

**THE PHARMACEUTICAL CORPORATION (IM) KERALA LTD  
KUTTANELLUR.P.O, THRISSUR-680 014  
(A Government of Kerala Undertaking)**

**ISSUE LETTER**

**TENDER NO: OUSHADHI/E2-20/25/2025-26**

**Date: 17/05/2025**

Online tenders are invited by The Pharmaceutical Corporation (I.M) Kerala Ltd., (Oushadhi), Kuttanellur.P.O, Thrissur -680 014 from competent Contractors for executing the following work.

1.	Name of Work	Setting of clean room of class 100000 at Centre of Excellence Oushadhi Kuttanellur
2.	Estimate Amount	Rs 49,97,699/-
3.	Earnest Money Deposit (EMD)	Rs 50,000/-
4.	Tender Submission Fee	Rs. 2500/-
5.	Period of completion	60 days
6.	Tender documents	Can be downloaded from the website <a href="http://www.etenders.kerala.gov.in">www.etenders.kerala.gov.in</a>
7.	Last date and time of Receipt of Tender/Bids	11/06/2025 At 5.00 PM
8.	Date and Time of Opening of Tender	13/06/2025 At 10 AM
9.	Form of Contract	Item rate
10.	Pre-bid Meeting Date and Venue	27/05/2025 at 11 AM at Oushadhi, Kuttanellur

## GENERAL TERMS AND CONDITIONS OF E-PROCUREMENT

This tender is an e-Tender and is being published online for the above work. This tender is invited in 2 cover system from the registered and eligible firms through e-procurement portal of Government of Kerala (<https://www.etenders.kerala.gov.in>). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in [www.etenders.kerala.gov.in](https://www.etenders.kerala.gov.in)

### A) Online Bidder registration process:

Bidders should have a Class II or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on [www.cca.gov.in](https://www.cca.gov.in). Once, the DSC is obtained, bidders have to register on [www.etenders.kerala.gov.in](https://www.etenders.kerala.gov.in) website for participating in this tender. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471-2577088, 2577188, 2577388 or 0484-2336006, 2332262 – through email: [etendershelp@kerala.gov.in](mailto:etendershelp@kerala.gov.in) for assistance in this regard.

### B) Online Tender Process:

The tender process shall consist of the following stages:

- i. **Downloading of tender document:** Tender document will be available for free download on [www.etenders.kerala.gov.in](https://www.etenders.kerala.gov.in). However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.
- ii. **Pre-bid meeting:** On 27/05/2025 at 11.00 AM at Oushadhi, Kuttanellur
- iii. **Publishing of Corrigendum:** All corrigenda shall be published on [www.etenders.kerala.gov.in](https://www.etenders.kerala.gov.in) and shall not be available elsewhere.
- iv. **Bid submission:** Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on [www.etenders.kerala.gov.in](https://www.etenders.kerala.gov.in). No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.
- v. **Opening of Technical Bid and Bidder short-listing:** The technical bids will be opened, evaluated and shortlisted as per the eligibility and technical qualifications. All documents in support of technical qualifications shall be submitted (online). Failure to submit the documents online will attract disqualification. Bids shortlisted by this process will be taken up for opening the financial bid.
- vi. **Opening of Financial Bids:** Bids of the qualified bidder's shall only be considered for opening and evaluation of the financial bid on the date and time mentioned in critical date's section.

### C. DOCUMENTS COMPRISING BID:

#### (i). The First Stage (Cover 1- Prequalification cum Technical Bid Document):

Pre-Qualification cum Technical bid proposal shall contain the scanned copies of the following documents which every bidder has to upload:

- i) Technical bid document digitally signed and upload.
- ii) Document proof of Eligibility Criteria mentioned in clause 1.01.01 of Notice Inviting Tender
- iii) Online Tenders/bids are to be accompanied with a preliminary agreement executed in Kerala stamp paper worth Rs.200/-.
- iv) The format for information about the tenderer attached in special conditions of contract and tender form in NIT shall be duly filled by the tenderer and should upload the same as pdf format with technical bid

The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload. Hard copies of the above documents shall be submitted to the office of Oushadhi, Kuttanellur.

**(ii). The Second Stage (Cover 2- Financial Bid):**

The Bidder shall complete the Price bid as per format given for download along with this tender.

**Note:** The blank price bid should be downloaded and saved on bidder's computer without changing file-name otherwise price bid will not get uploaded. The bidder should fill in the details in the same file and upload the same back to the website.

**Fixed price:** Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.

**D) Tender Document Fees and Earnest Money Deposit (EMD)**

The Bidder shall pay, a tender document fees of Rs.2500/- including GST @18% and Earnest Money Deposit or Bid Security of Rs.50,000/-The Bid security is required to protect the purchaser against risk of Bidder's conduct, which would warrant the forfeiture of security.

**Online Payment modes:** The tender document fees and EMD can be paid in the following manner through e-Payment facility provided by the e-Procurement system

**State Bank of India Multi Option Payment System (SBI MOPS Gateway):** Bidders are required to avail Internet Banking Facility in any of below banks for making tender remittances in eProcurement System.

<b>A) Internet Banking Options (Retail)</b>			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank
9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank

12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank (Erstwhile Thane Janata Sahakari Bank)
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
<b>B) Internet Banking Options (Corporate)</b>			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank
7	City Union Bank	27	ShamraoVithal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalakshmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	JantaSahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select **SBI MOPS** option and Submit the page, to view the **Terms and Conditions** page. On further submitting the same, the e-Procurement system

will re-direct the bidder to MOPS Gateway, where two options namely **SBI** and **Other Banks\*** will be shown. Here, Bidder may proceed as per below:

- a) SBI Account Holders shall click **SBI** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the Tender Fee and EMD amount.
- b) Other Bank Account Holders may click **Other Banks** option to view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting tender payments.

*\*Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

Any transaction charges levied while using any of the above modes of online payment has be borne by the bidder. The supplier/contractor's bid will be evaluated only if payment status against bidder is showing "Success" during bid opening.

#### **E) SUBMISSION PROCESS:**

For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and Financial bid online on [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) along with online payment of tender document fees and EMD.

For page-by-page instructions on bid submission process, please visit [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in) and click "Bidders Manual Kit" link on the home page.

**It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process**

Tenders/bids received online without the preliminary agreement will not be considered and shall be summarily rejected. Further details can be had from the Notice Inviting Tender (NIT) or Office of the Oushadhi, during working hours.

**Sd/-**  
**Managing Director**

## 1.0 **NOTICE INVITING TENDER**

1.01 Online tenders are invited by The Pharmaceutical Corporation (I.M) Kerala Ltd., (Oushadhi), Kuttanellur. P.O, Thrissur -680 014 from competent contractors for **Setting of clean room of class 100000 at Centre of Excellence Oushadhi Kuttanellur**

### 1.01.01 Eligibility Criteria

- i) Bidder should have executed at least one similar work of value not less than 80% of the PAC in single contract during the last seven financial year as Prime Contractor (Satisfactory completion certificate from the client for the work done shall be submitted in the designated cover)

or

Bidder should have executed at least two similar works of value not less than 60% of the PAC each during the last seven financial year as Prime Contractor (Satisfactory completion certificate from the client for the work done shall be submitted in the designated cover)

or

Bidder should have executed at least three similar works of value not less than 40% of the PAC each during the last seven financial year as Prime Contractor (Satisfactory completion certificate from the client for the work done shall be submitted in the designated cover)

- ii) Annual turnover of the tenderer shall be more than 150% of the PAC during any one of the last three preceding years (Audited balance sheet, profit and loss account of the last 3 financial years shall be submitted in the designated cover)
- iii) The bidder should have valid GST registration, PAN, ESI and PF Registration. The firm shall be registered with registrar of companies / Partnership firm / Proprietorship in India.
- iv) Those companies / firms not having the ESI or EPF shall provide affidavit stating the facts as per ESI and EPF rules in the company letterhead.
- v) Partnership firms shall furnish full names of all partners in the tender. It may, however, be signed in the partnership name by one of the partners or by a duly authorized representative, followed by the name and designation of the persons signing.
- vi) Joint venture / Consortium shall not be permitted.

(The proof of the above shall be submitted as PDF format in designated covers)

(Similar work for the purpose of eligibility shall be civil works including flooring works, painting, drainage system / renovation or construction of buildings)

1.02 The general information on the project may be found under Section 3.00 of this tender. The information is only indicative. The tenderers are required to visit the site and familiarize themselves with the site conditions, nature of substrata, availability of construction materials, etc., before quoting. The drawings, General and Special Conditions of Contract, Specification and Schedule of quantities and the specifications may be carefully studied before they offer the prices. No claims for extra compensation over and above the quoted rates will be entertained by OUSHADHI on the ground that the tenderer have misjudged site conditions, nature of substrata, tender conditions or any item of tender. Tender documents and tender

schedule may be downloaded free of cost from the website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in). A bid submission fee of **Rs. 2500/-** shall be remitted through online payment mechanism for e-procurement system of Govt. of Kerala through NEFT/Online banking through SBI. This payment is not refundable.

The bid should be submitted online in two cover system at website '<http://etenders.kerala.gov.in>' in the relevant covers only, by the due date and time, as specified in the 'Critical Dates' view of the 'Work Item details' of the tender. The Server Date & Time as appearing on the website '<http://etenders.kerala.gov.in>' shall only be considered for the critical date and time of tenders. Offers sent through post, fax, telex, e-mail, courier will not be considered.

The bidders are requested to go through the instruction to the bidders in the website '<http://etenders.kerala.gov.in>'. The bidders who submit their bids for this tender after digitally signing using their Digital Signature Certificate (DSC), accept that they have clearly understood and agreed the terms and conditions in the website including the terms and conditions of this tender.

BOQ other than downloaded against the Tender will not be considered.

Accepting Authority shall not be responsible for any delays reasons whatsoever in receiving as well as submitting offers, including connectivity issues.

For more assistance e tendering system you can contact Kerala State IT Mission e-Procurement Help desk, Basement floor of Pension Treasury Building Uppalam Road, Statue, Thiruvananthapuram. Phone 0471-2577088, 2577188. (On all working days from 10:30 am to 5:30pm)

- 1.03 All bid/tender documents are to be submitted online only and in the designated Cover/envelope(s) on the above website. All the required documents shall be submitted in their respective designated online covers with digital signature. The prequalification document in the prescribed format shall be downloaded, filled in with relevant details and uploaded to the website in digitally signed pdf format.
- 1.04 The bidders are requested to submit all the required documents for pre-qualification and the price bid in the appropriate covers provided.
- 1.05 The offer shall be valid for 60 days from the tender opening date. The firm period of a tender is the period from, the date of opening of the tender to the date up to which the offer given in the tender is binding on the bidder. The firm period is fixed as the maximum time required within which a decision can be taken on the tender and order of acceptance issued in writing to the bidder which shall not exceed two months in the normal course. The consideration of tenders and decision there on shall be completed well before the date of expiry of the firm period noted in the tender so that the letter of acceptance is sent before the expiry of the firm period. If delay is anticipated, the officer who invited the tenders shall get the consent of the lowest two bidders for extending the firm period by one month or more as required. In case the lowest or any bidder refuses to extend the firm period that tender cannot be considered. All officers concerned with the consideration of tenders, shall deal with them expeditiously to settle the contract before the expiry of the firm period.

- 1.06 After the public opening of the tenders, the information relating to the examination, Clarification, evaluation and comparison of tenders and recommendations concerning the award of Contract all shall be online.
- 1.07 Subject to ACCEPTING AUTHORITY's right to accept any tender and reject any or all tenders; the work will be awarded to the tenderer whose bid has been determined to be substantially responsive to the tender documents and who has offered the lowest Evaluated Tender Price provided further that the tenderer has the capability and resources to carry out the contract effectively.

Prior to the expiry of the period of validity of the tender ACCEPTING AUTHORITY will notify the successful tenderers in writing their name the sum which ACCEPTING AUTHORITY will pay to the contractor in consideration of the execution completion, operation, maintenance and guarantee of the work by the contractor as specified by the contract (hereinafter called the contract price). This letter of acceptance will constitute the formation of a contract.

Before commencing the work and within a week after the letter of acceptance of the tender has been intimated to him, the tenderer shall make a security deposit as given in clause 1.11 of this notice and furnish the same for the proper fulfillment of the contract and shall execute an agreement for the work in required non-judicial stamp paper of value not less than Rs.200 /-in the prescribed format.

If the tenderer fails to execute the agreement as stated above within the specified period, the earnest money deposit shall be forfeited to ACCEPTING AUTHORITY and fresh tenders called for or the matter otherwise disposed of. If as a result of such measures due to the default of the tenderer to pay the required deposit, execute the agreement or take possession of the work site, any loss to ACCEPTING AUTHORITY results, the same will be recovered from the tenderer by deducting from any amount due to him from other works or revenue recovery or by suitable course of action including legal proceedings.

Tenders not properly filled, mutilated with incorrect calculations or generally not complying with the conditions are susceptible to be rejected.

- 1.08 In the case of percentage rate contract only a single rate as an overall percentage above or below or at par with the rate given in the schedule by a single entry at the specified column of the schedule under the head quoted rate, may be made. The overall percentage rate accepted and specified in the agreement shall not be varied on any account whatever. In case of item rate tender, only the rate quoted shall be considered. In event no rate has been quoted for any item(s) leaving space both in figure(s), word(s), and amount blank, it will be presumed that the contractor has included the cost of this / these item(s) in other items and rate for such item(s) will be considered as zero and work will be required to be executed accordingly. The bidder should quote each and every items. The rate thus quoted will deemed to include the cost of all materials, labour, hire charges for all machinery's, cost of fuel, power, all leads and lifts, taxes, levies, royalties all over heads contingencies, profits, etc. and the quoted price is all inclusive. The total contract price shall also be worked out and entered in.
- 1.09 If the tender is made by an individual it shall be signed with his full name and his complete address shall be given. If it is made by partnership firm it shall be signed with the co-partnership name by a member of the firm who shall sign his own name and give the name and address of each partner of the firm and attach a copy of 'Power of Attorney with the tender authorizing him to sign on behalf of the other partners. A certified copy of the 'Registered



Partnership Deed' shall also be submitted along with the tender. A certified copy of the registered deed shall also be submitted along with the tender. The tender should be in a sealed cover.

#### **1.10 EARNEST MONEY DEPOSIT (EMD)**

- .01 The EMD of **Rs.50,000/-** shall be remitted through online payment mechanism for e-procurement system of Govt. of Kerala [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in). As per present system RTGS payment will not be accepted by the system and hence EMD should be remitted only through NEFT/Online banking through SBT. Bidders, who have secured exemption from individual EMD payments, need not do this except when special Earnest Money is asked to be deposited. Such EMD exemption certificate/document needs to be scanned and submitted online along with the bid, failing which, the bid shall be rejected summarily. The original EMD exemption document may have to be produced, if required, failing which, the bid shall be rejected summarily.
- .02 Bidders shall remit the tender fees and EMD by using the online payment options of e-Procurement system only. Bidders are advised to visit the "Downloads" of e-Procurement website ([www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in)) for detailed instructions on making online payment using internet banking facility of SBT or by using NEFT facility. Bidders opting for NEFT facility of online payment are advised to exercise this option at least 48 hours before the bid submission closing date to ensure that payment towards tender fees and EMD are credited and a confirmation is reflected in the e-Procurement system. KSITM/NIC/SBT/ TCC shall not be responsible for any kind of delay in payment status confirmation.
- .03 EMD deposited with ACCEPTING AUTHORITY will be forfeited,
  - i) if a bidder withdraws his bid during the period of validity specified.
  - ii) if the successful bidder fails within the time limit to sign the contract document or fails to furnish the required security deposit.

#### **1.11 PERFORMANCE SECURITY DEPOSIT**

- .01 Within 15 days of issue of letter of acceptance, the Contractor should submit 5% of the Contract Value as Performance Guarantee. At least fifty percent of the Performance Guarantee will be in the form of Treasury Fixed Deposit and the rest in the form of Bank Guarantee.
- .02 In addition to Performance Guarantee, Security Deposit shall be collected by deduction from the running/final bill of the Contractors @ 2.5% of the gross amount of each running and / or final claims.
- .03 Security deposit can be released against bank guarantee on its accumulation to minimum amount of Rs 2,49,885/-. The minimum amount of Bank Guarantee shall not be less than the mentioned amount at a time. This Bank Guarantee has to be valid up to the end of defect liability period and shall be in the performa attached.
- .04 On satisfactory completion of the work and on recording of completion certificate, the performance guarantee will be released based on the report from the Engineer in charge.
- .05 On completion of Defects Liability Period, the Engineer-in-Charge shall recommend on demand from the Contractor to refund to him the security deposit and the same will be refunded by the Accepting Authority provided that the Engineer-in-Charge is satisfied that there is no demand outstanding against the contractor.

- .06 All the deposits of EMD, PERFORMANCE GUARANTEE AND SECURITY DEPOSIT will not bear any interest whatsoever.
- 1.13 Income-tax at the rate prevailing at the time of payment will be deducted from each running bill and final bill.
- 1.14 All statutory payments in connection with the employment of the workmen for this work will be borne by the Contractor.
- 1.14.01 The contractor is the employer of all the worker's engaged for this work and should therefore take all required registrations and pay premium correctly to ESI, PF and labour welfare funds constituted by the Union Government and Government of Kerala from time to time.
- 1.15 All statutory deductions shall be made from the amount eligible to the contractor in each part bill at current rates. The deduction towards the work contract tax shall be as per the prevailing rates of Kerala Government Sales Tax Rules. Any tax omitted, to be deducted in any part bill shall be deducted in the subsequent bills/final bill.
- 1.16 **PERIOD OF VALIDITY**
- 1.16.01 The tender shall remain valid for acceptance for a period of **60 days** from the date of opening of the tender. If any tenderer withdraws his tender before the said period or makes any modifications in terms and conditions of the tender, then OUSHADHI has the liberty to forfeit the said Earnest Money Deposit.
- 1.17 **INSPECTION OF SITE**
- Every tenderer is expected to inspect the site of the proposed work and acquaint himself with the site conditions of substrata, approaches, availability of raw materials, geological and weather conditions, etc., before quoting his rates. He must go through all the drawings, specifications and other tender documents. Any further clarifications in the drawings and documents can be had from OUSHADHI at the above-mentioned address.
- 1.18 **QUANTUM OF WORK**
- 1.18.01 A schedule of approximate quantities for various items accompanies this tender. It shall be definitely understood that OUSHADHI do not accept any responsibility for the correctness or completeness of this schedule in respect of items and quantities and this schedule is liable to alteration by deletions, deductions or additions at the discretion of OUSHADHI without affecting the terms of the contract.
- 1.18.02 OUSHADHI reserves the right to increase or decrease the quantum of work at site without assigning any reason.
- 1.18.03 Variations in the quantities put to tender will not be the basis of any claim or disputes. The rates agreed by the contractor shall hold good for any amount of variation in the quantities and no claims whatsoever will be entertained on this amount. The contractor shall carry out all works as directed by OUSHADHI at the same agreed rates.

## 1.19 **ALL INCLUSIVE RATES**

The quoted rate of Contractor must be firm and shall be inclusive of cost of transportation of material to the site and all taxes and duties except GST.

The rates quoted by the Contractor shall be firm throughout the Contract period and there shall be no upward revision of the rates quoted by the Contractor for any reasons whatsoever. It should be clearly understood that any claims for Additional tax shall not be entertained in any case whatsoever once the tenders are opened.

### 1.19.1 **GST APPLICABLE**

The tenderer shall clearly indicate their GST registration number in the bid.

## 1.20 **INTERPRETING SPECIFICATIONS**

1.20.01 In interpreting the specifications, the following order of decreasing importance shall be followed:

- a. Specification mentioned in Schedule of Quantities
- b. Special Conditions of Contract,
- c. Unit Rate Specifications,
- d. Drawings.

1.20.02 Matters not covered by the specifications given in the contract, as a whole shall be covered by the relevant Indian Standard Codes. If such codes on a particular subject have not been framed, the decision of OUSHADHI shall be final.

1.21 No alterations shall be made by the tenderer in the Notice Inviting Tender, Instructions to the contractors, Contract form, conditions of the contract, special conditions, drawings and specifications and if any such alterations are made or any conditions attached, the tender is liable to be rejected.

1.22.01 The acceptance of a tender rests with the Authorized Representative of OUSHADHI who does not bind to accept the lowest tender and reserves the authority to reject any or all the tenders received without assigning any reason(s) whatsoever.

1.22.02 The authorized representative of OUSHADHI reserves the right of accepting the whole or any of the tenders received and the tenderer shall be bound to perform the same at the rates quoted.

1.23 The work shall be carried out under the direction and supervision of OUSHADHI or their representative at site. On acceptance of the tender, the contractor shall intimate the name of his accredited representative who would be supervising the construction and would be responsible for taking instructions for carrying out the work.

1.24 OUSHADHI's decision with regard to the quality of the material and workmanship will be final and binding. Any material rejected thus shall be immediately removed by the contractor and replaced by materials as per specifications and standards.

**1.25 SUB-LETTING**

No part of the contract shall be sublet without the written permission of OUSHADHI nor shall transfers be made by the Power of Attorney authorizing others to carry out the work or receive payment on behalf of the tenderer.

**1.26 DEFECTS LIABILITY PERIOD/GUARANTEE PERIOD**

Any defect developed within 'Defect Liability Period'/Guarantee period of Twelve months will have to be rectified by the contractor at their own cost and in case the defects are not rectified by the contractor, OUSHADHI or their representative shall get the work done at the risk and cost of the contractor.

**1.27 DELAYS IN COMMENCEMENT**

The contractor shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the cause for such delays may be including delays in procuring Government Controlled or other materials.

**1.28 OCCUPATION IN PART**

If OUSHADHI wants to occupy areas in part, the contractor shall complete the work of these areas in conjunction with OUSHADHI and hand over the same to OUSHADHI without affecting any of the clause of contract agreement.

1.29 The contractor should inspect the source of materials, their quality, quantity and availability. All materials must strictly comply with the relevant B.I.S./IBR.

1.30 The contractor must co-operate and co-ordinate with other contractors involved in other works at the site. The contractor should also note that they shall have to clear the site of vegetation, debris, etc. before the commencement of the work and that no extra payment is permissible on this account.

**1.31 CONTRACTOR'S STORE AND SITE OFFICE**

Suitable area in the site of work shall be allowed to the contractor free of cost for constructing temporary structures for storing his tools and plants, materials, site office and cement godown. However, the structure will be provided by him at his own expense and he will be solely responsible for guarding his property with requisite insurance against theft, fire, etc. The contractor however will have to dismantle the sheds and vacate the land of all debris, etc. at his own expense after completion of work.

**1.32 MEASUREMENT AND BILLING**

1.32.01 Wherever mode of measurement is specified, the measurement will be taken at site as per the latest BIS code of practice for measurement.

1.32.02 The contractor or his representative shall accompany OUSHADHI or their representative in taking measurements and shall agree to the measurements taken on spot. All necessary tapes shall be of steel and shall be supplied by the contractor. The contractor shall then present his bill based upon the agreed and recorded measurements and as per the directions

of OUSHADHI. If the contractor fails to accompany OUSHADHI's representatives for measurements, then he shall be bound by the measurements taken by OUSHADHI or their representative.

1.32.03 Payment towards all interim bills will be made by Oushadhi within 30 days of presentation by contractor.

1.32.04 The contractor, on signing an indenture, shall be entitled to be paid during the progress of the execution of the work up to 75% of the assessed value of any materials which are in the opinion of the Engineer-in Charge non-perishable, non-fragile and non-combustible and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and/or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this sub-clause are incorporated in the work, the amount of such advance shall be recovered/deducted from the next payment made under any of the clause or clauses of this contract.

1.32.05 Period of final measurement shall be three months from the time of completion of the project.

### 1.33 **EXTRA ITEMS**

1.33.01 Any item of work that do not find a place in the schedule of quantities, in the original tender or in the accepted tender or contract as has been directed by OUSHADHI to execute is deemed as an extra item of work. All such works that are necessary to be carried out under the direction of OUSHADHI shall be carried out by the contractor. No such variation will violate the Contract.

1.33.02 Extra items of work thus carried out by the contractor will be paid at the rates worked out by OUSHADHI in the following manner.

1.33.03 In the case of all extra items whether additional, altered or substituted, if accepted rates for identical items are provided for in the contract such rates shall be applicable.

1.33.04 In the case of extra items whether altered or substituted, for which similar items exists in the contract, the rates shall be derived from the original item by appropriate adjustment of cost of affected components. The percentage excess or deduction of the contract rate for the original item with reference to the estimated rate shall be applied in deriving the rates for such items.

1.33.05 In the case of extra items, whether altered or substituted, for which similar items do not exist in the contract, the rates shall be arrived at on the basis of provisions of DSR 2018 applying the contractor's quoted percentage above or below.

1.33.06 In the case of extra items, whether additional altered or substituted, for which the rates cannot be derived from similar items in the contract, and only partly from similar items in the contract and only partly from the public work department rates, the rates for such part or parts of items as are not covered in the schedule of rates shall be determined by OUSHADHI on the basis of the prevailing market rates giving due consideration to the analysis of the rate furnished by the contractor with supporting document including contractor's profit.

1.35.07 In the case of extra item whether additional, altered, substituted, for which the rates cannot be derived either from similar items of work in the contract or from the departmental schedule

or rates, the contractor after execution of the work as mentioned in 1.35.01 above and shall within 14 days of the receipt of order to carry out the said extra item of work, communicate to the Engineer the rate which he proposes to claim for the item, supported by analysis of the rate claimed and OUSHADHI shall within one month thereafter, determine, the rate on the basis of the market rate giving due consideration to the rate claimed by the Contractor.

1.36 The contractor shall make arrangement for water and electricity required for the work as per clause no.4.2.0 and 4.3.0 of Special Conditions of Contract

1.37 **INSURANCE**

The successful tenderer shall take out Contractor's All Risk (CAR) insurance policy, jointly in the name of OUSHADHI and the contractor, and the original policy shall be deposited with OUSHADHI.

1.38 This Notice Inviting Tender will form part of the tender document and the agreement executed by the successful tenderer.

Managing Director,

The Pharmaceutical Corporation (I.M) Kerala Ltd., (OUSHADHI)

Kuttanellur. P. O, Thrissur – 680 014.

**DECLARATION OF THE TENDERER**

I/We hereby declare that I/we have read and understood the above instructions and the terms and conditions mentioned above are binding on me/us.

SIGNATURE OF THE TENDERER

## SUMMARY OF NOTICE INVITING TENDER

- 1 Defects liability period : Twelve months from the date of Completion
- 2 Period of final measurements and valuation : 1 month from the date of Completion
- 3 Date of commencement of work : 15<sup>th</sup> day from the date of receipt of letter of acceptance or handing over the site or the date on which Engineer-in-charge issues written orders to commence the work, whichever is later.
- 4 Period of completion of work : 60 days from the date of Commencement of work
- 5 Earnest money deposit : Rs. 50000/-
- 6 Performance Guarantee : 5% of contract value
- 7 Security deposit : 2.5% of gross amount from each running bill
- 8 Firm period of tender : 60 days from the date of opening of Tender
- 9 Escalation : No Escalation
- 10 Liquidated damages : 1% per week of delay. Maximum 10% of total contract value or executed value whichever is higher.

Managing Director,  
The Pharmaceutical Corporation (I.M) Kerala Ltd.,  
Kuttanellur.P.O,  
Thrissur – 680 014.

## **SECTION 2.00 – GENERAL CONDITIONS OF CONTRACT**



## **GENERAL CONDITIONS OF CONTRACT**

### **2.1.0 Definition of Terms**

In construing these General Conditions of Contract and the annexed Technical Specifications and Commercial Terms, the following words shall have the meanings herein assigned to them unless there is something in the subject or context inconsistent with such construction.

a. **Client/Purchaser/Company**

The 'Client/Purchaser/Company' shall mean The Pharmaceutical Corporation Kerala Ltd, Kuttanellur P.O, Thrissur-680014, Kerala or its authorized representatives.

b. **Tender**

The Tender shall mean the tender submitted by the Contractor for acceptance by the Purchaser.

c. **Contractor/Supplier**

The 'Contractor/Supplier' shall mean the person or company whose tender is accepted by the Purchaser and shall be deemed to include the Contractor's successors, heirs, executors, administrators, representatives and assignees approved by the Purchaser.

d. **Sub Contractor**

The 'Sub-contractor' shall mean the person or company named in the contract for any part of the work or any person to whom any part of the contract has been sub-let by the Contractor with the consent in writing of the Purchaser and shall include his heirs, executors, administrators, representatives and assignees approved by the Purchaser.

e. **Inspector**

The Inspector shall mean any person or persons nominated by the Purchaser to inspect works or stores under the contract.

f. **The Goods/Items**

The Goods/Items means all the equipments, machinery and/or other materials which the supplier is required to supply to the purchaser under the contract.

g. **Contract**

The Contract shall mean and include the Notice Inviting Tender, Conditions of Contract, Technical Specifications, Commercial terms, Technical data, Schedules, Drawings, Tender offer of the Contractor with covering letter if any, Letter of Acceptance of the Purchaser, Schedule of Quantities, Prices, the Final General Conditions, any Special conditions applying to the particular contract, specifications and drawings, subsequent Amendments mutually agreed upon, and the Agreement to be entered into under these Conditions of Contract.

h. **Contract Price**

'The Contract Price' means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations.

i. Services

'Services' means services ancillary to the supply such as transportation and insurance, and other incidental services, such as installation, commissioning, provision of technical assistance, training and other such obligations of the Supplier covered under the Contract.

j. Specifications

The Specifications shall mean the specification annexed to or issued with these General Conditions \ technical specifications and Drawings attached thereto, if any.

k. Site

The site shall mean the actual place or places to which the machines/equipments are to be delivered or where work is to be done by the Contractor, together with the area surrounding the said place or places as the Contractor shall with consent of the Purchaser actually use in connection with the works, and shall include where applicable the lands and buildings upon or in which the works are to be executed.

l. Tests on Completion

Tests on Completion shall mean such tests which are to be made by the Contractor before the Works are taken over by the Purchaser as are provided in the Contract and such other tests as may be agreed upon between the Purchaser and the Contractor.

m. Commercial Use

Commercial use shall mean use of the work or works which the Contractor contemplates or of which it is to be commercially capable.

n. Dimensions

Dimensions shall mean the extent of a line, area, volume. All dimensions shall be given in the metric system i.e. for length measurement in kilometers, meters, or millimeters, for surface measurement in square meters, for volume measurement in cubic meters, etc.

o. Weight

Weight of a body shall mean the measure of the force of gravity on the body. It shall be given in metric units i.e. in tons (1 ton = 1000kg.), kilograms, grams and milligrams.

p. Time

Time shall be reckoned in months, days and hours, and the month shall mean calendar month.

q. Letter of Intent/Letter of Acceptance

Letter of Intent/Acceptance shall mean the Purchaser's letter to the Contractor conveying his acceptance of the tender subject to such reservations as may have been stated therein.

r. Writing

Writing shall include any manuscript, type-written or printed statement, under or over signature or seal, as the case may be.

s. Person

Words importing person shall include firms, companies, corporations, and associations or body of individuals, whether incorporated or not. Words importing the singular only shall also include the plural and vice-versa where the context requires.

Terms and expressions not herein defined shall have the same meanings as are assigned to them in the Indian Sale of goods Act (No.III of 1930) failing that in the Indian Contract Act (Act IX of 1872) and failing that the General Clauses Act 1987.

## **2.2.0 Packing and Marking**

2.2.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to severe climatic conditions during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit

2.2.2 The packing, marking and documents within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract and in any subsequent instruction ordered by the Purchaser.

2.2.3 Each package shall be marked outside to indicate:

- Name of the Supplier
- Details of items in the packages
- Name of the Consignee
- Purchase Order Number
- Gross, net and tare weights of the item
- Destination address

### **2.3.0 Inspection of Site**

The Contractor or his representative shall be deemed to have inspected and examined the site and surroundings before submitting his tender and shall obtain the necessary information as to risks, contingencies and other circumstances which may influence or affect his tender. Whether a tenderer visits the site or not, it will be assumed that a tenderer who submits his tender is fully aware of the site conditions and difficulties in erecting the work and no claims under this account will be entertained by the Purchaser at any future date.

### **2.4.0 Quantum of Work**

2.4.1 A schedule of approximate quantities for various items accompanies this tender. It shall be definitely understood that the Client do not accept any responsibility for the correctness or completeness of this schedule in respect of items and quantities and this schedule is liable for alteration by deletions, deductions or additions at the discretion of the Client without affecting the terms of the contract.

2.4.2 The Client reserves the right to increase or decrease the quantum of work at site without assigning any reason.

2.4.3 Variations in the quantities put to tender will not be the basis of any claim or disputes. The rates agreed by the contractor shall hold good for any amount of variation in the quantities and no claims whatsoever will be entertained on this account. The contractor shall carry out all works as directed by the Client at the same agreed rates.

### **2.5.0 Contract**

A formal agreement shall be entered into by the Contractor with the Purchaser for the proper fulfillment of the Contract within 15 days of receipt of the Letter of Acceptance in the prescribed format of the Company.

### **2.6.0 Application**

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

### **2.7.0 Standards**

The items and Services supplied under this Contract shall conform to the standards mentioned in the Technical Specifications and, when no applicable standard is mentioned, to the latest current edition or revision of the relevant Indian Standards and Codes.

### **2.8.0 Security Deposit**

If the Contractor is called upon by the Purchaser to deposit 'Security' and the Contractor fails to provide the security within the period specified, such failure shall constitute a breach of the Contract and the Purchaser shall be entitled to make other arrangements for the repurchase of the stores contracted for at the risk and expense of the Contractor and/or to recover from the Contractor damages arising from such cancellation. No claim shall lie against the Purchaser either in respect of interest if any due on Security Deposits or depreciation in value.

### **2.9.0 Sub-Letting of Contract**

The Contractor shall not sub-let any part of the contract.

#### **2.10.0 Time Schedule and Drawings**

The Contractor shall deliver to the Purchaser a detailed time schedule covering the various phases involved e.g. shop drawing, procurement, manufacture, assembly, inspection, test, delivery, etc. within 10 days of acceptance of the order by the Contractor.

The Contractor shall submit 4 copies of the foundation drawings/fabrication drawings for approval within 10 days from the award of Contract.

#### **2.11.0 Mistakes in Drawing**

The Contractor shall be responsible for any discrepancies, errors or omissions in the drawings and other particulars supplied by him, whether such particulars and drawings have been approved by the Purchaser or not. The Contractor shall pay for any extra cost due to any alteration of the works necessitated by reason of any discrepancy, error or omission in the drawings and particulars supplied by the Contractor.

#### **2.12.0 Warranty/Guaranty**

The work and items shall be of the best quality and workmanship and shall comply with particulars of the contract and in all respect shall be to the entire satisfaction of the Inspector and the Purchaser.

Whether or not the items have been installed under his supervision, the Contractor shall give the warranty/guaranty in respect of the work to be supplied by him for a period of 12 (twelve) months after the complete materials have been provisionally accepted, the Contractor shall be responsible for any defects that may be discovered therein notwithstanding that such defects could have been discovered at the time of inspection or any defects therein are found to have developed under proper use, arising from faulty materials or workmanship or fails to fulfil the performance guarantee or other requirement of the contract and the Contractor shall remedy all such defects as aforesaid at his own cost. The Purchaser shall state in writing in what respect the goods are faulty and further if in the opinion of the Purchaser the defects are of such a nature that it is necessary to replace or renew any defective stores, such replacement or renewal shall be made by Contractor forthwith without any extra costs to the Purchaser provided notice informing the Contractor of the defects is given by the Purchaser within the period of 12 (twelve) months from the date of provisional acceptance. The decision of the Purchaser notwithstanding any prior approval or acceptance of the Inspector as to whether or not the stores delivered are defective or any defect has developed within the said period of twelve months or as to whether the nature of defects require renewal or replacement shall be final, conclusive and binding on the Contractor. For the items replaced, the contractor shall give guarantee for another six (6) months.

Should the Contractor fail to rectify such defects to the full satisfaction of the Purchaser within a reasonable time, the Purchaser may reject and replace at the cost of the Contractor the whole or any part of the work as the case may be which is defective or fails to fulfil the requirements of the contract. Such replacement at the cost of the Contractor shall be carried out by the Purchaser within a reasonable time with items of the same particulars or when the items conforming to the stipulated particulars are, in the opinion of the Purchaser, not readily procurable, such opinion being final, then with the nearest substitutes. In the event of such rejection, the Purchaser shall be entitled to use the work in a reasonable manner for a time reasonably sufficient to enable him to obtain replacement as herein before provided. The Purchaser may engage any other contractor for carrying out such replacements.

**2.13.0 DELETED**

**2.14.0 Liquidated Damages for Late Delivery**

If the Contractor fails to fulfill his contractual obligations within the time fixed, he shall be liable at the discretion of the Purchaser to an unconditional and agreed liquidated damages of 1% (one per cent) of contract value or executed value whichever is higher per week or part thereof reckoned on the contract value based on the final bill. The Contractor's liability for delay shall not in any case exceed 10% (ten per cent) of the total contract value. Upon the liquidated damages attaining the maximum value, the Purchaser shall have the right to source the item from elsewhere at the risk and cost of the contractor.

**2.15.0 Inspection and Rejection**

The stores shall be offered by the Contractor for inspection at such places as may be specified by the Inspector, at the Contractor's own risk, expenses and costs and shall lie at such places of inspection at the risk of the Contractor and the stores will be subjected to inspection and test as may be considered necessary by the Inspector and his decision as regards rejection of goods shall be final and binding on the Contractor.

**2.16.0 Deductions from Contract Price**

All costs, damages or expenses which the Purchaser may have paid for which under the contract the Contractor is liable, may be deducted by the Purchaser from any money due or becoming due to the Contractor from the Purchaser under this contract or may be recovered by action of law or otherwise from the Contractor.

**2.17.0 Time of Completion and Force Majeure**

Should progress of work be delayed by strikes, lockouts, fire, accidents, acts of god, or any cause whatsoever beyond the reasonable control of the Contractor, a reasonable extension of time of completion shall be granted. Should one or both parties be prevented from fulfilling their contractual obligations by a state of force majeure lasting continuously for a period of at least one month, the two parties shall consult each other regarding the further implementation of the contract with the provision that if no mutually satisfactory arrangement is arrived at within a period of one month from the expiry of the one month referred to above, the contract shall be deemed to have expired at the end of the said one month referred to above. The above-mentioned expiry of the contract will imply that both the parties have the obligation to reach agreement regarding the winding up and financial settlement of the contract.

**2.18.0 Death, Bankruptcy, etc.**

If the Contractor shall die or dissolve or go into bankruptcy, or being a corporation cause to be wound up except for reconstruction purposes or carry on its business under a receiver, the executors, successors or other representatives in law of the estate of the Contractor or any such receiver, liquidator, or any person in whom the contract may become vested, shall forthwith give notice thereof in writing to the Purchaser and shall remain liable for the successful performance of the contract, and nothing aforesaid shall be deemed to relieve the Contractor or his successors of his or their obligations under the contract under any circumstances. The Contract may however be terminated by the Purchaser at his discretion by notice in writing to the Contractor.

## **2.19.0 Failure and Termination**

If the Contractor fails to deliver the stores or any installment thereof within the period fixed for such delivery or at any time repudiates the contract before the expiry of such period, the Purchaser may without prejudice to the right of the Purchaser to recover damages for breach of the Contract.

2.19.1 Purchase or authorize the purchase from elsewhere without notice to the Contractor, on the account and at the risk of the Contractor of the stores not so delivered or others of a similar description (where stores exactly complying with particulars are not in the opinion of the Purchaser, which shall be final, readily procurable) without canceling the contract in respect of the installments not yet due for delivery, or

2.19.2 Cancel the contract or a portion thereof and if so desired purchase or authorize the purchase of the stores not so delivered or other of a similar description (where stores exactly complying with particulars are not in the opinion of the Purchaser, which shall be final, readily procurable) at the risk and cost of the Contractor, if the Contractor had defaulted in the performance of the original contract, the Purchaser shall have the right to ignore his tender for risk purchase even though the lowest.

Where action is taken under sub-clause (i) or sub-clause (ii) above, the Contractor shall be liable for any loss which the Purchaser may sustain on that account provided the purchase or, if there is an agreement to purchase, such agreement is made, in case of failure to deliver the stores within the period fixed for such delivery within two months from the date of such failure and in case of repudiation of the contract before the expiry of the aforesaid period of delivery, within two months from the date of cancellation of the contract. The Contractor shall not be entitled to any gain on such purchase and the manner and method of such purchase shall be in the entire discretion of the Purchaser. It shall not be necessary for the Purchaser to serve a notice of such purchase on the Contractor.

## **2.20.0 Arbitration**

2.20.1 All disputes or difference whatsoever arising between the parties out of or relating to the construction, meaning and operation or effect of this contract or the breach thereof shall be settled by the sole Arbitrator appointed by the Chief Executive Officer of the Purchaser and the award of such Arbitrator shall be final and conclusive and binding on all parties to the contract.

2.20.2 The Contractor shall not in any way delay or default or cause to delay or default the carrying out of the Works by reasons of the fact that any matter has been agreed to be referred to and/or referred to Arbitration.

2.20.3 The seat of Arbitration shall be Thrissur and only the appropriate court coming under the High Court of Kerala will have jurisdiction to entertain all matters of litigation to the exclusion of all other courts.

## **2.21.0 Amendments**

No variation to the contract shall be valid unless made in writing and duly signed by both the parties. The Purchaser shall not, in the absence of written acceptance, be bound by any provision in the Contractor's quotation, offers, form of acknowledgement of the contract, invoices, packing lists and other documents which purport to impose any condition at variance with or supplemental to the Contract.

#### **2.22.0 Law Governing the Contract**

This Contract shall be governed by the laws of India for the time being in force. The marking of all stores supplied must comply with the requirements of Indian Acts relating to Merchandise marks and all the rules under such acts.

#### **2.23.0 Exercising the Rights and Powers of the Purchaser**

All the rights and discretions and powers of the Purchaser under the contract shall be exercisable by and all notices on behalf of the Purchaser shall be given by the Chief Executive Officer or any person or persons authorized to enter into contracts on behalf of the Purchaser and any reference to the opinion of the Purchaser in the terms and conditions contained in the contract shall mean and be construed as reference to the opinion of any of the persons mentioned in the clause.

#### **2.24.0 Notices**

2.24.1 Any notice to be given to the Contractor under the terms of the contract shall be served by sending the same by post, fax or telegram to or leaving the same at the Contractor's principal place of business (or in the event of the Contractor being a company to or at its registered office) or at the site.

2.24.2 Any notice to be given to the Purchaser under the terms of the contract shall be served by sending the same by post to or leaving the same at the Purchaser's last known address.

#### **2.25.0 Secrecy**

The Contractor shall not at any time during the pendency of the contract or thereafter disclose any information furnished to them by the Purchaser or any drawings, designs, reports and other documents and information prepared by the Contractor for this contract, without the prior written approval of the Purchaser except in so far as such disclosure is necessary for the performance of the Contractor's work and service hereunder.

#### **2.26.0 Ownership of Drawings and Specifications**

All drawings, specifications, materials and designs furnished by the Purchaser or his representatives shall be treated strictly as confidential property of the Purchaser. All such drawings, specifications, manuals and other materials shall be returned to the Purchaser upon the completion of the work under this contract. No copies, duplications or Photostats shall be retained by the Contractor without the consent of the Purchaser.

#### **2.27.0 Jurisdiction**

Any legal dispute arising out of or in any way connected with this contract shall be deemed to have arisen at site and shall be settled in court of competent jurisdiction located in Thrissur.

#### **2.28.0 Performance Tests and Provisional Acceptance**

2.28.1 On the completion of a satisfactory start-up operation, the Purchaser will proceed with the performance tests. The duration of the performance test shall be 3 days.



2.28.2 On the completion of a satisfactory start-up operation, the Purchaser will proceed with the Guarantee Run. The duration of the run shall be one (1) month.

2.28.3 On successful completion of the performance test and Guarantee run, the Purchaser will issue the Provisional acceptance certificate to the Contractor. If the system fails to qualify the performance test, the duration will be extended for one month from the date of failure of the system and if the Contractor is unable to prove the performance within this period, the Client shall have the right to procure similar equipment from another source at the risk and cost of the Contractor.

2.28.4 The final acceptance certificate will be issued on successful completion of the Warranty/Guarantee period.

#### **2.29.0 Accident or Injury to Workmen**

2.29.1 The Contractor shall be solely liable for any accident or injury that may happen to any of his personnel engaged in connection with the erection work according to the Contract. The Purchaser shall not be liable for, or in respect of, any damage or compensation payable at law in respect of, or in consequence of, any accident or injury to any personnel in the employment of the Contractor and the Contractor shall indemnify and keep indemnified the Purchaser against all such claims, damages, compensations and proceedings.

2.29.2 The Contractor is the employer of all the worker's engaged for this work and should therefore take all required registrations, insurance cover, etc. and pay premium correctly to labour welfare funds constituted by the Union Government and Government of Kerala from time to time.

#### **2.30.0 Compliance with Statutory and Other Regulations**

The Contractor shall, in all matters arising in the performance of the Contract, conform at his own expense with the provisions of all Central or State statutes, ordinances or laws and the rules, regulations, or bye-laws of any local or other duly constituted authority and shall keep the Purchaser indemnified against all penalties and liabilities of every kind for breach of any such statute, ordinance, law, rule regulations or bye-law.

The Contractor shall give all notices and pay all fees and taxes required to be given or paid under any Central or State statutes, ordinances or other laws or any regulations or bye-laws of any local or other duly constituted authority in relation to the erection work.

#### **2.31.0 Labour Rules**

##### **2.31.1 Provisions of Contract Labour Act**

In respect of all labour, directly or indirectly, employed by the Contractor for the erection work, the Contractor shall comply with the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, or any amendment thereof, and all legislations and rules of the State and/or Central Government or other local authority, framed from time to time governing the protection of health, sanitary arrangements, wages, welfare and safety for labour employed on the erection work. The rules and other statutory obligations with regard to fair wages, welfare and safety measures, maintenance of registers, etc. will be deemed to be part of the Contract.

### **2.31.2 Provisions of Minimum Wages and Payment of Wages Act**

The Contractor shall comply with the provisions of the Minimum Wages Act, 1948, and the Payment of Wages Act, 1936, and any amendment thereof in respect of all employees employed by him for the purpose of carrying out the erection work. The Contractor shall supply to the Purchaser any labour required to work wholly or partly under the direct order and control of the Purchaser, whether in connection with any work being executed by the Contractor or otherwise for the purpose of the Purchaser and such labour shall for the purpose of this clause still be deemed to be persons employed by the Contractor.

If any money shall, as a result of any claim or application made under the said Acts, be directed to be paid by the Purchaser, such money shall be deemed to be money payable to the Purchaser by the Contractor, and, on failure by the Contractor to repay the Purchaser, any money paid by the Purchaser as aforesaid, within seven days after the same, shall have been demanded from the Contractor, the Purchaser shall be entitled to recover the same from any money due or accruing to the Contractor under this or any other contract with the Purchaser.

In the event of the retrenchment of workers by the Contractor or sub-contractors employed by the Contractor during or after the completion of the work, the retrenchment compensation and other benefits will be paid by the Contractor to the workers as per the Industrial Disputes Act.

### **2.32.0 Provisions of Workmen's Compensation Act**

The Contractor shall at all times indemnify and keep indemnified the Purchaser against all claims for compensation under the provisions of the Workmen's Compensation Act, 1923 (VIII of 1923), or any other law for the time being in force by, or in respect of, any workman employed by the Contractor in carrying out of the Contract and against all costs and expenses or penalties incurred by the Purchaser in connection therewith. In every case in which, by virtue of the provisions of Section 12, sub-section (1) of the Workmen's Compensation Act, 1923 the Purchaser is obliged to pay compensation to a workman employed by the Contractor in executing the contract, the Purchaser shall recover from the Contractor the amount of the compensation so said and, without prejudice to the rights of the Purchaser under Section 12, sub-section (2) of the said Act, the Purchaser shall be at liberty to recover such amount or any part thereof deducting it from the security deposit or from any sum due by the Purchaser to the Contractor, whether under this contract or otherwise. The Purchaser shall not be bound to contest any claim made against him under Section 12, sub-section (1) of the said Act, except on the written request of the Contractor and upon his giving to the Purchaser full security for all costs for which the Purchaser might become liable in consequence of contesting such claim.

### **2.33.0 Damage to Persons or Property**

The Contractor shall indemnify and keep indemnified the purchaser against all losses and claims for injuries or damages to any property whatsoever which may arise out of, or in consequence of, the work at site carried out by the Contractor and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

### **2.34.0 Work in or around an Operating Plant**

When the work is being carried out in or around an operating plant, where the plant must run uninterrupted, the Contractor shall only work at specified places and times as mutually arranged between the Contractor and the Purchaser. The Contractor shall take sufficient care in moving his constructional / erection plant and equipment from one place to another in an

operating plant so that they may not cause any damage to the property of the Purchaser, like roads, overhead and underground cables, pipes and/or any other service or equipment or building, and, in the event of the Contractor's failure to do so, the cost of such damages, including eventual loss of working hours as estimated by the Purchaser, shall be borne by the Contractor.

## **2.35 INSTRUCTIONS FOR FILLING THE TENDER FORM**

1. In this tender item specifications are given in the following sections:

### **A. TECHNICAL SPECIFICATIONS**

### **B. SCHEDULE OF QUANTITIES WITH RATES with Unit Rate Specifications**

Technical specifications are the general instructions for carrying out the works.

Unit rate specifications are the descriptions of items for which unit rates are to be worked out by the bidder by considering all tender information.

2. The tenderer has to work out his rate as an overall percentage above or below or at the rate given in the schedule by a single entry. The tenderer's over all percentage shall be worked out based on the unit rate specification and rates provided against each specification.  
The rate has to be entered by a single entry in front of the schedule both in words and in figures. The rates should be quoted in decimal coinage system.
3. The tenderers should certify that he has studied the works at site and acquainted himself with the position with regard to constructions, materials and labour required for the work.
4. Every tenderer should furnish along with his tender, documents to prove their annual turnover and latest acknowledged income-tax clearance certificate and information regarding the income-tax circle of Ward of the District in which he is assessed by income-tax, the reference No. of assessment and the assessment year.
5. Experience in similar works have to be established by means of completion certificates from Clients.
6. The tenderer has to pay the earnest money deposit as specified in the tender notice along with the tender. Tenders for which earnest money deposit has not been received shall be rejected. There shall be no exemption for any tenderer from submitting the earnest money deposit.
7. Certified copies of Registration Certificate, Partnership Deed and Power of Attorney or Articles of Association in case of Limited companies will have to be furnished for considering the acceptance of the tender.
8. The tender of the tenderer not complying with the above instructions may be rejected.
9. The tenderer should return the original tender document after putting the signature on all pages.
10. The tenderer shall be responsible for furnishing the necessary forms including Form No.8-C, 20, 20-A, 20-B, 20-D, 20-F, etc. applicable for deducting GST/work contract tax under the GST Act.
11. Should the tenderer notice any discrepancy or error in the statement made, or quantities or units shown against items, he shall immediately bring it to the notice of OUSHADHI and obtain the clarification before submitting the tender. The tender shall be based on such

clarifications received and shall be recorded as such in the covering letter to the tenderer to execute the work according to the statement made for quantities or units shown in the tender, without any compensation.

12. The tenderer shall execute a preliminary agreement on non-judicial stamp paper of value not less than Rs.200/- and enclose the same with the tender documents. The Performa of the preliminary agreement can be found in Forms for different deeds.

I/We have carefully read the above said instructions and shall comply with the same.

Signature of the tenderer.

Place:

Date :

Tender No : OUSHADHI/E2-20/25/2025-26

**TENDER FORM**

To

The Managing Director,  
The Pharmaceutical Corporation (I.M.) Kerala Ltd., (OUSHADHI)  
Kuttanellur p.o, Thrissur-680 014.

Dear Sirs,

**Sub: Setting of clean room of class 100000 at Centre of Excellence Oushadhi Kuttanellur**

With reference to the tender invited by you for the above proposed work, I/We do hereby Tender for this after having:

- a) Examined the designs, drawings, details, specifications schedule of quantities, instructions to tenders, agreement and the conditions of contract annexed thereto (hereinafter called the Contract Documents) relating to Construction.
- b) Visited the site of work, studied the site conditions, nature of substrata, availability of construction materials and
- c) Acquired the requisite information on all prevailing factors affecting the tender.

I/We undersigned hereby offer to construct the proposed work in strict accordance with the Contract document for the consideration to be calculated in terms of the priced schedule of quantities.

I/We have noted that time is the essence of the contract and undertake to complete the whole of the works as per the attached schedule from the date of issue of an intimation by you that our tender has been accepted and upon receiving possession of site. I/We further undertake that on failure subject to the conditions of the contract relating to extension of time, I/We are willing to pay the agreed Liquidate Damages/Penalty for the period during which the work remains incomplete beyond the due date of completion.

I/We further agree to the deduction of retention money and to remit security deposit which will be returned to me/us as per the relevant clauses in the agreement. The deduction will be as explained in clause 1.11 of Notice Inviting Tender.

I/We undertake to execute the work of electrification of various facilities through a licensed electrical contractor of appropriate class as given in the tender condition. All the requirements of supervision, testing, commissioning and energising will be fulfilled by us.

We have also executed the preliminary agreement as is enclosed.

Further we undertake to execute the works which will be entrusted to us in the most workman like manner within the stipulated completion period. If our Tender is found accepted we agree to enter into a contract as specified by you within one week of receipt of intimation of acceptance of our tender.

Our Bankers are:

1.....

2.....

Place:

Date :

Signature of tenderer

Name of the partners of the firm

OR

Name of the person having power of  
Attorney to sign the contract.

### **3.0 GENERAL INFORMATION OF THE PROJECT**



3.00 **GENERAL INFORMATION OF THE PROJECT**

- 3.01 Owner : The Pharmaceutical Corporation (I.M) Kerala Ltd. (OUSHADHI),  
Kuttanellur .P.O, Thrissur-680014
- 3.02 Project : **Setting of Clean room of class 100000 at Centre of  
Excellence Oushadhi Kuttanellur**
- 3.03 Tender No : **OUSHADHI/E2-20/25/2025-26**
- 3.04 Location : Kuttanellur, Thrissur
- 3.05 Nearest Railway Station : Thrissur/Ollur
- 3.06 Nearest Airport : Cochin International Airport Ltd.
- 3.07 Accessibility : Site is accessible by NH47.
- 3.08 Scope of work : The scope of work covers Supply, commissioning of  
Items as per attached drawings/revisions,  
Specifications, bill of quantities,etc at Oushadhi,  
Kuttanellur
- 3.09 Schedule Taken : Market Rate and DSR 2018 with Cost Index of 35.59%

#### **SECTION - 4.00 - SPECIAL CONDITIONS OF CONTRACT**

## **SPECIAL CONDITIONS OF CONTRACT**

### **4.1 General**

The following special conditions shall be read in conjunction with General terms and conditions of Contract (GCC) and amendments/corrections thereto. Where any portion of the GCC is repugnant to or at variance with any provisions of the SCC, then, unless a different intention appears, the provision of the SCC shall be deemed to override the provisions of the GCC.

### **4.2 Quality of materials**

All the materials and equipment supplied by the contractor for this work shall be new and should conform to relevant BIS Specifications. They shall be of such design, size and material as to function satisfactorily under the rated conditions of operation and to withstand the environmental conditions at site. The copies of purchase vouchers & gate passes should be produced along with the materials.

### **4.3 Inspection of material and Equipment**

The materials should be inspected/tested by Purchaser prior to the despatch from the manufacturer. The inspection call should be given at least fifteen days in advance so as to depute the officials of Purchaser for the inspection.

Such inspection will be of the following categories:

1. To receive materials at site with manufacturers Test Certificate(s).
2. To receive materials after physical inspection at site.

Similarly, for fabricated equipment, the contractor will first submit dimensional detailed drawings for approval before fabrication is taken up in the factory.

### **4.4 Supply of Tools, Tackles and Materials**

The Supplier shall, at his own expense, provide all the necessary equipment, tools and tackles, haulage power, consumables, etc. necessary for effective execution and completion of the works during site fabrication, erection and commissioning.

### **4.5 Protection of Plant**

All works completed or in progress as well as machinery and equipment that are liable to be damaged by the Supplier's work shall be protected by the Supplier and protection shall remain and be maintained until its removal is directed by the Purchaser.

The Supplier shall effectively protect from the effects of weather and from damages or defacement and shall cover appropriately, wherever required, all the works carried out by him.

Adequate lighting, guarding and watching at and near all the storage, handling, fabrication, pre-assembly and erection sites for properly carrying out the work and for safety and security shall be provided by the Supplier at Supplier's cost. The Supplier should adequately light the work area during night time also.

The Supplier shall take full responsibility for the care of the works or any section or portions thereof until taking over of the plant by the Purchaser and in case any damage or loss shall happen to any portion of the works not taken over as aforesaid, from any cause whatsoever, the same shall be made good by and at the sole cost of the Supplier and to the satisfaction of the Purchaser. The Supplier shall also be liable for any loss of or damage to the works including works carried out by others, caused by the Supplier or his sub-supplier in the course of any operations carried out by them for the purpose of completing any outstanding work or complying with his obligations.

#### **4.6 Training of Personnel**

The Supervisory and operating personnel of the Purchaser shall be provided with adequate training by the Supplier during the installation, testing, start-up and commissioning of the system free of cost and the training shall be continued during the entire guarantee run period

#### **4.7 Consumption of Materials**

Proper record of daily consumption of materials shall be maintained at the site of work for each item (if necessary) as directed by the Engineer-in-charge. This is required to be done even if the contractor arranges these materials.

#### **4.8 Testing and Measuring Equipment**

Equipment for measurement of work and testing the installation shall be procured by the Contractor for his use at his own cost. The same shall also be made available to the Engineer-in-charge without any charges for use of this work.

#### **4.9 Structural Alterations to Building**

No structural member in the building shall be damaged/altered, without prior approval from the Engineer-in-charge.

Structural provisions like openings, if any, provided by Purchaser for the work, shall be used. Where these require modifications, such contingent works shall be carried out by the contractor, at his cost.

All cut out openings in floors provided by Purchaser shall be closed, after installation, in accordance with the schedule of work.

All cuttings made by the contractor in connection with the works shall be filled by him at his cost to the original finish.

#### **4.10 Initial Site Visit and Completion of work**

It is recommended that site visit shall be conducted by the contractor before bidding to understand the nature and timing of the work. The work has to be completed within the stipulated period without failure. Oushadhi shall not be responsible for the delay in completion of the work at any stage other than for reasons attributable to Oushadhi.

#### 4.11 Virtual Completion

The work shall not be considered as completed until the Engineer-in-charge has certified in writing that the work has been virtually completed and the Defects Liability period shall commence from the date of such certificate.

Should it become necessary to occupy any portion of the building or to use any part of any equipment, before the contract is completed, the same shall **not constitute an acceptance** of any part of the work unless so stated in writing by the Engineer-in-charge.

#### 4.12 Completion Drawings and Certificate

For all work completion report as given in the pro-forma for test results shall be submitted to the Engineer-in-charge, after completion of work.

On completion of work, the Contractor shall submit "As built drawings" drawn to a suitable scale in tracing sheet (whichever is applicable) in **three copies** and one set soft copy (CD) of the same to the Engineer-in-charge before the submission of the final bill.

1. Drainage lines
2. As built drawings

FAC shall be issued only after receipt and acceptance of all the above documents/drawings.

#### 4.13 Handing over the site

The site shall be handed over in Phases, if warranted. Contractor shall plan the work as per the phasing decided by the Purchaser and no claim will be entertained for not handing over the entire area in one stretch. In case there are small patches, which could not be handed over due to legal and technical reasons, this will not be considered as obstructions and no claim will be entertained for delays for such reasons.

The Contractor shall clear the site thoroughly of all shuttering materials and rubbish etc., left out of his work and dress the site around the area to the satisfaction of Engineer-in-charge upon completion of the work and before release of payment of the last running bill. He will remove the labour huts on completion of the work. The payment of final bill will be subject to the compliance of this condition by the contractor.

#### 4.14 Deviations from Purchaser's Specification

Deviations from the purchaser's specification, if any, proposed by the bidder will be considered, provided they meet with the purchaser's requirements and are necessary to improve utility, performance and efficiency. The deviations proposed by the bidder shall include the technical merits and the financial implications.

#### 4.15 Conformity to IE Act, IE Rules and Standards

The work shall be carried out in the best workmanlike manner in conformity with this specification, the relevant specification/codes of practice of the Bureau of Indian Standards or IEC recommendations (Except where specified otherwise) and other relevant standards with latest amendments, approved drawings and the instructions issued by the Engineer-in-charge or his authorised representative, from time to time. Equipment meeting any other authoritative standard, which ensures an equal or better quality than the above standards, will also be acceptable.

In addition to the standards, all works shall also conform to the requirements of the followings:

- a. The works shall also conform to relevant Bureau of Indian Standards' Codes of practice (COP) for the type of work involved.
- b. Materials to be used in work shall be ISI marked wherever applicable.
- c. In all electrical installation works, relevant Safety codes of practices shall be followed.
- d. Fire Insurance Regulations/Tariff Advisory Committee.
- e. Regulations laid down by the Factory Inspector of the State.
- f. Any other regulations laid down by the local authorities.
- g.

#### **4.16 Extra items**

If the Contractor has been asked to execute any such item/work in course of construction for which the tender rates have not been quoted by him, he must undertake such work. The rates for which additional work shall be determined by the Purchaser on the following lines, in the order of preference.

1. The rate to be derived from any one of the quoted rates for similar items of work in the tender.
2. In the case of extra items, whether altered or substituted, for which similar items do not exist in the contract, the rates shall be derived at on the basis of provisions of standard data book and latest schedule of rates of Kerala Public Works Department by adding profit and overhead of 15% and applying the Contractor's quoted percentage above or below.
3. Rates based on actual observation and/or analysis of labour and materials involved in such items. For this purpose the Contractor shall submit to the Engineer-in-charge detailed analysis of the rate proposed by the Contractor supported by relevant vouchers. While fixing rates for extra items an allowance of 15% of the cost will be provided towards contractors profit and overhead charges taken over.

#### **4.17 Data/Drawings/Documents**

The bidder shall submit the following data/information/drawings/documents as indicated below:

- i) Material Approval Request, Material Inspection Reports, Fabrication drawings
- ii) List of deviations clause by clause and reasons.
- iii) Descriptive literature of the various equipment offered with catalogues, if any.
- iv) Guaranteed technical particulars of the equipment and performance particulars
- v) Approximate dimensions, foundation drawings with load details and preliminary G.A drawings.
- vi) List of optional features with extra price.
- vii) Make of various equipment and associated components/ accessories.
- viii) Where applicable, preliminary schematic of the equipment/ system offered in the tender.

Within 2 weeks of order, Contractor shall submit 4 sets of following documents for purchaser/Consultant's approval.

1. Data Sheets
2. Drainage system Drawings with details.

The Contractor has to carry out the works in a functioning factory. Hence all necessary precautions such as proper barricading, material handling, etc. shall be taken by the Contractor. The works of the Contractor shall not affect the functioning of the factory and the same shall not make any issues such as

pollution, contamination of the raw material, products, etc. The quoted rate shall inclusive of all the above and no claims on account of the above shall be permitted.

## **CHAPTER B**

### **TECHNICAL SPECIFICATIONS - CIVIL WORKS**

#### **CEMENT PLASTER: -**

- The cement plaster shall be 6mm, 12 mm, 15 mm or 20 mm thick as specified in the item. The use of PP Cement shall be preferred.
- Finish: The plaster shall be finished to a true and plumb surface and to the proper degree of smoothness as required. The work shall be tested frequently as the work proceeds with a true straight edge not less than 2.5 m long and with plumb bobs. All horizontal lines and surfaces shall be tested with a level and all jambs and corners with a plumb bob as the work proceeds. Precaution : Any cracks which appear in the surface and all portions which sound hollow when tapped, or are found to be soft or otherwise defective, shall be cut out in rectangular shape and redone as directed by the Engineer-in-Charge. (i) When ceiling plaster is done, it shall be finished to chamfered edge at an angle at its junction with a suitable tool when plaster is being done. Similarly when the wall plaster is being done, it shall be kept separate from the ceiling plaster by a thin straight groove not deeper than 6 mm drawn with any suitable method with the wall while the plaster is green. (ii) To prevent surface cracks appearing between junctions of RCC column/beam and walls, 150 mm wide chicken wire mesh should be fixed with U nails 150 mm centre to centre before plastering the junction. The plastering of walls and beam/column in one vertical plane should be carried out in one go. The rate for plastering items shall be inclusive of this.

#### **SAND/ M Sand**

- Sand/ M Sand to be used for the work shall be of as specified in CPWD Specifications. Sand/ M Sand shall be obtained from the source to be got approved by the Engineer in charge and washed if required, with appropriate equipment to bring down the chemical, inorganic and organic impurities within the permissible limits as per the direction of the Engineer in charge. The same shall consist of hard siliceous materials.

Note: Where only one variety of sand is available the sand will be sieved for use in finishing work as directed by the Engineer – in – charge in order to obtain smooth surface and nothing extra will be paid on this account.

- Nothing extra shall be paid for screening or washing the sand/ M Sand as prescribed above.

#### **CEMENT:**

- The contractor shall procure 43/ 53 grade ordinary Portland cement [grade as per



design/ drawings/ decision of Engineer-in-charge] conforming to IS 8112/Portland Pozzolana Cement conforming to IS:1489 (Part-I) as required in the work, from approved manufacturers of cement having a production capacity not less than one million tonnes per annum as approved by the Engineer –in -charge. The tenderers may also submit a list of names of cement manufacturers which they propose to use in the work. The tender accepting authority reserves right to accept or reject name(s) of cement manufacturer(s) which the tenderer proposes to use in the work. No change in the tendered rates will be accepted if the tender accepting authority does not accept the list of cement manufacturers, given by the tenderer, fully or partially. The supply of cement shall be taken in 50 kg. bags bearing manufacturer's name and ISI marking. Samples of cement arranged by the contractor shall be taken by the Engineer-in-charge and got tested in accordance with provisions of relevant BIS codes. In case the test results indicate that the cement arranged by the contractor does not conform to the relevant BIS codes, the same shall stand rejected, and it shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer- in-charge to do so.

- The cement shall be brought at site in bulk supply of approximately 50 tonnes or as decided by the Engineer-in-charge. The cement godown of the capacity to store a minimum of 2000 bags of cement shall be constructed by the contractor at site of work for which no extra payment shall be made.
- Double lock provision shall be made to the door of the cement godown. The keys of one lock shall remain with the Engineer-in-Charge or his authorized representative and the keys of the other lock shall remain with the contractor. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-Charge at any time.
- The cement shall be got tested by the Engineer-in-charge and shall be used on the work only after satisfactory test results have been received. The contractor shall supply free of charge the cement required for testing including its transportation cost to testing laboratories. The cost of tests shall be borne by the contractor/Department in the manner indicated below: (a) By the contractor, if the results show that the cement does not conform to relevant BIS codes. (b) By the Department, if the results show that the cement conforms to relevant BIS codes.
- The actual issue and consumption of cement on work shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of cement shall be worked out as per procedure prescribed in clause 42 of the contract and shall be governed by conditions laid therein. In case the cement consumption is less than theoretical consumption including permissible variation, recovery at the rate so prescribed shall be made. In case of excess consumption no adjustment need to made.
- The cement brought to the site and the cement remaining unused after completion of the work shall not be removed from site without the written permission of the

Engineer-in- charge.

- The damaged cement shall be removed from the site immediately by the contractor on receipt of a notice in writing from the Engineer-in-charge. If he does not do so within 3 days of receipt of such notice, the Engineer-in charge shall get it remove at the cost of the contractor.
- Engineer –in- charge may change the brand of Cement depending upon availability in local market, if needed. Instructions in this respect can be issued by them at regular intervals.

## **CLEAN ROOM INTERIOR**

### **SCOPE**

This part covers Requirements and Specifications for the clean room components associated with proposed class 100000 clean room facility for Centre of excellence Oushadhi Kuttanellur. Contractor shall deploy a full time supervisor with sufficient experience in the similar kind of project.

The installation shall be carried out in accordance with good engineering practices available, latest Indian and International standards and specific requirements covered as below:-

### **CEILING PANELS**

This shall be double skin type, 50mm thick made with stainless steel panels sandwiched with PUF having a density not less than 38 kg/m<sup>3</sup> as core. Both sides of the panel shall be smooth finished. The panel shall be covered with peel off film to ensure that the material is protected against scratches and indentation during transit and storage.

The ceiling panel shall have a recessed male edge on one side and roll formed female edge on the other side, which creates an interlock, thus ensuring panel finish and a snug insulation to insulation.

Necessary service/ trap doors shall be provided to the false ceiling for maintenance on the top of the false ceiling. All materials required for the manufacturing of cubical will be new and shall comply with relevant Bureau of Indian Standard specification and bear the mark.

### **WALL PANELS**

This shall be double skin type, 100mm thick made with stainless steel panels sandwiched with PUF having a density not less than 38 kg/m<sup>3</sup> as core. Both sides of the panel shall be smooth finished. The panel shall be covered with peel off film to ensure that the material is protected against scratches and indentation during transit and storage. Wall panels shall have a male edge one side and female edge on other side. This when two panels joined

forms a sturdy interlock. Further the joints shall be finished with silicon sealant.

## **DOOR**

Single door, flush door, roller hinged type single leaf shall be fabricated out of similar material to wall panels as mentioned in the tender specification above. The size of the door shall be 800mm x 2100mm clear size measured inner to inner of frames. The door shall be provided with door closer and lock. The door handles, push plate and hinges shall be of stainless steel.

Double door, Flush door, roller hinged type single leaf shall be fabricated out of similar material to wall panels as mentioned in the tender specification above. The size of the door shall be 1800 x 2100 mm clear size measured inner to inner. The door shall be provided with door closer and lock. The door handles, push plate and hinges shall be of stainless steel.

## **EPOXY COATING**

Surface should be prepared using acid etching and wire brushing so that all loose particles, grease and oil are removed. The moisture content should not be more than 5%.

One coat of penetration primer may be applied to the cleaned surface followed by spreading of epoxy mortar screed made out of epoxy resin with reactor and silica sand aggregate of a suitable proportion. Proper care should be taken for a uniform spread so that thickness is uniform.

After allowing for an initial curing of the mortar screed, final layer of self leveling epoxy is applied within 8 hours and final curing time may be 10hours. Average thickness shall be 3mm.

Coving to the vertical wall to 100mm shall be provided. Coving radius shall be 6mm. All internal and external corners may be rounded off.

Minimum 24 hours shall be allowed for complete curing. The flooring should be protected using 6mm thick hardboard or particle board if other project activities has to be carried out after the epoxy flooring is done. This covering may be removed only after completing all above activities and at the time of commissioning.

## **DISMANTLING AND DEMOLITION**

### **General**

The term dismantling implies carefully taking up or down and removing without damage. This shall consist of dismantling one or more parts of the building as specified or shown on the drawings.

The term Demolition implies taking up or down or breaking up. This shall consist of demolishing whole or part of work including all relevant items as specified or shown on drawings.

### **Precautions**

Necessary propping, shoring and /or underpinning shall be provided for the safety of the adjoining work or property, which is to be left in tact, before dismantling and demolishing is taken up and the work shall be carried out in such a way that no damage is caused to the adjoining work or property.

Wherever required, temporary enclosures or partitions/barricades shall also be provided. Necessary precautions shall be taken to keep the dust-nuisance down as and when necessary.

Dismantling shall be commenced in a systematic manner. All materials which are likely to be damaged by dropping from a height or demolishing roofs, masonry etc., shall be carefully dismantled first. The dismantled articles shall be passed by hand where necessary and lowered to the ground and not thrown. The materials then be properly stacked as directed by the Engineer-in-charge. Methodology of dismantling shall be got approved in toto by Engineer-in-charge prior to take up work at site.

All materials obtained from dismantling or demolition shall be the property of Oushadhi unless otherwise specified and shall be kept in safe custody until handed over to the Engineer-in-charge.

Any serviceable material, obtained during dismantling or demolition shall be separated out and stacked properly as indicated by the Engineer-in-charge within a lead of 150m, or as specified in the item. All under serviceable materials, rubbish etc., shall be disposed off as directed by the Engineer-in-charge.

### **Treatment**

All the dismantled area shall be rendered clean off all debris, dust etc. The sides of jambs, sills, soffits etc., of the openings if any, after taking out doors and window chowkhats, unless and otherwise to be treated, shall be plastered in C.M 1:3 with neeru finish to render true sides, corners, edges etc. Reinforcement shall be cut either by hacksaw or gas cutting as approved by Engineer-in-charge. All services shall be disconnected prior to taking up job.

### **Rates**

The rate shall include cost of all such operations mentioned above including necessary labour, materials, transport, scaffolding, stacking the serviceable materials, disposing the unserviceable materials within the lead specified, all as directed by the Engineer-in-charge.

## **PRELIMINARY PROGRAMME**

The tenderer shall also submit a preliminary programme of the contract works showing the various stages of design sampling, testing, fabrication, delivery and installation of the works. Upon approval of the shop drawings, at least 4 copies shall be submitted by the Contractor.

The Contractor/Sub-contractor shall submit a maintenance manual for the curtain wall/structural glazing system inclusive of all metal parts, glass and finish etc.

During detailed design and execution any details may increase as per actual requirement at site, these variations shall be executed without any extra cost implications to Oushadhi.

## **PERFORMANCE GUARANTEE**

The tenderer shall provide a performance guarantee of requisite value to be indicated in the General Conditions of Contract for a period of mentioned in the GCC, to provide for expenses, to cover the risk and cost of rectification of defect, noticed during the five years guarantee period. Guarantee period to start from the date of completion of the project.

## **SAMPLES OF MATERIALS:**

- Sample of all materials/ fittings and fixture to be used in the work such as doors, windows, tiles, sanitary, water supply, drainage fittings and fixtures shall be submitted well in advance by the contractor for approval from the Engineer-in charge of work in writing before placing orders for the entire quantity required for completion of work. Samples approved by the EIC shall be kept in Sample Room under the charge of Engineer-in-Charge and shall retain till completion of work.
- Finished items in respect of typical portion of works of repetitive nature such as typical room, toilet, railing, door, window or any other work desired by the engineer-in- charge shall be prepared by the contractor to the satisfaction of Engineer-in-charge and got approved from him in writing before the commencement of these items for the entire work.
- The requirements for preparation of samples shall be observed and fulfilled by the contractor well in advance to avoid any detriment to the general progress of work. In other words, this will not be allowed to have any effects on the general progress of work or on any of the terms and conditions of the contract. No claims of any kind whatsoever including the claims of extension of time will be entertained due to the incorporation of this requirement.

**VARIATION IN CONSUMPTION OF MATERIALS:**

- The variation in consumption of material shall be governed as per CPWD specification and clauses of the contract to the extent applicable.

**MISCELLANEOUS:**

- Materials manufacture by reputed firms and approved by Engineer – in charge shall only be used. Only articles classified as “First Quality” by the manufactures shall be used unless otherwise specified. Preference shall be given to those articles which bear ISI certification marks. In case articles bearing ISI certification marks are not available the quality of sample brought by the contractor shall be judged by the standards laid down in the latest CPWD specifications. For items not covered by the latest CPWD specification, relevant ISI standards shall apply.

**TESTS:**

- Materials brought at site of work shall not be used in the work before getting satisfactory test results for Mandatory tests as per relevant provisions in Latest CPWD/PWD Specifications for works. Normally, part rate payment shall be allowed in the running account bills only if the materials are tested and test results are found to be satisfactory to by the Engineer-in-charge. These tests shall be got done from laboratories approved by Engineer-in - charge or the laboratory set up by the contractor at site as per directions of Engineer-in - charge.
- The Engineer-in - charge of work shall check the test results and satisfy himself before allowing any payment in the running/ final bill.

## **TECHNICAL SPECIFICATIONS – ELECTRICAL WORKS**

### **General Conditions**

#### **1. Wiring**

- Wiring shall conform to IS 732
- Light wiring and power wiring shall be segregated.
- The points of connection in wires shall be properly soldered.
- If different materials happen to come at a connection point, corrosion inhibiting compound shall be applied.
- Bare copper conductors which come close to live exposed portions inside switch boards/DB etc. shall be sleeved and connected using suitable sockets.
- Wires and copper conductors which come inside switch boards/DB etc. shall be properly clipped with suitable ties, neatly arranged and dressed before giving connections.

#### **2. Fixing Conduits.**

- PVC pipes shall be clamped with GI saddles/painted MS saddles/PVC spacer saddles, spacing of clamps shall not exceed 60cms. For fixing saddles clips, minimum 30mm MS screws shall be used. Fibre plug/raw plug/Phil plug alone will be permitted to fix screws and holes for providing plugs are to be drilled properly. Under no circumstances wooden pegs will be permitted.
- For fixing conduits in recess, grooves to the required depth shall be cut and pipes saddles in the grooves as is done for clamping on surface. It can be fixed with staples also. In either case the spacing between saddles clips/staples shall not exceed 60cms. After fixing conduits as described the groove is to be filled and plastered with 1:6 Cement Mortar and the surface finely finished.
- All the junction boxes shall be screwed and fixed to the wall/ceiling.
- Conduits shall be fixed with saddles at distance not exceeding 30cm from conduit accessory.
- The size of conduits shall be so fixed as to hold number of wires as stipulated in IS 732.
- Layout of the conduits shall be so arranged so as not to disturb the aesthetic view of the building.
- Male/Female adapters shall be provided for the proper termination of PVC conduits if they are in open position.

### **3 . Fixing Switch Boards.**

- Normally switch boards shall be fixed at a height of 1.35m from ground level. The position of the switch board shall be fixed according to the directions of the field officers concerned.
- switch board should be of modular type
- modular switch boxes should be of durable material that keeps the internal switches and circuits safe from physical damages like wear and tear

### **4 . Fixing Accessories.**

- Accessories such as switches, plug sockets, fan regulators etc. are to be arranged on sheet cover in such a manner that there shall be a clear space of 25mm along the periphery on all sides. There shall be a clear space of at least 6mm in between individual switches/sockets etc. as the case may be. The spacing between adjacent fan regulators and between regulators and switches/plug sockets shall be 25mm. Size of the switch box shall so selected so as to have this spacing when the accessories are arranged.
- Only one row of switch/plug sockets shall be arranged on a switch board.
- Accessories such as switches, plug sockets, fan regulator should be of modular type and made up of flame retardant, dust proof, fire grade material
- The sockets must be shuttered to avoid any accidental contact with any live electrical wires or parts.
- Ceiling rose can be screwed directly to conduit outlets.

### **5. Fixing lamps/fittings/call bells/ fans etc.**

- Batten holders can be fixed directly to conduit outlets.
- Bulk head fittings can be fixed either in recess or surface using 30mm iron screws.
- Mirror lamp can be fixed directly on wall using 30mm screws.
- Round block for suspending fluorescent fitting shall be screwed using 2 nos.. 50mm M.S. screws.
- Fan clamps to be fitted as per ISS.



## **6 . Installation of DBs.**

- DBs shall normally be fixed at a height of 1.5m from ground level. Two DBs shall not be at a distance less than 2m.

## **7. Cabling.**

- Cables shall conform to IS 1554 and shall have ISI marking.
- Cables shall be laid conforming to relevant IS specification.
- At points of road crossing, cables are to be drawn through GI pipes laid at a depth of 1m
- The nominal cross section of conductor of cable should be such that current carrying capacity is not less than the maximum continuous current that flows through the conductor under normal conditions of operations.
- The rated voltage for the cable should be the reference voltage for which the cable is designed
- While laying cables allowance shall be made for all possible mechanical stress and internal bending radius of cable should be chosen such that cable is not damaged.

## **8. Panel boards/meter boards.**

- Smaller size panel boards shall be fabricated using 1.6mm MS sheet and bigger size boards using 2.0mm MS Sheet.
- Separate space for mounting metering equipment and indicators are to be provided.

## **9. Earthing.**

- Earthing shall conform to IS 3043/1987.

## **10. Identification.**

- Identification letters shall be written legibly in English language with white enamel paint on switch boards up to DBs cable.

## **11 . General Requirements.**

- The contractor shall conduct at site tests and furnish test results as specified in IS 732.

- As fitted drawing shall be submitted (3 copies) to the concerned department.
- He/she shall prepare schematic diagrams, plans etc. required for submission to electrical inspectorate. He shall also follow up with electrical inspectorate and KSEB for getting the installations energized immediately on completion of work.
- The contract's supervisor shall be at site.

MINIMUM TECHNICAL SPECIFICATION OF ELECTRICAL ITEMS			
Sl. No.	Item description	Specification	Required rating
1	LED round recessed light	Wattage	As mentioned in schedule
		Frequency	50 Hz
		Operating Temperature	10 to 45 degree Celsius
		colour Temperature	6500 K
		colour rendering index (CRI)	80 and above
		Rated luminous efficiency	70 - 110 lumen/watt
		colour	cool white
		voltage withstanding range	150 V to 270v
		In built surge protection	Yes
		LED Driver	electronic
		Installation Type	Flush mounting

## HVAC SPECIFICATIONS

### TECHNICAL SPECIFICATIONS FOR HVAC SYSTEM

#### 1. SCOPE

The scope of this section comprises the supply, erection testing and commissioning of and DX system and ventilation systems conforming to these specifications and in accordance with the requirements of Drawing and Schedule of Quantities.

#### STANDARDS TO BE FOLLOWED

##### LIST OF BUREAU OF INDIAN STANDARDS CODES

IS : 554 – 1985 (Reaffirmed 1996)	Dimensions for pipe threads where pressure tight joints are required on the threads.
IS: 659-1964 (Reaffirmed 1991)	Air Conditioning (Safety Code)
IS:660-1963 (Reaffirmed 1991)	Mechanical Refrigeration (Safety Code)
IS : 732-1989	Code of practice for electrical wiring
IS : 822-1970 (Reaffirmed 1991)	Code of procedure for inspection of welds.
IS : 1255-1983	Code of Practice for installation and maintenance of Power Cables up to and including 33KV rating (Second Revision)
IS : 1554 – 1988 (Part – I)	PVC insulated (Heavy Duty) electric cables for working voltages up to and including 1100 volts
IS : 2379 – 1990	Colour code for the identification of pipelines.
IS : 2551 – 1982	Danger notice plate
IS : 3043 – 1987	Code of practice for earthing
IS : 3103 – 1975 (Reaffirmed 1999)	Code of practice for Industrial Ventilation
IS : 3837 – 1976 (Reaffirmed 1990)	Accessories for rigid steel conduit for electrical wiring
IS : 4736-1986 (Reaffirmed 1998)	Hot-dip zinc coatings on steel tubes
IS : 5133-1969 (Part-I) (Reaffirmed 1990)	Boxes for the enclosure of electrical accessories.
IS : 5424-1989 (Reaffirmed 1994)	Rubber mats for electrical purposes.
IS : 5578 & 11353-1985	Marking and identification of conductors
IS : 6392-1971 (Reaffirmed 1988)	Steel pipe flanges.
IS : 13947-1993 (Part – V)	Control Circuit Devices

**ASHRAE (American Society of Heating Refrigeration & Air-conditioning Engineers) Hand Books**

Application 1999 Fundamentals 1997  
Systems & Equipment 1996  
ASHRAE Indoor air quality Standard 62-1982  
IEC Relevant Sections

**NATIONAL ACREDITATION BOARD FOR HOSPITALS (NABH 2016)**

**2. DX UNITS**

**a. TYPE**

Units shall be air cooled, variable refrigerant volume/ variable refrigerant flow air conditioner consisting of one or more outdoor units and single indoor unit. The indoor unit on any circuit shall be controlled individually. Compressor installed in each modular outdoor unit shall have higher reliability, improved life, better backup and duty cycling purpose. The system shall be capable of changing the rotating speed of inverter compressor by inverter controller to follow variations in cooling and heating load. Outdoor unit shall be suitable for mix match connection of all types of indoor units. The refrigerant piping between indoor units and outdoor unit shall be possible to extend up to 50 m with maximum 15 m level difference without any oil traps. Both indoor units and outdoor unit shall be factory assembled, tested and filled with first charge of refrigerant before delivering at site. In the event of failure of an indoor unit, system should be capable of working until the error / complaint is rectified by the technician. After the completion of works system should be commissioned by authorized personnel of the manufacturer.

**b. OUTDOOR UNIT**

The outdoor unit shall be factory assembled, weather proof casing, constructed from heavy gauge mild steel panels and coated with baked enamel finish. The unit should be completely factory wired tested with all necessary controls. Each modular inverter outdoor shall be DC twin scroll hermetic compressor.

The outdoor units shall have multiple compressors with multi step capacity control and shall be able to operate in case of failure of one of the compressors or shall have multi outdoor units connected to a single indoor system. The outdoor units shall be capable of connecting all types of indoor units. They shall be provided with duty cycling and starting sequence changing facility for multiple inverter compressor and multiple outdoor units working in one system. The outdoor units shall be of modular construction and shall be provided with microprocessor based control panel. The outdoor unit shall be compatible for three phase 415V 50 Hz AC supply. The outdoor unit shall be delivered with first charge of refrigerant. The outdoor unit should be fitted with low noise, aero spiral design fan with aero fitting grill for C spiral discharge airflow to reduce pressure loss and should be fitted with DC fan motor inverter type for better efficiency.      The

condensing unit shall be designed to operate safely when connected to multiple indoor units.

Note: The Outdoor machines shall be preferably compact machines for Purpose of space saving and smaller foot print shall be preferred.

**c. COMPRESSOR**

The compressor shall be highly efficient hermetic scroll type with DC inverter control capable of changing the speed in accordance with load requirements inside the building. The refrigerant used shall be R 410A/ R 407A. All parts of the compressor shall be lubricated and shall have oil separator for stable operation. Oil heater also shall be provided. Forced lubrication may also be employed. Oil heater shall be provided in the compressor casing.

**d. HEAT EXCHANGER**

The heat exchanger shall be constructed with copper tubes mechanically bonded to aluminum fins to form a cross fin coil. The aluminum fins shall be covered by anti-corrosion resin film. The unit should be with e-pass heat exchanger to optimize the path of heat exchanger and for better efficiency of condenser. The unit shall be provided with necessary number of direct driven low noise level propeller type fans arranged for vertical discharge. Each fan shall have a safety guard.

**e. REFRIGERANT CIRCUIT**

The refrigerant circuit shall include liquid & gas shut-off valves and a solenoid valves at condenser end. The equipment must have in built refrigerant stabilization control for proper refrigerant distribution. All necessary safety devices shall be provided to ensure the safely operation of the system.

Refrigerant should be R410A/R407A Only. The refrigerant piping between indoor and outdoor units shall be constructed from soft seamless up to 19.1mm and hard drawn copper pipes above 19.1 mm with copper fittings and silver soldered joints. All joints in copper piping shall be sweat joints using low temperature brazing and or silver solder. After the installation, the piping shall be pressure tested using nitrogen at 20kg/cm<sup>2</sup> and 10 kg/cm<sup>2</sup> for low side. The sizing and flow of refrigerant shall be designed as specified by the manufacturer. All refrigerant pipelines shall be properly supported and anchored to the building structure using steel supports/brackets/clamps of adequate size to support the load.

**f. SAFETY DEVICES**

All necessary safety devices shall be provided to ensure safe operation of the system. The outdoor units shall be equipped with the following safety devices.

High pressure switch.

Over load relay

Fusible plug

Overload protector for inverter

Over load protector for Fan drive

Oil recovery system

**g. OIL RECOVERY SYSTEM**

Unit shall be equipped with an oil recovery system to ensure stable operation with long refrigeration piping lengths. The system must be provided with oil balancing circuit to avoid poor lubrication.

**h. INDOOR UNIT**

This section deals with supply, installation, testing, commissioning of indoor units conforming to general specification and suitable for the duty selected. The type, capacity and size of indoor units shall be as specified in detailed Bill of Quantities. The address of the indoor unit shall be set automatically in case of individual and group control. In case of centralized control, it shall be set by liquid crystal display remote controller. The fan shall be dual suction, aerodynamically designed turbo, multi blade type, statically & dynamically balanced to ensure low noise and vibration free operation of the system. The fan shall be direct driven type, mounted directly on motor shaft having supported from housing. The cooling coil shall be made out of seamless copper tubes and have continuous aluminum fins. The fins shall be spaced by collars forming an integral part. The tubes shall be staggered in the direction of airflow. The tubes shall be hydraulically/ mechanically expanded for minimum thermal contact resistance with fins. Each coil shall be factory tested at 21kg/sqm air pressure under water. Unit shall have cleanable type filter fixed to an integrally molded plastic/aluminum frame. The filter shall be easily serviceable. Each indoor unit shall have computerized PID control for maintaining design room temperature. Each unit shall be provided with microprocessor thermostat for cooling or cooling and heating. Each unit shall be with Cordless LCD type remote controller for Hi Wall , Cassette ,Ductable and Concealed units.. The remote controller shall memorize the latest malfunction code for easy maintenance. The controller shall have self-diagnostic features for easy and quick maintenance and service. The controller shall be able to change fan speed and angle of swing flap individually as per requirement.

**3. AIR HANDLING UNITS**

**a. SCOPE**

This section of the specification covers the supply, installation, testing and commissioning of double skin construction air handling units along with its accessories, conforming to these specifications and in accordance with requirement of the 'Schedule of Quantities', Drawings and 'Technical Schedule of Equipment'.

**b. TYPE**

The air-handling units shall be double skin, comprising, filters as per BoQ, DX coil, fan as per details given in Drawings and Schedule of Equipment.

**c. CAPACITY**

The air handling capacities, maximum motor HP, static pressure shall be as per actual ducting coming in the approved shop drawing, even though the nearby static

pressure can be taken from the tender drawing/BOQ. The static shown in BoQ is only indicative. The contractor shall calculate the static as per actual site condition.

#### **d. CONSTRUCTION**

##### **i. AHU HOUSING / Casing:**

The AHU housing shall be of double skin construction with main structure made of extruded aluminum hollow sections. The panels shall be double skin sandwich type with 0.8 mm pre painted GSS/ pre-plasticized on the outside and 0.6 mm galvanized sheet inside with 40 mm thick 40 kg/m<sup>3</sup> PUF insulation or equivalent material injected in between. These panels shall be screwed with soft rubber gasket fixed in built in groove of aluminum frame in between to make the joints airtight. The corner joints shall be nylon glass fiber reinforced.

##### **ii. Drain Pan**

The drain pan shall be of 18 G aluminum/stainless steel with necessary slope to facilitate fast removal of condensate. It shall be provided with drain connection of suitable size complete with 25 mm rigid insulation. Necessary arrangement will be provided to slide the coil in the drain pan.

##### **iii. Cooling Coil**

The DX coil shall be of seamless copper tubes not less than 0.5 mm thick and 12mm OD (or as per OEM standards). Coil face areas shall be such as to ensure rated capacity from each unit and such that air velocity across each coil shall not exceed 150 meters per minute. The coil shall be pitched in the unit casing for proper drainage. The fins shall be spaced by collars forming integral part of the fins. The tubes shall be staggered in the direction of airflow.

The fins shall be uniformly bonded to the tubes by mechanical expansion of the tube for minimum thermal contact resistance with fins. Fin spacing shall be 11 to 13 FPI. The coils shall be tested against leaks at a hydraulic pressure of 21-kg/sq cm. This pressure shall be maintained for a period of at least 2 hours. No drop should be observed indicating any leaks.

##### **iv. Filter Section**

Each unit shall be provided with a factory assembled filter as per BoQ. Filters shall have aluminum frame. One stage of filtration consisting of normal washable filters upto 10 micron particle size and Two stages of filtration consisting of Pre-filter & Microvee filter upto 5 micron particle size. Filter face velocity shall not exceed 150 meters per minute. Filter shall fit so as to prevent by pass. Holding frames shall be provided for installing number of filter cells in banks. These cells shall be held within the frames by sliding the cells between guiding channels.

##### **v. FRESH AIR INTAKES**

Extruded aluminum construction duly anodized fresh air louver with bird screen and extruded construction dampers shall be provided in the clear opening in masonry walls of the air handling unit room having at least one external wall. Fresh air louver, damper, pre-filters, ducts and fresh air fan with speed regulator

(wherever specified in 'Schedule of Quantities') shall be provided. Fresh air dampers shall be of the interlocking, opposed blade louver type. Blades shall be rattle free. Damper shall be similar to those specified in 'air distribution'. Fresh air fans and fresh air intakes shall be as per the requirements of 'Schedule of Quantities'.

**vi. ACCESSORIES**

1. Double Flexible connection of fireproofs material between the fan outlet and duct.
2. Vibration isolators of at least 90% efficiency.

**vii. SAFETY FEATURES**

Each handling unit must have safety features as under:

**e. PERFORMANCE DATA**

Air handling unit shall be selected for the lowest operating noise level. Fan performance rating and power consumption data with operating points clearly indicated shall be submitted and verified at the time of testing & commissioning of the installation.

**f. TESTING**

Cooling capacity of various air-handling unit models shall be computed from the measurements of airflow and dry and wet bulb temperatures of air entering and leaving the coil.

Flow measurements shall be by anemometer and temperature measurements by accurately calibrated mercury in glass thermometer. Computed result shall conform to the specified capacities and quoted ratings. Power consumption shall be computed from measurements of incoming voltage and input current.

**AIR HANDING UNITS – DATA SHEET**

1	GENERAL	
1.1	Manufacturer	
1.2	Type of Unit	
1.3	Over All Dimensions (L x W x H) (mm)	
1.4	Weight (Including Water in circulation) Kg.	
1.5	Approximate Noise Level (DBA)	
1.6	Fan Discharge Position	
2.0	FAN SECTION	
2.1	Air Quantity (CFM)	
2.2	Total Static Pressure (mm of WG)	
2.3	Fan Speed (RPM)	
2.4	Fan Diameter (INCH) and no. Of fans	
2.5	Balancing (Static and / or dynamic)	
2.6	BHP	
2.7	Motor HP, RPM, Make & Type	
3.0	COOLING COIL	
3.1	Coil Fin Material (Aluminum or copper)	
3.2	Tube Diameter (INCH) and material	



3.3	no. of circuits	
3.4	Fin Size (INCH)	
3.5	No of Fins / INCH	
3.6	Coil Pressure Drop (ft of WG)	
3.7	Outside Coil Surface (SQFT)	
3.8	Face Area (SQFT) of Coil	
3.9	Rows Deep	
3.10	Air In and Out DB& WB Temp (DEG F)	

## 4 DUCTING SYSTEM

This section deals with supply, erection, testing and commissioning of all sheet metal ductwork conforming to specifications given below. The ducts shall be of factory fabricated.

### 4.1 Material for Ducting

All ducts shall be Aluminium sheet metal fabricated and must be as per SMACNA standards.

The following points shall be also taken into account while fabrication of ducts.

- a) All ducts shall be as per gauges, etc. indicated on the approved drawings.
- b) All ducts of size larger than 450 mm shall be cross broken.
- c) All ducts shall be supported from RCC/truss by means of MS rods, angles, etc.
- d) The ductwork shall not extend outside and beyond height limits as specified on the approved drawings.
- e) All ducts shall be reinforced, if necessary and must be secured in place so as to avoid shifting of the ducts on its supports.
- f) The vanes shall be provided and securely fastened to prevent noise and vibration.
- g) The rubber gasket shall be installed between duct flanges in all connections and joints.
- h) The ductwork can be modified in consultation with Purchaser to suit actual conditions in the building.
- i) All flanges and supports should be primer coated on all surfaces before erection and painted with aluminum paint thereafter.
- j) The flexible joints are to be fitted to the suction and delivery of all fans with double heavy canvass. The length of flexible joints should not be less than 150 mm.
- k) All sheet metal gauges and fabrication procedure as given in BIS specification shall be strictly adhered to. The BIS specification shall form part of this contract.

## 5. Grilles/Diffusers

Material of construction - Extruded Aluminum

Supply air and return air grilles shall be continuous type and shall be fixed as given in the approved drawing. The square/rectangular diffusers shall be flush or step down type to match false ceiling pattern. The diffuser blades shall be die formed, flush mounted with single or double direction airflow. Supply of frames for fixing the grilles/diffusers, if required, is also in the scope of the contractor.

Return air grilles shall be with blanks and return air provisions. The size and appearance shall match with supply air grilles. The supply air grilles shall form part of the continuous return air grilles. The fixing of grilles/diffusers should be done in close co-ordination with false ceiling work and as directed by Purchaser.

The aluminum grilles/diffusers, etc. shall be powder coated of colours to match the interiors. However, successful bidder shall have to obtain prior approval regarding colour, finish, shape, etc. of grilles/diffusers and sample should be submitted to Purchaser for approval.

The complete duct system shall be tested for air leakage and complete air distribution systems shall be balanced in accordance with the approved drawings for achieving designed values inside the building.

## **6 THERMAL / ACOUSTIC INSULATION**

### **6.1 Material**

- Insulation material shall be Closed Cell Elastomeric Nitrile Butadiene Rubber.
- Insulation material shall have anti-microbial product protection. The antimicrobial product protection shall be an integral part of insulation that is built-in during the manufacturing process and the product protection should not allow the microbes to function, grow and reproduce.
- Resistance towards microbiological growth on insulation surface should confirm to following standards: Fungi Resistance – ASTM G21 where the fungal growth on the surface is NIL after 28 days of incubation at 28 – 30° C and Bacterial resistance – ASTM E 2180 where the reduction of bacterial growth is minimum 99.9% after 24 hours of incubation at 34 – 38° C.
- Thermal conductivity of Elastomeric Nitrile rubber shall not exceed 0.035 W/m°K at an average temperature of 20°C in accordance to EN12667
- The insulation shall have fire performance such that it passes Class 1 as per BS476 Part 7 for surface spread of flame as per BS 476 and also pass Fire Propagation requirement as per BS476 Part 6 to meet the Class 'O' Fire category as per 1991 Building Regulations (England & Wales) and the Building Standards (Scotland) Regulations 1990.
- Water vapour permeability shall not exceed  $1.74 \times 10^{-14}$  Kg/m.s.Pa, i.e. Moisture Diffusion Resistance Factor or 'μ' value should be minimum 10,000 according to EN 12086
- Density of Material shall be between 40 to 60 Kg/m<sup>3</sup>.

### **6.2 Duct Insulation**

External thermal insulation shall be provided as follow:

- The thickness of Nitrile rubber shall be as shown on drawing or identified in the schedule of quantity. Following procedure shall be adhered to:
- Duct surfaces shall be cleaned to remove all grease, oil, dirt, etc. prior to carrying out insulation work. Measurement of surface dimensions shall be taken properly to cut closed cell elastomeric rubbers sheets to size with sufficient allowance in dimension.
- Material shall be fitted under compression and no stretching of material shall be permitted. A thin film of adhesive shall be applied on the back of the insulating material sheet and then on to the metal surface. When adhesive is tack dry, insulating material

sheet shall be placed in position and pressed firmly to achieve a good bond. All longitudinal and transverse joints shall be sealed as per manufacturer recommendations. The adhesive shall be strictly as recommended by the manufacturer.

- The detailed Application specifications are mentioned separately.

### **6.3 Insulation of Ducts Exposed Directly to Sunlight**

For installations exposed to sunlight, after giving 36 hours curing time for the adhesive apply manufacturer's recommended UV/Mechanical Protection. Please refer the separate detailed guidelines on UV/Mechanical Protection.

### **6.4 Piping Insulation**

All refrigerant and condensate drain pipe shall be insulated in the manner specified herein. An air gap of 25 mm shall be present between adjacent insulation surfaces carrying chilled water or refrigerant. Before applying insulation, all pipes shall be brushed and cleaned. All Pipe surfaces shall be free from dirt, dust, mortar, grease, oil, etc. Nitrile Rubber insulation shall be applied as follows:

- Insulating material in tube form shall be sleeved on the pipes.
- On existing piping, slit opened tube of the insulating material (slit with a very sharp knife in a straight line) shall be placed over the pipe and adhesive shall be applied as suggested by the manufacturer.
- Adhesive must be allowed to tack dry and then press surface firmly together starting from butt ends and working towards centre.
- Wherever flat sheets shall be used it shall be cut out in correct dimension. All longitudinal and transverse joints shall be sealed as per manufacturer recommendations.
- The insulation shall be continuous over the entire run of piping, fittings and valves.
- All valves, fittings, joints, strainers, etc. in chilled water piping shall be insulated to the same thickness as specified for the main run of piping and application shall be same as above. Valves bonnet, yokes and spindles shall be insulated in such a manner as not to cause damage to insulation when the valve is used or serviced.

The detailed application specifications are as mentioned separately. The manufacturer's trained installer should only be used for installation.

### **6.5 Recommended Adhesive**

In all cases, the manufacturer's recommended Adhesive should be used for the specified purpose.

### **6.6 Acoustic Insulation**

Material shall be engineered Nitrile Rubber open cell foam.

The Random Incidence Sound Absorption Coefficients (RISACs) across the octave band frequencies; tested as per ISO 354, and Noise Reduction Coefficients (NRCs) for the Acoustic Insulation should be minimum as per the below chart:

<b>Freq (Hz)</b>	<b>125</b>	<b>250</b>	<b>500</b>	<b>1000</b>	<b>2000</b>	<b>4000</b>	<b>NRC</b>
<b>10 mm</b>	0.03	0.04	0.14	0.40	0.88	1.00	0.40
<b>15 mm</b>	0.01	0.09	0.29	0.74	1.08	0.83	0.55
<b>20 mm</b>	0.04	0.13	0.40	0.90	1.04	0.90	0.60
<b>25 mm</b>	0.05	0.25	0.86	1.14	0.88	0.99	0.80
<b>30 mm</b>	0.07	0.32	0.99	1.16	0.93	1.08	0.85
<b>50 mm</b>	0.23	0.73	1.29	0.99	1.09	1.11	1.05

- The material should be fibre free.
- The density of the acoustic insulation should be minimum 140 Kg/m<sup>3</sup>
- The insulation should have Microban®; Built-in Anti-Microbial Product Protection, and should pass Fungi Resistance as per ASTM G 21 and Bacterial Resistance as per ASTM E 2180.
- The insulation should be non-eroding & should pass Air Erosion Resistance Test in accordance to ASTM Standard C 1071-05 (section 12.7).
- The material should have a thermal conductivity not exceeding 0.047 W/m.K @ 20 ° C
- The material should withstand maximum surface temperature of +85°C and minimum surface temperature of -20°C
- The material should confirm to Class 1 rating for surface spread of Flame in accordance to BS 476 Part 7 & UL 94 (HBF, HF 1 & HF 2) in accordance to UL 94, 1996.
- Thickness shall be 10mm for Duct Acoustic Lining
- Duct so identified and marked on Drawings and included in Schedule of Quantities shall be provided with internal acoustic lining for a distance of minimum 6 meters (or 30% of the duct length whichever is more)
- Thickness of the insulation material shall be as specified for the individual application. The insulation should be installed as per manufacturer's recommendation.

## 6.7 Accessories

Adhesive to adhere insulation to the inside walls of the duct shall be from the Insulation manufacturer only.

## 7 CENTRALIZED TYPE REMOTE CONTROLLER

A multifunctional compact centralized controller shall be provided with the system. It shall be able to control up to 100 indoor units with the following functions:

- Starting/stopping of Air-conditioners as a zone or group or individual unit.
- Temperature settling for each indoor unit or zone
- Switching between temperature control modes, switching of fan speed and direction of airflow, enabling/disabling of individual remote controller operation.

- d. Monitoring of operation status such as operation mode & temperature setting of individual indoor units, maintenance information, and troubleshooting information.
- e. Display of air conditioner operation history.
- f. Daily management automation through yearly schedule function with possibility of various schedules.

The controller shall have wide screen user friendly display and can be wired

## **8. FIELD TEST AND INSPECTION**

### **a. Inspection:**

Materials, equipment and the completed installation will be inspected by Engineer. Equipment, materials or work rejected because of defects or non-conformance with Drawings and Specifications shall be replaced or corrected by Contractor as directed by Engineer. Start-up air conditioning system, in accordance with manufacturer's start-up instructions, and in presence of the manufacturer's technical representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment, and retest.

### **b. Tests:**

- A. Provide materials and equipment required to perform the tests. Defects disclosed by the test shall be corrected at no cost to Owner.
- B. Tests after installation and prior to acceptance shall be performed in the presence of Engineer and subject to his Approval.
- C. Equipment and material certified as having complied with referenced Specifications and Standards will not require retesting before installation. Equipment and materials not tested at place of manufacture will be tested before and after installation, as applicable, where necessary to determine compliance with referenced specifications and Standards.

## **9. ROOM THERMOSTATS:**

Thermostats shall be compatible in design and appearance and shall be of modern, compact design with option of key locking type conversant concealed temperature set point adjustment. No room thermostat shall operate on Voltage in excess 24 Volt unless the thermostat is controlling a 240V fan or unit heater or unless specifically noted otherwise. Thermostat shall have on/off switch, three speed fan switch and LED's.

## **10. FREEZE PROTECTION THERMOSTATS:**

Sensing element shall be fixed to the front of the coil or wrapped around the pipe to guard against freezing at any point. If the capillary is damaged the thermostat shall cut-out to the safety side.

## **11. REMOTE SETTING UNITS:**

Remote setting unit shall have tough non-flammable plastic case on back plate suitable for surface or conduit box mounting. This unit shall enable control adjustments to be from a position remote from the controller.

## **12. OUTSIDE TEMPERATURE SENSOR:**

Sensing element of sensor shall have a negative temperature coefficient thermistor and housing shall be sealed aluminum tube, alloy head, with plastic cover.

## **13. ROOM HUMIDITY SENSOR AND DEHUMIDIFICATION:**

The sensing element shall be foil dielectric coated both sides with gold to form a capacitor; sensor shall have 0-10V dc output. OTs shall be provided with electrical strip heater bank to maintain desired RH level inside OT as specified in the BoQ. Humidity sensor and strip heater panel shall be included in the same. The electrical connection to the heater bank from the power source shall be considered by the contractor.

## **14. UNDER DECK INSULATION:**

- Insulation material shall be Closed Cell Elastomeric Nitrile Rubber
- Density of Material shall be between 40 to 60 Kg/m<sup>3</sup>
- Thermal conductivity of elastomeric nitrile rubber shall not exceed 0.035 W/mK at an average temperature of 0°C
- The insulation shall have fire performance such that it passes Class 1 as per BS476 Part 7 for surface spread of flame as per BS 476 and also pass Fire Propagation requirement as per BS476 Part 6 to meet the Class 'O' Fire category as per 1991 Building Regulations (England & Wales) and the Building Standards (Scotland) Regulations 1990
- Material should be FM (Factory Mutual), USA approved.
- Water vapour permeability shall not exceed 0.017 Perm inch ( $2.48 \times 10^{-14}$  Kg/m.s.Pa), i.e. Moisture Diffusion Resistance Factor ' $\mu$ ' value should be minimum 7000.

### **Installation procedure:**

- The ceiling surface shall be cleaned with brush to remove all dirt, cement etc. If surface is uneven it should be made smooth prior to carrying out insulation work.
- A layer of synthetic rubber adhesive should be applied on the ceiling with the help of brush so that all the pores are filled and surface becomes smooth and allow it to dry.
- Allow an additional 5 mm to the total dimensions while cutting Insulation sheet. Ensure you measure the cutting dimensions on the top surface of the insulation sheet. This can be identified by the products markings; "they are always on the top surface". This surface is the one you will see after installation.
- All Insulation sheet and ceiling surfaces shall have all-over adhesive coverage. Adhesive should be applied on the side that has no product markings and identification printing. This side is the one that curves inwards.
- During installation avoid air bubbles. Always apply pressure while fixing the Insulation sheet, this action will ensure maximum bond strength.
- All cut Insulation sheet edges shall be of a "clean cut nature and not cut rough".
- All seams and joint shall be sealed with synthetic rubber adhesive.
- Measurement of surface dimensions shall be taken properly to cut closed cell elastomeric rubbers sheets to size with sufficient allowance in dimension. Material shall be fitted under compression and no stretching of material shall be permitted. A thin film of adhesive shall be applied on the ceiling with brush and then on to the back of the insulating material sheet with brush/small piece of sheet metal having smooth edges. When adhesive is tack dry,

insulating material sheet shall be placed in position and pressed firmly to achieve a good bond. All joints shall be sealed. The adhesive shall be strictly as recommended by the manufacturer. There is no need to make holes for wires etc. as no supporting wires/screws are required.

While doing installation on the metal roofing, it is important to ensure that metal roof should not face direct sun light, as metal sheets becomes very hot and adhesive may not work.

In such conditions work should be done in the evening / night.

## **15. FIRE DAMPERS**

This section deals with supply, erection, testing and commissioning of fire dampers and box type dampers, conforming to general specification and suitable for duty selected, indicated in schedule of equipment/material.

### **15.1 Dampers**

- a) The fire dampers of at least two hour rating shall be provided in all return air ducts at wall crossing. All fire dampers shall be fire tested by CBRI Roorkee for 120 minutes fire rating as per UL555-1995.
- b) 6G GSS sheet blade and frame with 165mm casing, heavy duty interlocking blades and fully enclosed blade linkage mechanism, SS lateral seal blade seals, self lubricating sintered bronze bushes, fire rating as per UL555-1995 tested as per BS-476 part 20 with 18G extended sleeve 450mm and with fusible link, spring mechanism control panel temp sensor, smoke sensor, limit switch with lever for auto shut off in case of fire/smoke
- c) In the normal position the blades of the dampers shall remain open to allow maximum air to flow. The dampers shall be actuated using fusible link and spring mechanism. The fire damper shall also close due to temperature rise above 74°C.
- d) All fire dampers shall be mounted on wall with a duct sleeve 400 mm long depending on the wall thickness. The sleeve shall be factory fitted on the fire damper. The joint at the sleeve end shall be slip on type. Minimum thickness of GI sheet used for sleeves shall be 18G.

## **16. Exhaust Air Blowers**

line exhaust air flow duct blowers suitable for single phase operations with direct driven class F motor, IP 54 insulation, max 1400rpm, necessary steel frame, and complete with GI box, with an operating sound level not exceeding 60dB at 3m distance.

## **17. HEPA Filter**

Hepa Filter shall be of efficiency 99.97%. HEPA filters shall be aluminium corrugated and Mini pleat style. All filters shall be made up of high quality micro-fine glass fiber media. Filter frames shall be made up of Galvanized steel. Hepa filter shall ensure low pressure drop even at high airflows & with Antimicrobial protection.

All filters shall be made in accordance and tested to EN 1822 / ASHRAE 52.2 standards. These test certificates from OEM's shall be produced. The Hepa filter shall be fixed in a plenum box.

## 18. PAINTING WORK

- 18.1** All equipment shall be painted as specified under respective headings. Grilles/ diffusers shall be powder coated as per approved colour matching with interiors. The contractor has to get approval of the quality and colour of paints for all types of painting work.  
All pipes for chilled water shall be painted as per standard code of practice and arrows indicating direction of flow of water shall be marked.

## 19. Colour scheme for the plant and equipment

i) Compressor	.. Battle ship grey
ii) Condenser	.. Battle ship grey
iii) Refrigerant discharge line	.. Red
iv) Refrigerant liquid line	.. Yellow
v) Steel supports	.. Black
vi) Direction of flow of water	.. White arrows
vii) Electrical panels/sub-panel/remote control console	.. Light grey or any approved
viii) Cable trays	.. Black
xi) Supports for ducts/open ducts	.. Black.

## 20. SUBMITTALS

**Product Data:** Submit manufacturer's technical data for air distribution equipment, including capacity ratings, fan performance curves with operating point clearly indicated, Finishes of materials, dimensions, weights, furnished accessories, and installation and instructions.

**Shop Drawings:** Submit manufacturer's assembly type shop drawings indicating dimensions, required clearances, installation details and field connection details.

**Wiring Diagrams:** Submit the manufacturer's electrical requirements for power supply, wiring to the units.

**Operation and Maintenance Data:** Submit maintenance and lubrication instructions, motor and drive replacement instructions, and spare parts list for each unit.

**Spare Parts List:** Submit the manufacturer's spare parts list for ventilation equipment for a period of 2 years for the Engineer's review and approval.

## 21. TRANSPORTATION, HANDLING AND STORAGE

- A. Transportation, handling and storage of materials shall be in accordance with Manufacturer's recommendations regarding transportation, handling and storage of materials.
- B. Deliver materials to the site in manufacturer's original factory wrappings and containers, clearly labeled for identification of manufacturer, brand name and contents. Store materials off ground in original undamaged packages and containers, inside well-



ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Follow manufacturer's instructions regarding transportation, handling and storage of materials.

## **22. WARRANTY**

Materials shall be provided of standard products of specialist manufacturers who have long experience of manufacturing and installing control equipment specified in this section. The system shall be installed by competent personnel, regularly employed by the Controls manufacturer with full responsibility for proper operation of the Controls including debugging and proper calibration of each component in the entire system. Supplier shall have in-place support facility within 30 km of the site with technical staff, spare parts inventory and all necessary test and diagnostic equipment. Submit a written guarantee signed by manufacturer, contractor, and installer agreeing to replace partitions which fail in material or workmanship within a period of 3 years from the date of handing over.

## **23. QUALITY ASSURANCE**

- A. Motors and electrical accessories shall comply with the applicable Indian Standards.
- B. Electrical components and installation shall comply with National Electrical Code.
- C. Test, adjust and balance air conditioning systems during hot season.

### **D. Training**

- 1. Train Owner's maintenance personnel on the troubleshooting procedures and testing, adjusting, and balancing procedures. Review with Owner's personnel, the information contained in the Operating and Maintenance Data.
- 2. Schedule training through the Project Manager with at least 7 days prior notice.

## **24. Piping with/without insulation**

- a) Piping with insulation shall be measured in running length (meters) for each size of pipe.
- b) The length of piping including accessories and fittings shall be measured along the center line of piping.
- c) No separate measurement of flanges, bends, elbows, reducer, expanders, tees, cross pipe supports, hangers, anchors, sockets for thermometer, pressure gauge, etc. shall be made. All such fittings / accessories shall be treated as normal piping.
- d) All accessories and finishes connected with insulation work shall be deemed to form part of insulation, and no separate measurement shall be made for such items.

**25. Equipment Insulation:**

No separate measurement for insulation of any equipment shall be made. Insulation of equipment shall be deemed to form part of the equipment. Insulation on equipment shall be done as per specifications provided.

**26. ASSOCIATED CIVIL WORKS**

The rate shall include all civil works associated with HVAC installation executed in accordance with approved shop drawings under direct supervision of the Project Manager such as PCC foundation blocks for all OUT DOOR UNITS/wall openings etc.

**27. PERFORMANCE GUARANTEE**

The contractor shall carry out the work in accordance with the Drawings, Specifications, Schedule of Quantities and other documents forming part of the Contract. The Contractor shall be fully responsible for the performance of each equipment installed by him at the specified parameters and for the efficiency of the installation to deliver the required end result. The Contractor shall guarantee that the HVAC system as installed shall maintain the inside conditions in the air-conditioned spaces as described under "Basis of Design" included in the specifications.

The contractor shall also guarantee that the performance of various equipment individually, shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating, during testing, commissioning and handing over.

**28. BYE-LAWS AND REGULATIONS**

The installation shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities concerned, in so far as these become applicable to the installation. But if these Specifications and drawings call for a higher standard of materials and / or workmanship than those required by any of the above regulations and standards, then these specifications and drawings shall take precedence over the said regulations and standards. However, if the drawings and specifications require something which violates the Bye-laws and Regulations, then the Bye-laws and Regulations shall govern the requirement of this installation.

**29. FEES AND PERMITS**

The contractor shall obtain all permits / licenses and pay for any and all fees required for the inspection, approval and commissioning of the installation. It shall be reimbursed by the owner on submission documentary evidence.

**30. DRAWINGS.**

The HVAC drawings issued with tenders are diagrammatic only and indicate arrangement of various systems and extent of work covered in the contract. These drawings indicate the points of supply and of termination of services and broadly suggest the routes to be followed. Under no circumstances shall dimensions be scaled from

these Drawings. The architectural/interiors drawings and details shall be examined for exact location of equipment, controls, grilles and diffusers. The Contractor shall follow the tender drawings for preparing his shop drawings, and for subsequent installation work. He shall check the drawings of other trades to verify spaces in which his work will be installed. Maximum headroom and space conditions shall be maintained at all points. Where headroom appears inadequate, the contractor shall notify the Architect/ Consultant/ Owner's site representative before proceeding with the installation. In case installation is carried out without notifying, the work shall be rejected and contractor shall rectify the same at his own cost. The contractor shall examine all architectural, structural, plumbing, electrical and other services drawings and check the as-built works before starting the work, report to the Owner's site representative any discrepancies and obtain clarification. Any changes found essential to coordinate installation of this work with other services and trades, shall be made with prior approval of the Architect/ Consultant/ Owner's site representative without additional cost to the Owner. The data given in the Drawings and Specifications is as exact as could be procured, but its accuracy is guaranteed.

### **31. TECHNICAL DATA**

Each tenderer shall submit along with his tender, the technical data for all items. Failure to furnish complete technical data with tenders may result in rejection of the tender. Manufacturer's drawings, catalogues and other documents submitted for approval shall be in four sets. Each item in each set shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted. Samples of all materials like grilles, diffusers, controls, insulation, pre-molded pipe section, control wires etc. shall be submitted to the Owner's site representative prior to procurement. These will be submitted in for approval and retention by Owner's site representative and shall be kept in their site office for reference and verification till the completion of the project. Wherever directed a mockup or sample installation shall be carried out for approval before proceeding for further installation. Where the contractor proposes to use an item of equipment other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundation, piping, wiring or any other part of the mechanical, electrical or architectural layouts; all such re-design, and all new drawings and detailing required therefore, shall be prepared by the contractor at his own expense and gotten approved by the Architect/ Consultant/ Owner's site representative. Delay on such account shall be at the cost of and consequence of the Contractor. Where the work of the contractor has to be installed in close proximity to, or will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Owner's site representative, if the contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the Owner.

### **32. QUIET OPERATION AND VIBRATION ISOLATION**

All equipment shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Owners site representative. In case of rotating

machinery sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. Such condition shall be corrected by the contractor at his own expense. The contractor shall guarantee that the equipment installed shall maintain the specified NC levels.

### **33. ACCESSIBILITY**

The contractor shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his ducting and piping. His failure to communicate insufficiency of any of the above shall constitute his acceptance of sufficiency of the same. The contractor shall locate all equipment's which must be service, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for each concealed damper, valve or other devices requiring attendance shall be finalized and communicated in sufficient time, to be provided in the normal cause of the work. Failing this, the contractor shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment / device / accessory and shall be clearly nomenclature / marked.

### **34. MATERIALS AND EQUIPMENT**

All materials and equipment shall conform to the relevant Indian Standards and shall be of the approved make and design. Makes shall be strictly in conformity with list of approved manufacturer's.

### **35. MANUFACTURER'S INSTRUCTIONS**

A Manufacturer has furnished specific instruction, relating to the material and equipment used in this project, covering points not specifically mentioned in these documents, such instructions shall be followed in all cases.

### **36. ELECTRICAL INSTALLATION**

The electrical work related to air conditioning services shall be carried out in full knowledge of and with complete coordination of Oushadhi. The electrical installation shall be in total conformity with the control wiring drawings prepared by the contractor and approved by the Engineer in charge. All air conditioning equipment shall be connected and tested in the presence of an authorized representative of the contractor. The air conditioning system shall be commissioned only after the contractor has certified in writing that the electrical installation work or air conditioning services has been thoroughly checked, tested and found to be totally satisfactory and all in full conformity with contract drawings, specifications, and manufacturer's instructions. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements, of the electrical installation work for air conditioning services, lies solely with the contractor.

### **37. OPERATING INSTRUCTION & MAINTENANCE MANUAL**

Upon completion and commissioning of HVAC system the contractor shall submit a draft copy comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one each for retention by Consultant and Owner's site representative and two for Owners Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 4 year period of maintenance of each equipment.

### **38. ON SITE TRAINING**

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labour and helpers for operating the entire installation for a period of fifteen (15) working days of twelve (12) hours each, to enable the Owner's staff to get acquainted with the operation of the system. During this period, the contractor shall train the Owner's personnel in the operation, adjustment and maintenance of all equipment installed.

### **39. MAINTENANCE DURING LIABILITY PERIOD**

#### **39.1 Complaints**

The contractor shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 10 hours of receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

#### **39.2 Repairs**

All equipment that requires repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of charge to the Owner.

### **40. UPTIME GUARANTEE**

The contractor shall guarantee for the installed system an uptime of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability Period shall get extended by a month for every month having shortfall. In case of shortfall beyond the defects liability period, the contract for Operation and Maintenance shall get extended by a month for every month having the shortfall and no reimbursement shall be made for the extended period.

The Contractor shall provide log in the form of diskettes and bound printed comprehensive log book containing tables for daily record of all temperatures, pressures, humidity, power consumption, starting and stopping times for various equipment, daily services rendered for the system alarms, maintenance and record of unusual observations etc. Contractor shall also submit preventive maintenance.

#### **40.1 Schedule.**

Each tenderer shall submit along with the tender, a detailed operation assistance proposal for the Owner's site representatives/ Consultant's review. This shall include the type of service planned to be offered during the Defects Liability Period and beyond. The

operation assistance proposal shall give the details of the proposed monthly reports to the management.

#### 41. OPERATION AND MAINTENANCE

Contractor may be required to carry out the operation of the HVAC installation for the defects liability period. Further, he may also be required to carry out operation and all-inclusive maintenance of the entire system for a period of three years beyond the defects liability period.

##### **LIST OF APPROVED MAKES**

The tenderer shall quote his rates on the basis of the price of the brand/make stipulated in the item of works as described in BOQ and specification as well as in the approved makes. The owner reserves the right to select any of the brands indicated in the "List of Approved Makes/Agency" in case of delay in delivery of ordered "make of item". The contractor cannot claim anything extra for the same.

Sl. No.	Items	Approved Makes
1.	DX Outdoor units	Carrier, Daikin, LG, Voltas, Blue Star, Hitachi, Samsung
2.	Air Handling Units/ Treated fresh Air unit with Heat Recovery wheels	Edge-Tech, VTS, System air
3.	GI/ AI Sheets	HSL, Jindal, SAIL, TATA
4.	Factory Fabricated Duct	Rola Star, Seven Star, Zeco, Multiline
5.	Flexible Duct	Ruskin Titus, System air
6.	Copper pipe	Mandev, Mexflow, Totaline
7.	Grilles/ Diffusers/ Louvers/ Dampers	Air master, Systemaire, Ruskin Titus
8.	Fire Dampers	Carryaire/ Airmaster/ Ravistar
9.	Open & Closed Cell Nitrile Rubber Insulation(thermal & acoustic)	Armacell, K-flex, ALP
10.	Air Filters & HEPA filters	Aerofoil/Pyramid/AAF/Thermodyne
11.	Exhaust/ Duct Fans	System Air/Kruger/Nicotra/ Almonard
12.	Thermostat	Anergy, Honeywell, Johnson Control, Siemens
13.	Drain Pipe	Ashtral, Finolex, Prince, Supreme
14.	Aluminium Conductor Cables/Power Cables/ Communication Cables	Finolex/NICCO/Havells/Gloster/Polycab

##### **LIST OF APPROVED MAKE - CIVIL**

Sl.No.	Items	Make

1.	Cement	Malabar, Ultra Tech, Zuari, Ramco, ACC, India Cements, Dalmia, Ambuja, J.P. Rewa, Vikram, Shri Cement, Birla Jute and Cement Corporation of India, Chettinadu, JSW Cement, Penna cement etc. or any other approved Brand
2.	PUFF	JSW
3.	Paints	ICI Dulux/ Asian / Nerolac/ Berger/ Nippon/ Jotun
4.	Epoxy	BASF
5.	M sand	Pobs

#### **LIST OF APPROVED MAKE - ELECTRICAL**

Sl.No	Items	Make
1	FRLS PVC insulated Copper Wire/Flex Wire (ISI marked)	Traco/ RR Kabel/Gloster/Polycab/Havells/ V-Guard/lapp/KEI
2	cables (ISI marked)	RR / Gloster/ Polycab/Havells/KEI/Traco
3	PVC conduit (ISI marked)	EPSEE/BALCO/Panasonic-Anchor/Hycount/Geo/TOMS
4	PVC accessories (ISI marked)	Spin-Tech/BALCO/TOMS
5	CMS OBO/ MK/ Legrand	OBO/ MK/ Legrand
6	Boxes for Modular Accessories/Front Plates/Modular type switches, Bell push, Plug sockets,/Stepped Electronic fan regulators, and other modular accessories ( RoHS compliant )	MK-Blenze/ Legrand-Lyncus/Panasonic- vision/Philips/ L&T- entice/ wipro-Artisa/Elleys /Kolors -Kosmic
7	Ceiling Rose/Batten holder (fancy) (ISI marked with Polycarbonate body)	Vimal/ Ponds/ Kany/GM/Panasonic Anchor /polycab
8	LED light fittings	Philips/Crompton/Wipro/Havells
9	LED Bulb	Philips/ Crompton/ Bajaj/Osaram/Havells/ wipro
10	RCCB / RCBO / Miniature isolator / MCB (10 kA)	Legrand/ L&T/Schneider/Mitsubishi/Hager/ABB/Indo Asian/C &S/V Guard
11	MCB DB Enclosure	Same make as of the MCB used

12	MCCB	Legrand/ Schneider/ L&T/ ABB/Mitsubishi/havells/C&S
13	LED Indication lamp	C&S/ Siemens/ L&T/ ABB
14	Meters	L&T/ Elmeasure/ Conserv
15	Insulation Materials	Electromat/Raichem/GM
16	Cable Gland/Socket	Siemens/Dowells

• The contractor will use one of the approved makes as approved by the Oushadhi/ Engineer -in-charge.

• In case of different quality / pattern of same make, the pattern/ quality shall be approved by the Oushadhi / Engineer – in – charge

• All the items included in the list or otherwise to be used in the work should confirm to CPWD/PWD and relevant BIS specifications/ relevant codes, GRIHA V 2019, ECBC, EDGE as applicable.

• If any item is missing in the above list, its make will be decided by the Oushadhi/ Engineer –in-charge.