFM /5000 CFM /6000 CFM / 7000 CFM /10500 CFM /11000 CFM / 12000 CFM/ /13000 CFM /14000 CFM /15000/16000 CFM/
4	CSUs	(2000 CFM / 3500 CFM / 4000 CFM / 4500 CFM / 5000 CFM / 5500 CFM / 6000 CFM) ,
5	FCUs, Axial flow fans, cabinet fans, various Valves, Grilles diffusers etc.	
6	Building management system	Johnson Controls

Schedule of work

**Name of Work: Annual Operation & Maintenance of HVAC System in Trauma Centre, IMS, Banaras Hindu University.**

Sl. no.	Description of Items	Qty.	Rate	Unit	Amount
	<b>SH :OPERATION &amp; MAINTENANCE</b>				
1	Operation & maintenance (routine & preventive) contract of the high side & low side of the air-conditioning plant having 3X325 TR Screw chiller (2 working + 1 standby) comprising of all the machinery equipments installed in the ac Plant Room main building including cooling towers, AHU and monitoring and operation of BMT system etc. in three shift of 8 Hrs each per Day as per maintenance schedule attached plant shall be operated round the clock in year.				
	Note : Total nos of staffs for operation & maintenance are 10 numbers only in three shift of 8 hours each. One skilled & one semi-skilled staffs shall be present in each shift & forth staffs (both skilled and semi-skilled ) shall be provided for reliever duty otherwise they should be present in the general shift. Engineer & Supervisor shall be present in general shift. Engineer & Supervisor in charge shall have minimum of 5 years experience in AC system with BMS specialized in hospital project.				
a)	Engineer-1 no.	12		Month	
b)	Supervisor-1No.	12		Month	
c)	Operator Skilled Staffs – 4 Nos .	12		Month	
d)	Helper Semi – skilled Staffs 4 nos .	12		Month	
2	Providing annual maintenance (non comprehensive ) of 3 nos 325 TR Daikin make water cooled chillers with other low side equipments as per Annexure – III )	12		Month	
3	Providing Condenser De-Scaling (Approach below 2 degree C) as per term & conditions.	3		Each	
	<b>Total</b>				

**Professor In charge**  
Trauma Centre, IMS,  
BHU, Varanasi.