

# **CENTER OF INNOVATIVE AND APPLIED BIOPROCESSING (CIAB)**

**Department of Biotechnology,  
Ministry of Science & Technology  
(Govt. of India)**



## **e- Tender Notice**

**for the award of work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India.**

**TENDER NO: CIAB/7(98)/2021-Works**

## **VOLUME-1**

**Tender Issued from: 01-08-2023**

**Last date of receipt of tender: 22-08-2023 upto 3:00pm**

**Tender Opening date: 23-08-2023 @ 15:30am**

**Center of innovative and Applied Bioprocessing (CIAB)**

## **E-NOTICE INVITING TENDER (NIT)**

1.0 Item Rate e-Tenders in two parts [Part(A)-Technical Bid & Part(B)-Financial/Price Bid] are invited on the behalf of Chief Executive Officer, CIAB from the specialized agencies/firms who have executed similar works with some Central Govt. department/State Govt. Department/Central Autonomous body/State Autonomous Body/Central PSU/State PSU/Central Govt. undertaking/State Govt. Undertaking/ City Development Authority/Municipal Corporation of City//Reputed Private Companies & Organizations for carrying out the **work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India.**

1.1 The work is estimated to cost Rs. 25,00,000/- (Inclusive of taxes & labour cess etc.). This estimate, however, is given merely as a rough guide.

### **1.2 Technical Eligibility Criteria for Bidders-**

1.2.1 Experience of having successfully completed following type of works during the last 07 years ending previous day of last date of submission of tenders.

Three similar completed works costing not less than the amount equal to 40% of estimated cost put to tender

or

Two similar completed works, costing not less than the amount equal 60% of the estimated cost put to tender

or

One similar completed work of aggregate cost not less than the amount equal to 80% of the estimated cost put to tender.

Similar work shall mean the work of **work of Installation, Testing and Commissioning of Heating, Ventilation and Air-conditioning (HVAC) system i/c Chillers, Cooling Towers, Air Handling Units, Ducting and duct insulations and Packaged AC system** etc.in any reputed Institutional campus/University/Hospitals/Multistory Office buildings/Commercial Complexes/ Power Plants/Refineries/Manufacturing Plants & Industries/Research Centers and Laboratories/ Date Centre/Sport Stadiums/Any other Industry or Organization.

Department reserves the right to ask contractor for detailed schedule of quantities (BOQ) authenticated by concerned Government department to ascertain the scope of work done, in case, there is any doubt. Contractor shall fully co-ordinate in providing such documents/details.

Note - The Tenderer shall produce definite proof from the appropriate authority, which shall be to the satisfaction of the Competent Authority, of having satisfactorily completed similar works of magnitude specified above. Completion Certificates/proofs need to be enclosed.

1.2.2 The Agency/firm must have valid GST Registration No. The proof for the same shall be enclosed with the bid.

1.2.3 The earnest money deposit as per mentioned in tender document.

1.2.4 Average annual financial turnover should be at least 30% of the estimated cost put to tender during the immediate last three consecutive financial years. Copies of duly attested statement (for last 03 years) by Chartered Accountant should be provided.

1.2.5 The bidder should not have incurred any loss (profit after tax should be positive) in more than two years during available last five consecutive balance sheet, duly audited and certified by the Chartered Accountant.

1.2.6 The bidder should submit the Net worth certificate of minimum 10% of the estimated cost

- put to tender issued by certified Chartered Accountant with UDIN.
- 1.2.7 The bidder shall submit the performance certificate of works as per format given in **Annexure-2** (In case the bidder has executed any contract/work or ongoing work at CIAB during the last 05 years). In case of non-satisfactory performance of any work executed or ongoing work at CIAB during last 05 years, the bid will not be considered for further evaluation.  
The declaration on firm's letter head '**No work executed at CIAB during last 05 years**' be submitted if the firm has not executed any work in CIAB for last 05 years.
- 1.2.8 The bidder shall submit the mandatory **site visit certificate** as per the format given in **Annexure-3**.
- 1.2.9 The tenderer shall submit a letter head, certifying that "**information /documents/experience certificates enclosed by the bidder (Name of contractor) along with this tender are genuine and also the bidder (applicant) shall not have any objection in case CIAB verifies them from the issuing authority. Original copy of the documents shall also be produced to CIAB for their verification on demand. In case, the information /documents /certificates are not found genuine the agency (applicant) shall be debarred for 05 years from participating in any tender of CIAB in future. Further, the agency (applicant) confirms that we have not been blacklisted by any of their clients.**

## 2. The site for the work is available.

2.1 The time allowed for carrying out the work will be 10 weeks as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.

3. (i) Tender documents can be downloaded directly from the CIAB website **www.ciab.res.in** or E-Central public procurement portal **https://eprocure.gov.in/eprocure/app** (up to 21-08-2023).

(ii) Tender forms, NIT, schedule of items and all the Tender documents consisting of all the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary documents can be seen in the office of Assistant Executive Engineer-Electrical, CIAB on all working days between 10:00 am to 5:00pm.

(ii) Tenders shall be accompanied with Earnest money of **Rs.50,000/- only** in the form of Receipt Treasury Challan/Deposit at Call receipt of a scheduled bank/fixed deposit receipt of a scheduled bank/demand draft of a scheduled bank issued in favour of "Center of Innovative and Applied Bioprocessing" payable at Mohali.

4. **Submission of Tender-** The tender shall be submitted/uploaded as e-tender only in the following covers as detailed below:

**A) Cover -1 marked as Technical Bid containing the following-**

- a) Scanned copy of Earnest Money Deposit (EMD) of **Rs.50,000/- only/ MSME Certificate** in the prescribed format.
- b) Scanned copy of documents related to Technical eligibility criteria 1.2 i.e., Completion certificates/proofs of the similar works completed and all other required documents as mentioned in the Technical Eligibility criteria 1.2.1 to 1.2.9.
- c) Scanned copy of signed and stamped complete Tender documents i.e., Volume-1.

## **B. Envelope-2 marked as Financial/Price Bid containing the following-**

- a) This shall contain the price for the execution of the works specified as per Volume-2 of the tender document.

**The above documents shall be uploaded by the bidder on E-Central public procurement portal <https://eprocure.gov.in/eprocure/app> by 3:00 PM on 22-08-2023 and will be opened on 23-08-2023 by CIAB at 15:30 PM.**

Note: - a) Documents to be uploaded in PDF format only (Price Bid in Excel format only). b) The original payment instrument like Demand Draft of any Nationalized Bank against Earnest Money should be sent to the address- Center of Innovative and Applied Bioprocessing, Sector-81, Knowledge City, PO- Manauli, SAS Nagar, Mohali 140306, and Punjab by post/speed post/courier/by hand before due date & time of receipt of tenders, failing which the tenders will not be considered for further evaluation.

Note-2: In case of non-submission/incorrect submission of any of the above-mentioned documents/details by the bidder or in case of non-compliance of any of the technical eligibility criteria by the bidder, their bid shall not be considered for further evaluation or shall be considered ineligible.

Note-3: Bidders are advised to upload only relevant documents pertaining to cited work to avoid wastage of stationary, resources of department.

## **5. Regarding Tender Fee and EMD Exemption**

EMD exemption is allowed for Micro & Small Enterprises (MSEs) who are registered with District Industries Centers(DICs)/Khadi & Village Industries Commission(KVIC)/ Khadi & Village Industries Board(KVIB)/ National Small Industries Corporation (NSIC)/MSEs registered under Udyog Aadhar Memorandum(UAM)/Directorate of Handicrafts and Handloom or any other body specified by Ministry of Micro, Small and Medium Enterprises(MoMSME) but relevant certificates of registration need to be enclosed by the bidder along with the Technical bid, claiming for exemption. Also, the bidders/MSEs claiming for exemption of EMD shall submit the duly signed and stamped hard copies of necessary registration certificates on or before the last date of submission of tenders, failing which their tenders will not be considered for further evaluation.

6 a) The contractor whose tender is accepted will be required to furnish performance guarantee of 3% (Three Percent) of the tendered amount in accordance with Procurement Policy Division, Department of Expenditure, Ministry of Finance, Govt. of India, Office Memorandum dated 12th November 2020 within the period specified in Schedule 'F'. This guarantee shall be in the form of cash (in case guarantee amount is less than Rs. 5000/-) or Deposit at Call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F'. including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor.

(b) Upon submission of performance bank guarantee, the EMD submitted by contractor shall be returned.

(c) Upon award of work, contractor shall within 07 days sign the indemnity bond (performa prescribed at the end of tender document) for supply of minor materials and against violation of labour laws, other State/Central Acts/norms as amended from time to time, accidents, damages

etc thus indemnifying CIAB from negligence, loss of life/property, disputes, claims, violation arising out of the work due to contractor/his partner/workers/sub-contractors etc. CIAB shall have authority to take suitable action against contractor both financially as well as legally depending upon the violation by contractor/his partner/workers/sub-contractors etc.

7. The description of the work is as follows:

**Work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India.**

Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the type of system (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed.

The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

7. The Competent Authority does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

8. Canvassing whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.

9. The Competent Authority reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.

10. The contractor shall not be permitted to tender for works in the CIAB, Mohali if his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Gazetted officer in the CIAB, Mohali or in the Ministry of Science & Technology, Govt. of India. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department.

11. No Engineer of gazette rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the previous permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the tender or engagement in the contractor's service.

12. The tender for the works shall remain open for acceptance for a period of ninety (180) days from the date of opening of tenders/Ninety days from the date of opening of financial bid in case

tenders are invited on 2/3 envelop system (strike out as the case may be) if any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the department shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.

13. This Notice Inviting Tender shall form a part of the contract document. The successful tenderer/contractor, on acceptance of his tender by the Accepting/Competent Authority shall within 15 days from the stipulated date of start of the work, sign the contract agreement consisting of:-

- a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming part of the tender as uploaded at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
- b) Tender form-1.

14. No price preference to any corporate society/Registered society, Govt. Public Sector undertakings / bodies shall be given and tenders shall be exclusively dealt with on merit.

15. The contractor shall comply with the provisions of the Apprentices Act 1961, Minimum wages Act 1948, Workmen's compensation Act 1923, contract labour (Regulation and Abolition Act 1970), payment of wages Act 1938, Employer's liability Act 1938, Maternity Benefits Act 1961, Employee's State Insurance Act, 1948, Employees Provident Funds and Miscellaneous Provisions Act, 1952 and the Industrial disputes Act 1947 as applicable and the rules and regulations issued there under and by the local Administration/ Authorities from time to time as well all provisions of law applicable to workmen. Failure to do so shall amount to breach of the contract and the Competent Authority may at his discretion terminate the contract. The Contractor shall also be liable for any pecuniary liability arising on account of violation by him of any of the said Acts and shall indemnify the Institute on that account. Institute will not be liable for any act or omission on the part of the contractor in so far as any violation of any of the aforementioned acts.

16. Each tenderer shall submit only one tender; either by him or as partners in a joint venture. A tenderer who submits or participates in more than one tender will be disqualified.

17. Unless otherwise stated, the contract shall be for the whole work as described in the "Schedule of Items" and the drawings. The contractor shall be bound to complete the whole work as described in the schedule of items of works and the drawings, including additional items, if any, as per drawings and instructions. The issuance of certificate of completion as issued by the Engineer-in-Charge shall be mandatory and will be conclusive proof of completion of work.

18. Interpretations, corrections and changes to the Tenders Documents shall be made by Addendum, if required by the Institute.

19. Each Tenderer shall ascertain prior to submitting his tender that he has received all Addenda issued and he shall so acknowledge their receipt in his Tender.

20. The provisions in the Tender documents shall govern over the contents of the above paragraphs if in contradiction or variation.

21. All pages of the Tender should be page numbered and indexed.

22. It is the responsibility of tenderer to go through the tender document to ensure furnishing all required documents in addition to above, if any.

**23. The authorized signatory of the tenderer must sign the tender duly stamped at appropriate places and initial all the remaining pages of the tender along with the stamp.**

24. A tender, which does not fulfill any of the above requirements and/or gives evasive information/reply against any such requirement, shall be liable to be ignored and rejected.

25. Only bidding through e-tendering on CPP portal (**E-Central public procurement portal <https://eprocure.gov.in/eprocure/app>**) shall be accepted.

## TENDER ACCEPTANCE LETTER

To,

The Chief Executive Officer  
CIAB, Mohali, Punjab, India

Dear Sir,

I/We have read and examined the following Tender Documents relating to the Work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India

### General Conditions

- Instructions to bidders
- General Information
- Specific condition of contract
- Terms and Conditions of Contract Agreement
- Technical specification and Bill of Quantities
- Price Bid

I/We hereby offer to execute the work complete in all respects specified in the underwritten Memorandum within the time specified therein at the rates specified in the bill of Quantities and in accordance, with the specifications, designs, drawings and instructions in writing referred to in the conditions of tender.

I/We hereby certify that I/We had read the entire terms and conditions of the tender documents (including all documents like annexure(s), schedule(s), etc.) which form part of the contract agreement and I/We shall abide hereby by the terms/conditions/clauses contained therein. The corrigendum(s) issued from time to time by your department/organization too have also been taken into consideration, while submitting the acceptance letter. I/ We hereby unconditionally accept the tender conditions of above-mentioned tender document(s) in its totality/entirety. In case any provision of this tender is found violated, then your department/organization shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the full said earnest money deposit absolutely.

Tenderer's  
Signature and Seal

DATED:

Witness:

Address:

Occupation:



**Center of innovative and Applied Bioprocessing (CIAB)**

**Item rate Tender & Contract for Works**

- (i) Tender for the work of: **work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India.**
- (ii) To be submitted by 15:00 hours on 22-08-2023 to the Chief Executive Officer, CIAB
- (iii) To be opened at 15:30 hours on 23-08-2023 in the office of the Administrative Officer, CIAB

Earnest Money Deposit: Rs.50, 000/- only

Performance Guarantee: @ 3% of Tendered value

Place of opening of tender document: Center of Innovative and Applied Bioprocessing, Knowledge City, sector-81, Mohali-Punjab

Issued to\*: \_\_\_\_\_

Signature of officer issuing the documents\*: \_\_\_\_\_

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

Date of Issue\*: \_\_\_\_\_

**TENDER**

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

I/We hereby tender for the execution of the work specified for the Institute within the time specified in Schedule 'C' viz., schedule of quantities and in accordance in all respect with the specifications, designs, drawing and instructions in writing referred to in General Rules and Directions and in Clauses of the Conditions of contract and with such materials as are provided for, by, and in respect of accordance with, such conditions so far as applicable.

We agree to keep the tender open for ninety (180) days from the due date of its opening/ ninety days from the date of opening of financial bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) and not to make any modification in its terms and conditions.

A sum of **Rs.50,000/- only** is hereby forwarded in cash/receipt treasury challan/deposit at call receipt of a scheduled bank/fixed deposit receipt of scheduled bank/demand draft of a scheduled bank/bank guarantee issued by a scheduled bank as earnest money. If I/We, fail to furnish the prescribed performance guarantee within prescribed period, I/We agree that the Chief Executive Officer, CIAB or his successors, in office shall without prejudice to any other right or remedy, be

at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/We agree that the Chief Executive Officer, CIAB or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained.

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

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

Dated:

Signature of Contractor

Witness:

Postal Address

Address:

Occupation:

## **GENERAL RULES & DIRECTIONS**

1. All work proposed for execution by contract will be notified in a form of invitation to tender posted on website as the case may be.

This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tender, and the amount of the security deposit and Performance guarantee to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills. Copy of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the officer inviting tender shall also be open for inspection by the contractor at the office of officer inviting tender during office hours.

2. In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power-of attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act, 1952.
3. Receipts for payment made on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm, in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipts for the firm.
4. Any person who submits a tender shall fill up the usual printed form, stating at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates, will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelopes.

The rate(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paisa and considering more than fifty paisa as rupee one.

In case the lowest tendered amount (worked out on the basis of quoted rate of Individual items) of two or more contractors is same, then such lowest contractors may be asked to submit sealed revised offer quoting rate of each item of the schedule of quantity for all sub sections/sub heads as the case may be, but the revised quoted rate of each item of schedule of quantity for all sub sections/sub heads should not be higher than their respective original rate quoted already at the time of submission of tender. The lowest tender shall be decided on the basis of revised offer.

If the revised tendered amount (worked out on the basis of quoted rate of individual items) of two or more contractors received in revised offer is again found to be equal, then the lowest tender, among such contractors, shall be decided by draw of lots in the presence of Administrative Officer, Engineer in-charge of major & minor component(s) and the lowest contractors those have quoted equal amount of their tenders.

In case of any such lowest contractor in his revised offer quotes rate of any item more than their respective original rate quoted already at the time of submission of tender, then such revised offer shall be treated invalid. Such case of revised offer of the lowest contractor or case of refusal to submit revised offer by the lowest contractor shall be treated as withdrawal of his tender before acceptance and 50% of his earnest money shall be forfeited.

In case all the lowest contractors those have same tendered amount (as a result of their quoted rate of individual items), refuse to submit revised offers, then tenders are to be recalled after forfeiting 50% of EMD of each lowest contractors.

Contractor, whose earnest money is forfeited because of non-submission of revised offer, or quoting higher revised rate(s) of any item(s) than their respective original rate quoted already at the time of submission of his bid shall not be allowed to participate in the retendering process of the work.

5. In the case of Item Rate Tenders, only rates quoted shall be considered. Any tender containing percentage below/above the rates quoted is liable to be rejected. Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy in the rates written in figures and words. However, if a discrepancy is found, the rates which correspond with the amount worked out by the contractor shall unless otherwise proved be taken as correct. If the amount of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or in words, then the rates quoted by the contractor in words shall be taken as correct. Where the rates quoted by the contractor in figures and in words tally, but the amount is not worked out correctly, the rates quoted by the contractor will unless otherwise proved be taken as correct and not the amount. 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.
6. All rates shall be quoted on the tender form. The amount for each item should be worked out and requisite totals given. Special care should be taken to write the rates in figures as well as in words and the amount in figures only, in such a way that interpolation is not possible. The total amount should be written both in figures and in words. In case of figures, the word 'Rs.' should be written before the figure of rupees and word 'P' after the decimal figures, e.g. 'Rs. 2.15 P' and in case of words, the word, 'Rupees' should precede and the word 'Paise' should be written at the end. Unless the rate is in whole rupees and followed by the word 'only' it should invariably be upto two decimal places. While quoting the rate in schedule of quantities, the word 'only' should be written closely following the amount and it should not be written in the next line.
7. The Bidder/Contractor Firm should possess all the necessary clearance from all the Govt. authorities/departments for the related work as well as the regulatory affairs.
8. The Chief Executive officer, CIAB shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
9. Use of correcting fluid, anywhere in tender document is not permitted. Such tender is liable for rejection.
10. The Contractor whose tender is accepted, will be required to furnish performance guarantee of 3% (three percent) of the tendered amount within the period specified in Schedule 'C'. This guarantee shall be in the form of cash (in case guarantee amount is less than Rs. 10,000/-) or Deposit at call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form.
11. On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.

12. GST, turnover tax or any other tax applicable in respect of this contract shall be payable by the Contractor and Institute will not entertain any claim whatsoever in respect of the same. The bidder shall give the total composite price inclusive of all Central & State's levies and taxes i.e. GST, Excise duty, Turnover Tax, Works Contract Tax etc applicable to this work.

If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of India and does not any time become payable by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.

13. The contractor shall give a list of both gazetted and non-gazetted CIAB employees related to him (if any).
14. The tender for the work shall not be witnessed by a contractor or contractors who himself/ themselves has/have tendered or who may and has/have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.
15. The statutory deductions such as TDS etc. shall be deducted at source as per prevailing percentage/rates/rules as amended from time to time by Central/State Govt.
16. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Competent Authority may in his discretion, without prejudice to any other right or remedy available in law, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.
17. After the installation work has been completed by the contractor, he will conduct tests and make adjustments as may be necessary to satisfy himself that the plant including low side equipments is capable of continuous running. There after he will offer to the department a running-in period of 7 days subject to a minimum aggregate of 120 hrs. at his cost. All the compressors shall be run by rotation. The plant will be operated and a log book of all parameters will be maintained during this the period. The contractor will be free to carry out necessary adjustment during this period without stopping the plant. The plant will be said to have successfully completed the running –in-period, if no break down or abnormal/unsatisfactory operation of any machinery occurs during this period. After this the plant will be made available for beneficial use. After the plant has operated without any major breakdown/trouble for the above specified running-in-period it shall be taken over by the department subject to guarantee clause mentioned below. This date of taking over of plant after trouble free operation during the running-in-period shall be the date of acceptance.
18. All equipments shall be guaranteed for a period of 12 months from the date of acceptance and taking over of the installation by the Department against unsatisfactory performance and/or breakdown due to defective design, material, manufacture, workmanship or installation. The equipment or component or any part thereof so found defective during the guarantee period shall be repaired or replaced free of cost to the satisfaction of the engineer-in-Charge. In case it is felt by the department that undue delay is being caused by the contractor in doing this, the same will be got done by the department at the risk & cost of the contractor. The decision of Engineer-in-charge in this regard shall be final.
19. The rates quoted by the tenderer shall be firm and inclusive of all taxes (including works contract tax), duties and levies and all charges for packing, forwarding, insurance, freight and delivery, installation, testing, commissioning etc. site including temporary constructional storage, risks overhead charges general liabilities/obligations and clearance from concerned authorities. However, the fee of these inspections shall be born by the department on production of supporting document.

20. Octroi duty shall be paid separately but octroi exemption certificate can be furnished by the department on demand. However, the department is not liable to reimburse the octroi duty in case exemption certificates are not honoured by the concerned authorities.
21. No GST etc. shall be separately paid by the department. The rates tendered should be inclusive all taxes and duties. Deduction of contract tax and labour cess at source shall be made while releasing payment through running/final bills at the rate as applicable. A certificate specifying the rate and amount of deduction shall however be issued. No Form-D, 31/32 (Road Permit) shall be issued by the department. The road permit shall be arranged by the tenderer on his own without any extra cost.
22. The tenderer shall furnish along with the Technical Bid, detailed technical literature, pamphlets and performance data for appraisal and evaluation of the offer. Computerized selection of chilling unit and blowers shall be furnished.
23. The successful tenderer shall furnish well in advance three copies of detailed instructions and manuals of manufacturers for all items of equipments regarding installation, adjustments operation and maintenance i/c preventive maintenance & trouble shooting together with all the relevant data sheets, spare parts catalogue and workshop procedure for repairs, assembly and adjustment etc. all in triplicate.
24. The work shall comprise of entire labour including supervision and all materials necessary to make a complete installation and such tests and adjustments and commissioning as may be required by the department. The term complete installation shall not only mean major items of the plant and equipments covered by specifications but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender with document in connection with this contract.
25. Minor building works necessary for installation of equipment, foundation, making of opening in floors and restoring to their original condition, finish and necessary grouting etc. as required.
26. Initial inspection at work and final inspection and testing at site shall be carried out as per chapter 17 of CPWD General Specification of HVAC work 2004 as amended to date.
27. The department shall be free to carry out any Sample Test of the material like GSS sheet, Fiber Glass Insulation etc at the approved lab as decided by the department. The material should conform to the relevant BIS. The Contractor should submit the Sample of all such material in advance so that it should not create any hindrance in the progress of work.
28. All components shall conform to relevant Indian Standard Specifications, wherever existing, amended to date.
29. All electrical works shall be carried out in accordance with relevant regulation, both statutory & those specified by the provisions of Indian Electricity Act, 2003 and Indian Electricity Rules, 1956 amended up to date. They shall also conform to CPWD General Specifications for Electrical Works, Part-I: Internal, 2005 and Part-II: External, 1994 and Part IV (Sub-Station) 1983 as amended to date.
30. No mobilization advance shall be paid.

31. All consignments are to be insured up to the destination from warehouse to warehouse at the cost of the contractor. The insurance covers shall be valid till the equipment is handed over duly installed, tested and commissioned.
32. The contractor shall provide all equipment, instruments, labour and such other assistance required by the Engineer-in-Charge for measurement of the works, materials etc.
33. Plant room/Air handling unit room, if ready can be used for storage of materials/equipment brought to site by the contractors. Watch and ward of the same shall be the contractor's responsibility. In case the plant room space is not readily available, it shall be contractor's responsibility to make his own temporary structure at site with approved location from the department at his own cost.
34. All AHU's temporary wooden door, foundation work for machinery & equipment, wooden frame work for AC ducting & grill as per specification will be responsibility in the scope of AC Contractor nothing extra shall be paid on this account.

## CONDITIONS OF CONTRACT

### Definitions

1. The Contract means the documents forming the tender and acceptance thereof and the formal agreement executed between competent authority on behalf of the CIAB and the contractor, together with the document referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by Engineer-in-charge and all these documents taken together shall be deemed to form one contract and shall be complementary to one another.
2. In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:-
  - a) The expression **works** or **work** shall unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
  - b) The **site** shall mean the land/ or other places like building etc. on into or through which work is to be executed under the contract or any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
  - c) The **contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such, individual, firm or company.
  - d) The Competent Authority shall mean the **Chief Executive Officer, CIAB**
  - e) **Institute/Department** shall mean the Center of innovative and Applied Bioprocessing (CIAB), Mohali.
  - f) **Administration** shall mean the administration of CIAB, Mohali.
  - g) **Local authority** shall mean the Municipal Corporation of Mohali and shall also deemed to include any other body, State Govt. Department or department of the administration.
  - h) **Accepting Authority** shall mean the authority mentioned in Schedule 'C'.
  - i) **Engineer-Incharge** shall mean the Assistant Executive Engineer-Electrical
  - j) **Schedule(s)** referred to in these conditions shall mean the relevant schedule(s) annexed to the tender papers.
  - k) **District Specifications** means the specifications followed by the State Government in the area where the work is to be executed.
  - l) **Tendered value** means the value of the entire work as stipulated in the letter of award.
  - m) **Date of commencement of work:** The date of commencement of work shall be the date of start as specified in schedule 'C' or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender document.
  - n) **Excepted Risk** are risks due to riots (other than those on account of contractor's Employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or



occupation by owner of the part of the works in respect of which a certificate of completion has been issued or a cause solely due to owner's faulty design of works.

- o) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour as per market at the site where the work is to be executed plus the percentage to cover all overheads and profits.

### **Scope & Performance**

3. Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.
4. Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.
5. The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications, Schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract.

### **Works to be carried out**

6. The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Scope of Work (Schedule- A & Schedule-D) shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.

### **Sufficiency of Tender**

#### **Sufficiency of tender:**

The contractor shall be deemed to have satisfied himself before bidding as to the correctness and sufficiency of his bid for the works and of the rates and prices quoted in the Bill of Quantities which rates and prices shall except as otherwise provided, cover all his obligations under the Contract and everything necessary for the proper completion and maintenance of the works, if required contractor shall obtain clearances from concerned local authorities at his cost. The cost of any item for which contractor has failed to enter rate shall be deemed to be covered by other rates entered in the Bill of Quantities. The Contractor shall also co-ordinate with any other agency working in the same project, compare plans, specifications and the time schedules and so arrange his work that there will be no interference. CIAB shall entertain no claim on this account.

The rates quoted by the contractor shall also take into account the cost of the following:-

- a) Income tax deductions:

Appropriate deductions as per relevant Income Tax Rules applicable at the time shall be made from bills submitted by the contractor.

- b) Rates to be inclusive of all labour, material etc.

The rates for all items, unless clearly specified otherwise, cover all costs for proper execution of work including labour, material, hire charges of machinery etc. and any other inputs involved during execution of the works.

C) Water and Electric Supply: CIAB will provide required supply of water and electric power to the contractor at the designated point. Any further extension from that source shall be organized by the contractor at his own expense.

### **Discrepancies and Adjustment of Errors**

7. The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.
- 7.1 In the case of discrepancy between the schedule of work, the Specifications and/or the Drawings, the following order of preference shall be observed:-
- a) Description of Schedule of Quantities.
  - b) Particular Specification and Special Condition, if any.
  - c) Drawings.
  - d) CPWD Specifications and Manufacturer specifications with upto date amendments.
  - e) Indian Standard Specifications of B.I.S.
- 7.2 If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.
- 7.3 Any error in description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.
- 7.4 In case of any conflict/discrepancy on any specification or item to be executed or any other issue related to the contract, the CPWD guidelines and GFR (General Financial Rules) shall be referred to for the same with further recommendations and approvals of the Competent Authority.

## PROFORMA OF SCHEDULES

### **SCHEDULE 'A'**

Schedule of quantities in Vol-II.

### **SCHEDULE 'E'**

Reference to General Conditions of contract.

Name of work: **work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India**

Estimated cost of work: Rs. 25,00,000/-

(i) Earnest money: Rs. 50,000/-

(ii) Performance Guarantee: 3% of tendered value.

(iii) Security Deposit: 2.5% of tendered value

or

2.5% of tendered value plus 50% of PG for contracts involving maintenance of the building and services/ other work after construction of same building services/ other work.

### **SCHEDULE 'F'**

GENERAL RULES & DIRECTIONS

Officer inviting tender: **-CEO, CIAB**

#### **Definitions:**

2(v) Engineer-in-Charge: - **Assistant Executive Engineer - Electrical**

2(viii) Accepting Authority: - **Chief Executive Officer, CIAB**

2(x) Percentage on cost of materials and labour to cover all overheads and profits: - **15%**

2(xi) Standard Schedules of Rates: - **CPWD DSR 2021 along with Market rates for non-scheduled items**

#### **Clause 1**

(i) Time allowed for submission of Performance Guarantee, programme chart (Time and progress) and applicable labour licenses and BOCW welfare board or proof of applying thereof from the date of issue of letter of acceptance: - **07 days**

(ii) Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above: - **07 days**

#### **Clause 2**

Authority for fixing compensation under clause 2: - **Chief Executive Officer, CIAB**

#### **Clause 5**

Number of days from the date of issue of letter of acceptance for reckoning date of start of work: - **07 days**

Time allowed for execution of work: - **10 weeks after 07 days of award/acceptance letter by CIAB.**

**Authority to decide:**

(i) Extension of time: - **CEO, CIAB**

(ii) Rescheduling of mile stones: - **CEO, CIAB**

(iii) Shifting of date of start in case of delay in handing over of site: - **CEO, CIAB.**

**Clause 8A**

Authority to decide compensation on account if contractor fails to submit completion plans; - **CEO, CIAB**

**Clause 11**

Specifications to be followed for execution of work: -**Technical Specifications mentioned in Vol.-II of tender document.**

**Clause 12**

Authority to decide deviation upto 1.5 times of tendered amount: - **CEO, CIAB**

**12.2 & 12.3**

Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for building work: - **as per CPWD Works Manual 2022 with up-to-date amendments**

**Clause 16**

Competent Authority for deciding reduced rates: - **CEO, CIAB**

**Clause 32 (i)**

**Requirement of Technical Representative(s) and recovery Rate-----CPWD MANUAL 2022**

**Or**

**as amended from time to time by CP**

## CLAUSES OF CONTRACT

### CLAUSE 1-Performance Guarantee

(i) The contractor shall submit an irrevocable **Performance Guarantee of 3% (Five percent)** of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period specified from the date of issue of letter of acceptance. This period can be further extended by the

Competent Authority up to a maximum period as specified in schedule 'F' on written request of the contractor stating the reason for delays in procuring the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This guarantee shall be in the form of Cash (in case guarantee amount is less than Rs. 5,000/-) or Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay Order of any scheduled bank (in case guarantee amount is less than Rs. 1, 00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the form annexed hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.

(ii) The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.

(iii) The Engineer-in-Charge shall not make a claim under the performance guarantee except for amounts to which the owner is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

(a) Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.

(b) Failure by the contractor to owner any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-Charge.

(iv) In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Competent Authority.

(v) On substantial Completion of any work which has been completed to such an extent that the intended purpose of the work is met and ready to use, then a provisional Completion certificate shall be recorded by the Engineer-in-Charge. The provisional certificate shall have appended with a list of outstanding balance item of work that need to be completed in accordance with the provisions of the contract. This provisional completion certificate shall be recorded by the concerned Engineer-In-charge with the approval of Superintending Engineer /Project Manager / Chief Engineer/Chief Project Manager, if required. After recording of the provisional Completion Certificate for the work by the competent authority, the 80 % of performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving Maintenance of building and services /any other work after construction of same building and services/ other work, then 40% of performance guarantee shall be returned to the contractor, without any interest after recording the provisional Completion certificate.

### **CLAUSE 1 A: Recovery of Security Deposit**

The person/persons whose tender(s) may be accepted (hereinafter called the contractor) shall permit Department at the time of making any payment to him for work done under the contract to **deduct a sum at the rate of 2. 5% of the gross amount** of each running and final bill till the sum deducted will amount to security deposit of 2. 5% of the tendered value of the work. Such deductions will be made and held by Government by way of Security Deposit unless he/they has/have deposited the amount of Security at the rate mentioned above in cash or in the form of Government Securities or fixed deposit receipts. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the security deposit and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit. All compensations or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising therefrom, or from any sums which may be due to or may become due to the contractor by Government on any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by Scheduled Banks or Government Securities (if deposited for more than 12 months) endorsed in favour of the Engineer-in-Charge, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof. The security deposit shall be collected from the running bills and the final bill of the contractor at the rates mentioned above.

The security deposit as deducted above can be released against bank guarantee issued by a scheduled bank, on its accumulations to a minimum of Rs. 5 lac subjects to the condition that amount of such bank guarantee, except last one, shall not be less than Rs. 5 lacs. Provided further that the validity of bank guarantee including the one given against the earnest money shall be in conformity with provisions contained in clause 17 which shall be extended from time to time depending upon extension of contract granted under provisions of clause 2 and clause 5.

In case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned year wise proportionately.

### **CLAUSE 2: Compensation for Delay**

If the contractor fails to maintain the required progress or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the Government on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the authority specified in schedule 'F' (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified in Clause 5 or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified.

**(i) Compensation @ point five percent (0.5%) per week of delay** for delay of work to be computed on day basis provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given.

### **CLAUSE 3: When Contract can be Determined**

Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

- (i) If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or unworkman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.
- (ii) If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.
- (iii) If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.
- (iv) If the contractor persistently neglects to carry out his obligations under the contract and/ or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.
- (v) If the contractor shall offer or give or agree to give to any person in Government service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for Government.
- (vi) If the contractor shall enter into a contract with Government in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge.
- (vii) If the contractor had secured the contract with Government as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement.
- (viii) If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.
- (ix) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
- (x) If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.
- (xi) If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer -in-Charge.

When the contractor has made himself liable for action under any of the cases aforesaid, the Competent Authority shall have powers:

(a) To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Security Deposit already recovered and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the Government

(b) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work.

In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

### **CLAUSE 3A**

In case, the work cannot be started due to reasons not within the control of the contractor within 1/8th of the stipulated time for completion of work or one month whichever is higher, either party may close the contract. In case contractor wants to close the contract, he shall give notice to the department stating the failure on the part of department. In such eventuality, the Performance Guarantee of the contractor shall be refunded within following time limits:

- (i) If the Tendered value of work is up to Rs. 45 lac: 15 days.
- (ii) If the Tendered value of work is more than Rs. 45 lac and up to Rs. 2.5 Crore: 21 days.
- (iii) If the Tendered value of work exceeds Rs. 2.5 Crore: 30 days.

### **CLAUSE 4: Contractor liable to pay Compensation even if action not taken under Clause 3**

In any case in which any of the powers conferred upon the Competent Authority by Clause-3 thereof, shall have become exercisable and the same are not exercised, the non-exercise hereof shall not constitute a waiver of any of the conditions hereof and such powers shall Notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in- Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work/or any part thereof, paying or allowing for the same in account at the contract rates, or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the

premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.



**CLAUSE 5: Time and Extension for Delay**

The time allowed for execution of the Works as specified in the Schedule 'F' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in schedule 'F' or from the date of handing over of the site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance guarantee absolutely.

If the work(s) be delayed by: -

- (i) Force majeure, or
- (ii) Abnormally bad weather, rains or
- (iii) Serious loss or damage by fire, or
- (iv) Civil commotion, local commotion of workmen, strike or lockout, affecting any of the Trades employed on the work.
- (v) Delay on the part of other contractors or tradesmen engaged by owner in executing work not forming part of the Contract, or
  
- (vi) Non-availability of stores material, which are the responsibility of owner to supply or
- (vii) Non-availability or break down of tools and Plant to be supplied or supplied by Government  
or
- (viii) Any other cause which, is beyond the Contractor's control.

Then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the authority as indicated in

Schedule 'F' but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

The contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed in sub clause 5.2.

**CLAUSE 8: Completion Certificate and Completion Plans**

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-Charge and within thirty days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution; thereof, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding, surplus materials and rubbish etc., and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

**CLAUSE 8A:- Completion Plans to be submitted by the Contractor**

The contractor shall submit completion plans for Internal and External Civil, Electrical and Mechanical Services within thirty days of the completion of the work, provided that the service plans having been issued for execution by the Engineer-in-Charge, unless the contractor, by virtue

of any other provision in the contract, is required to prepare such plans In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum of 0.1 % (zero point one percent) of accepted Tendered Value or limit prescribed in Schedule F whichever is more as may be fixed by the authority as mentioned in Schedule F and in this respect the decision of the that authority shall be final and binding on the contractor.

**CLAUSE 9:- Payment of Running & Final Bill**

*The running bills of contractor shall be paid within 21 days from date of submission of hard copy. The running bills below value of Rs 5.0 lacs shall not be entertained. The payment shall be made based on measurements recorded against each item mentioned in financial bid and the amount shall be worked out based on the measurements recorded, rates mentioned in this tender document by Department and percentage quote plus/minus quoted by bidder. Contractor shall duly co-operate with Department in verifying measurement at site.*

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer-in-Charge, will, as far as possible be made within the period specified here in under, the period being reckoned from the date of receipt of the bill by the Engineer in- Charge or his authorized Asstt. Engineer, complete with account of materials issued by the Department and dismantled materials.

(a) If the Tendered value of work is up to 1 Crore : 2 months

(b) If the Tendered value of work is more than Rs 1 Crore and upto: 3 months Rs. 10 Crore

(c) If the Tendered value of work exceeds Rs. 10 Crore: 6 months

**CLAUSE 10A: Materials to be provided by the Contractor**

The contractor shall, at his own expense, provide all materials, required for the works other than those which are stipulated to be supplied by the owner. The contractor shall, at his own expense and without delay, supply to the Engineer-in- Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in- Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.

The Contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer in-Charge or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the Contractor. The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped at least with the testing equipment as specified in schedule F.

**CLAUSE 10 D:-Dismantled Material Govt. Property**

The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work, etc. as Government's property and such materials shall be disposed off to the best advantage of Government according to the instructions in writing issued by the Engineer in-Charge.

**CLAUSE 11:- Work to be executed in Accordance with Specifications, Drawings, Orders etc.**

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the standard specifications of Central Public Works Department or in any Bureau of Indian Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract. The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

**CLAUSE 12: Deviations/ Variations Extent and Pricing**

The Engineer-in-Charge shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

**12.1** The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered be extended, if requested by the contractor, as follows:

- (i) In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus
- (ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

## **12.2 :- Deviation, Extra Items and Pricing**

In the case of extra item(s) (items that are completely new, and are in addition to the items contained in the contract), the contractor may within fifteen days of receipt of order or occurrence of the item(s) submit market rate claim rates, supported by proper analysis which shall include invoices, vouchers etc. and Manufacturer's specification for the work failing which the rate approved later by the Engineer- in charge shall be binding and the Engineer-in-Charge shall within prescribed time limit of the receipt of the claims supported by analysis , after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined, failing which it will be deemed to have been approved. In the case of substituted items (items that are taken up with partial substitution or in lieu of items of work in the contract), the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the following para.

- (a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).
- (b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

## **Deviation, deviated Quantities, Pricing**

In the case of contract items, substituted items, contract cum substituted items, which exceed the limits laid down in schedule F, the contractor may within fifteen days of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities, the Engineer-in-Charge shall within prescribed time limit of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates (as per invoice, vouchers from the manufacturers or suppliers submitted by the agency and duly verified by Engineer in Charge or his representative) and the contractor shall be paid in accordance with the rates so determined. The prescribed time limit for finalizing rates for Extra Item(s), Substitute Item(s) and Deviated Quantities of contract items is within 45 days after submission of proposal by the contractor without observation of the Engineer-in-Charge. If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the

**12.3** The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Schedule F, and the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of fifteen days having regard to the market rates.

**12.4** For the purpose of operation of Schedule "F", the following works shall be treated as works relating to foundation unless & otherwise defined in the contract:

- (i) For Buildings: All works up to 1.2 metres above ground level or up to floor 1 level whichever is lower.
- (ii) For abutments, piers and well staining: All works up to 1.2 m above the bed level.
- (iii) For retaining walls, wing walls, compound walls, chimneys, overhead reservoirs/ tanks and other elevated structures: All works up to 1.2 metres above the ground level.
- (iv) For reservoirs/tanks (other than overhead reservoirs/tanks) : All works up to 1.2 metres above the ground level.
- (v) For basement: All works up to 1.2 m above ground level or up to floor 1 level whichever is lower.

(vi) For Roads, all items of excavation and filling including treatment of sub base.

**12.5** Any operation incidental to or necessarily has to be in contemplation of tenderer while quoting tender, or necessary for proper execution of the item included in the Schedule of quantities or in the schedule of rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations.

**CLAUSE 13:- Foreclosure of contract due to Abandonment or Reduction in Scope of Work**

If at any time after acceptance of the tender or during the progress of work, the purpose or object for which the work is being done changes due to any supervening cause and as a result of which the work has to be abandoned or reduced in scope the Engineer-in-Charge shall give notice in writing to that effect to the contractor stating the decision as well as the cause for such decision and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

**Clause 14:- Carrying out part work at risk & cost of contractor**

If contractor:

(i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after a notice in writing of 7 days in this respect from the Engineer-in-Charge; or

(ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Engineer-in-Charge; or Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge.

(iii) The Engineer- in-Charge without invoking action under clause 3 may, without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to Government, by a notice in writing to take the part work / part incomplete work of any item(s) out of his hands and shall have powers to:

(a) Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or

(b) Carry out the part work / part incomplete work of any item(s) by any means at the risk and cost of the contractor.

The Engineer-in-Charge shall determine the amount, if any, is recoverable from the contractor for completion of the part work/ part incomplete work of any item(s) taken out of his hands and execute at the risk and cost of the contractor, the liability of contractor on account of loss or damage suffered by Government because of action under this clause shall not exceed 10% of the tendered value of the work.

In determining the amount, credit shall be given to the contractor with the value of work done in all respect in the same manner and at the same rate as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the contractor.

The certificate of the Engineer-in-Charge as to the value of work done shall be final and conclusive against the contractor provided always that action under this clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the department

are less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

Any excess expenditure incurred or to be incurred by Government in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by Government as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to Government in law or per as agreement be recovered from any money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract.

In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

**CLAUSE 15: Suspension of Work**

(i) The contractor shall, on receipt of the order in writing of the Competent Authority, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

- (a) on account of any default on the part of the contractor or;
- (b) for proper execution of the works or part thereof for reasons other than the default of the contractor; or
- (c) for safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer in- Charge.

**(ii)** If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:

(a) the contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;

(b) If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in- Charge may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in- Charge within fifteen days of the expiry of the period of 30 days.

**(iii)** If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in subpara above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer in-Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by owner or where it affects whole of the works, as an abandonment of the works by owner, shall within ten days of expiry of

such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by owner, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months.

**CLAUSE 16: Action in case Work not done as per Specifications**

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-In-charge, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself. If it shall appear to the Engineer-in-charge, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in the case of work costing Rs. 10 Lac and below except road work) of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause 2 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the authority specified in schedule 'F' may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Competent Authority to be conveyed in writing in respect of the same will be final and binding on the contractor.

**CLAUSE 17: Contractor Liable for Damages, defects during defect liability period**

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within twelve months after a certificate final or otherwise of its completion shall have been given by the Engineer in-Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of twelve months after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later. Provided that in the case of road work, if in the opinion of the Engineer-in-Charge, half of the security deposit is sufficient, to meet all liabilities of the contractor under this

contract, half of the security deposit will be refundable after six months and the remaining half after twelve months of the issue of the said certificate of completion or till the final bill has been prepared and passed whichever is later.

The Warranty/Defect Liability period after the completion of works will be **12 months (from the date of completion recorded or handing over of the work, whichever is later)**. In addition to this, extended warranty, if any for items as given by the manufacturer will also be applicable. Warranty will be inclusive of all accessories and it will also cover all wearable & non-wearable components. Replacement and repair will be under taken for the defective goods.

Upon receipt of notice during the warranty/Defect liability period, the Contractor shall, within 48 hours on a 24(hrs) X 365 (days) basis respond to take action and to repair or replace the defective goods or parts thereof, free of cost, at the ultimate destination. The Supplier/Contractor shall take over the replaced parts/goods after providing their replacements and no claim, whatsoever shall lie on the Owner/Institute for such replaced parts/goods thereafter. The penalty clause for non-rectification will be applicable as per tender conditions.

If the Contractor, having been notified, fails to respond to take action to repair or replace the defect(s) within 48 hours on a 24(hrs) X 365 (days) basis, the Owner may proceed to take such remedial action(s) as deemed fit by the Owner, at the risk and expense of the Contractor and without prejudice to other contractual rights and remedies, which the Owner may have against the Contractor.

**Clause 18 B: Ensuring Payment and Amenities to Workers if Contractor fails**

In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, Government is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the C.P.W.D. Contractor's Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by C.P.W.D. Contractors, Government will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of the Government under subsection(2) of Section 20, and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, Government shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Government to the contractor whether under this contract or otherwise Government shall not be bound to contest any claim made against it under sub-section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the Government full security for all costs for which Government might become liable in contesting such claim.

**CLAUSE 19: Labour Laws to be complied by the Contractor**

The contractor shall obtain a valid licence under the Contract Labour (R&A) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work, if required as per labour law. The contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) Act, 1986.

The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996. Any failure to fulfil these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.



## **CLAUSE 19A**

No labour below the age of fourteen years shall be employed on the work.

## **CLAUSE 19 B**

### **Payment of wages:**

**(i)** The contractor shall pay to labour employed by him either directly or through subcontractors, wages not less than fair wages as defined in the C.P.W.D Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

**(ii)** The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wage to labour indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work, as if the labour had been immediately employed by him.

**(iii)** In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Central Public Works Department contractor's Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorized made, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

**(iv)** (a) The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfilment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of the Regulations.

(b) Under the provision of Minimum Wages (Central) Rules, 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned.

**(v)** The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made thereunder from time to time.

**(vi)** The contractor shall indemnify CIAB against payments to be made under and for the observance of the laws aforesaid and any other law, Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors.

**(vii)** The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.

**(viii)** Whatever is the minimum wage for the time being, or if the wage payable is higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise.

(ix) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

**CLAUSE 20: Minimum Wages Act to be complied with**

The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, and Contract Labour (Regulation and Abolition) Act, 1970, amended from time to time and rules framed thereunder and other labour laws affecting contract labour that may be brought into force from time to time.

**CLAUSE 21: Work not to be sublet. Action in case of insolvency**

The contract shall not be assigned or sublet without the written approval of the Engineer-in-Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor, or any of his servants or agent to any public officer or person in the employ of Government in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer in-Charge on behalf of the President of India shall have power to adopt the course specified in Clause 3 hereof in the interest of Government and in the event of such course being adopted, the consequences specified in the said Clause 3 shall ensue.

**CLAUSE 24:- Life Cost Cycle**

The contractor shall be responsible for safety, quality and soundness of the buildings including structural elements beyond maintenance period. The contractor shall have obligation to rectify such defects minimum up to 5 (five) years from the date of completion of work. The defects have to be rectified within a reasonable time not exceeding three months after issue of notice by Engineer-in-Charge.

**CLAUSE 25:- Settlement of Disputes & Arbitration**

Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter: (i) If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge or if the Engineer in Charge considers any act or decision of the contractor on any matter in connection with or arising out of the contract or 51 carrying out of the work, to be unacceptable and is disputed, such party shall promptly within 15 days of the arising of the disputes request the Chief Engineer/ CPM, or where there is no Chief Engineer/CPM, request the Additional Director General/Special Director General ,who shall refer the disputes to Dispute Redressal Committee (DRC) within 15 days along with a list of disputes with amounts claimed if any in respect of each such dispute. The Dispute Redressal Committee (DRC) give its decision within a period of 60 days extendable by 30 days by consent of both the parties from the receipt of reference from CE/CPM/ADG/SDG. The constitution of Dispute Redressal Committee (DRC) shall be as indicated in Schedule 'F'. Provided that no party shall be represented before the Dispute Redressal Committee by an advocate/legal counsel etc. The DRC will submit its decision to the concerned ADG/SDG for acceptance. ADG/ SDG in a time limit of 30 days from receipt of DRC decision will convey acceptance or otherwise on the said decision .If the Dispute Redressal Committee (DRC) fails to give its decision within the aforesaid period or the ADG/SDG fails to give his decision in the aforesaid time limit or any party is dissatisfied with the decision of Dispute Redressal Committee (DRC)/ ADG/ SDG

then either party may within a period of 30 days from the receipt of the decision of Dispute Redressal Committee (DRC)/ ADG/SDG or on expiry of aforesaid the time limits available to DRC/ ADG/SDG, may give notice to the Chief Engineer/CPM, CPWD, in charge of the work or if there be no Chief Engineer/ CPM,, the Additional Director General /Special Director General concerned or if there be no Additional Director General/ Special Director General, the Director General, CPWD for appointment of arbitrator on prescribed proforma as per Appendix XVII under intimation to the other party. It is a term of contract that each party invoking arbitration must exhaust the aforesaid mechanism of settlement of claims/disputes prior to invoking arbitration. The CE/ADG/ SDG /DG shall in such case appoint the sole arbitrator or one of the three arbitrators as the case may be within 30 days of receipt of such a request and refer such disputes to arbitration. Wherever the Arbitral Tribunal consists of three Arbitrators, the contractor shall appoint one arbitrator within 30 days of making request for arbitration or of receipt of request by Engineer-in-charge to CE/ADG/ SDG /DG for appointment of arbitrator, as the case may be, and two appointed arbitrators shall appoint the third arbitrator who shall act as the Presiding Arbitrator. In the event of a. A party fails to appoint the second Arbitrator, or b. The two appointed Arbitrators fail to appoint the Presiding Arbitrator, then the Director General, CPWD shall appoint the second or Presiding Arbitrator as the case may be. (ii) Dispute or difference shall be referred for adjudication through arbitration by a Tribunal having sole arbitrator where claimed amount is Rs. 20 Crore or less. Where claimed Value is more than Rs. 20 Crore, Tribunal shall consist of three Arbitrators as above. The requirements of the Arbitration and Conciliation Act, 1996 (26 of 1996) and any further statutory modification or reenactment thereof and the rules made there under and for the time being in force shall be applicable. It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed, if any, in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the decision of the ADG/ SDG on the finding / recommendation of DRC. It is also a term of this contract that any member of the Arbitration Tribunal shall be a Graduate Engineer with experience in handling public works engineering contracts, and further he shall have earlier worked at a level not lower than Chief Engineer/ equivalent (i.e. Joint Secretary level of Government of India). This shall be treated as a mandatory qualification to be appointed as arbitrator. Parties, before or at the time of appointment of Arbitral Tribunal may agree in writing for fast track arbitration as per the Arbitration and Conciliation Act, 1996 (26 of 1996) as amended in 2015. Subject to provision in the Arbitration and Conciliation Act, 1996 (26 of 1996) as amended in 2015 whereby the counter claims if any can be directly filed before the arbitrator without any requirement of reference by the appointing authority. The arbitrator shall adjudicate on only such disputes as are referred to him by the appointing authority and give separate award against each dispute and claim referred to him and in all cases where the total amount of the claims by any party exceeds Rs. 1,00,000/-, the arbitrator shall give reasons for the award. It is also a term of the contract that fees payable to arbitral tribunal shall be as approved by DG, CPWD, OM issued vide no.2/2006/SE(TLC)/CSQ /137 dated 19-11-2019 (or its latest amendment as approved by DG, CPWD). This fee shall be shared equally by parties. The place of arbitration shall be as mentioned in Schedule F. In case there is no mention of place of arbitration, the arbitral tribunal shall determine the place of arbitration. The venue of the arbitration shall be such place as may be fixed by the Arbitral Tribunal in consultation with both the parties. Failing any such agreement, then the Arbitral Tribunal shall decide the venue.

**CLAUSE 27:- Lumpsum Provisions in Tender**

When the estimate on which a tender is made includes lump sum in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge payable of measurement, the Engineer-in-Charge may at his discretion pay the lump -sum amount entered in the estimate, and the certificate in writing of the Engineer-in-Charge shall be final and conclusive

against the contractor with regard to any sum or sums payable to him under the provisions of the clause.

**CLAUSE 28:- Action where no Specifications are specified**

In the case of any class of work for which there is no such specifications as referred to in Clause 11, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers' specifications, if not available then as per state/ District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

**CLAUSE 29:- Withholding and lien in respect of sum due from Contractor**

(i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in Charge or the Government shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any deposited by the contractor and for the purpose aforesaid, the Engineer-in-Charge or the Government shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the Engineer-in-Charge or the Government shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge of the Government or any contracting person 54 through the Engineer-in-Charge pending finalization of adjudication of any such claim. It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or Government will be kept withheld or retained as such by the Engineer-in-Charge or Government till the claim arising out of or under the contract is determined by the arbitrator (if the contract is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the Government shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company as the case may be, whether in his individual capacity or otherwise. (ii) Government shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract, etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for Government to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by Government to the contractor, without any interest thereon whatsoever. Provided that the Government shall not be entitled to recover any sum overpaid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Superintending Engineer or Executive Engineer on the one hand and the contractor on the other under any term of the contract permitting payment for work after assessment by the Superintending Engineer or the Executive Engineer

**CLAUSE 30:- Water for Works**

The contractor(s) shall make his/their own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions.

- (i) That the water used by the contractor(s) shall be fit for construction purposes to the satisfaction of the Engineer-in-Charge.

(ii) The Engineer-in-Charge shall make alternative arrangements for supply of water at the risk and cost of contractor(s) if the arrangements made by the contractor(s) for procurement of water are in the opinion of the Engineer-in- Charge, unsatisfactory

**CLAUSE 30 A:-            Alternate water arrangements**

The contractor shall be allowed to construct temporary wells in Government land for taking water for construction purposes only after he has got permission of the Engineer-in- Charge in writing. No charges shall be recovered from the contractor on this account, but the contractors shall be required to provide necessary safety arrangements to avoid any accidents or damage to adjacent buildings, roads and service lines. He shall be responsible for any accidents or damage caused due to construction and subsequent maintenance of the wells and shall restore the ground to its original condition after the wells are dismantled on completion of the work.

**CLAUSE 31:-    Hire of Plant & Machinery**

The contractor shall arrange at his own expense all tools, plant, machinery and equipment (hereinafter referred to as T&P) required for execution of the work.

**CLAUSE 32:-    Employment of Technical Staff and employees**

Contractors Superintendence, Supervision, Technical Staff & Employees (i) The contractor shall provide all necessary superintendence during execution of the work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract. The contractor shall immediately after receiving letter of acceptance of the tender and before commencement of the work, intimate in writing to the Engineer-in-Charge, the name(s), qualifications, experience, age, address(s) and other particulars along with certificates, of the principal technical representative to be in charge of the work and other technical representative(s) who will be supervising the work. Minimum requirement of such technical representative(s) and their qualifications and experience shall not be lower than specified in Schedule 'F'. Even of the contractor (or partner(s) in case of firm/ company)is himself / herself an Engineers, it is necessary on the part of the contractor to Employ principal technical representative / technical representative (s) as per stipulation in Schedule 'F' The Engineer-in-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise of such a representative(s) to the contractor. Any such approval may at any time be withdrawn and in case of such withdrawal, the contractor shall appoint another such representative(s) according to the provisions of this clause. Decision of the tender accepting authority shall be final and binding on the contractor in this respect. Such a principal technical representative and other technical representative(s) shall be appointed by the contractor soon after receipt of the approval from Engineer-incharge and shall be available at site before start of work. All the provisions applicable to the principal technical representative under the Clause will also be applicable to other technical representative(s) The principal technical representative and other technical representative(s) shall be present at the site of work for supervision at all times when any construction activity is in progress and also present himself/themselves, as required, to the Engineer-in-Charge and/or his designated representative to take instructions. Instructions given to the principal technical representative or other technical representative(s) shall be deemed to have the same force as if these have been given to the contractor. The principal technical representative and other technical representative(s) shall be actually 57 available at site fully during all stages of execution of work, during recording/checking/test checking of measurements of works and whenever so required by the Engineer-in-Charge and shall also note down instructions conveyed by the Engineer-in-Charge or his designated representative(s) in the site order book and shall affix his/their signature in token of noting down the instructions and in token of acceptance of measurements/checked measurements/ test checked measurements. The representative(s) shall not look after any other work. Substitutes, duly approved by Engineer-in-Charge of the work in similar manner as aforesaid shall be provided in event of absence of any of the representative(s) by more than two days. If the Engineer-in-Charge, whose decision in this

respect is final and binding on the contractor, is convinced that no such technical representative(s) is/are effectively appointed or is/are effectively attending or fulfilling the provision of this clause, a recovery (non refundable) shall be effected from the contractor as specified in Schedule 'F' and the decision of the Engineer-In-Charge as recorded in the site order book and measurement recorded checked/test checked in Measurement Books shall be final and binding on the contractor. Further if the contractor fails to appoint suitable technical Principal technical representative and/or other technical representative(s) and if such appointed persons are not effectively present or are absent by more than two days without duly approved substitute or do not discharge their responsibilities satisfactorily, the Engineer-in-Charge shall have full powers to suspend the execution of the work until such date as suitable other technical representative(s) is/are appointed and the contractor shall be held responsible for the delay so caused to the work. The contractor shall submit a certificate of employment of the technical representative(s) (in the form of copy of Form-16 or CPF deduction issued to the Engineers employed by him) along with every on account bill final bill and shall produce evidence if at any time so required by the Engineer-in-Charge. (ii) The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work. The contractor shall provide and employ skilled, semiskilled and unskilled labour as is necessary for proper and timely execution of the work. The Engineer-in-Charge shall be at liberty to object to and require the contractor to remove from the works any person who in his opinion misconducts himself, or is incompetent or negligent in the performance of his duties or whose employment is otherwise considered by the Engineer-in-Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer-in-Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.

**CLAUSE 33:- Levy/Taxes payable by Contractor**

(i) GST, Building and other Construction Workers Welfare Cess or any other tax, levy or Cess in respect of input for or output by this contract shall be payable by the contractor and Government shall not entertain any claim whatsoever in this respect except as provided under Clause 34.

(ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red bajri, stone, kankar, etc. from local authorities. If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of India and does not any time become payable by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor

**CLAUSE 35:- Termination of Contract on death of contractor**

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Engineer-In-charge on behalf of the Chief Executive Officer, CIAB shall have the option of terminating the contract without compensation to the contractor.

**CLAUSE 36:- If relative working in department, then the contractor not allowed to tender**

The contractor shall not be permitted to tender for works if officials responsible for award and execution of contracts. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Officer in CIAB. Any breach of this condition by the contractor would render him debarred from tendering.

***NOTE: By the term "near relatives" is meant wife, husband, parents and grandparents, children and grandchildren, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.***

**CLAUSE 37:- No Gazetted Engineer to work as Contractor within one year of retirement**

No engineer of gazetted rank or other gazetted officer employed in CIAB engineering division or administrative duties shall work as a contractor or employee of a contractor for a period of one year after his retirement from CIAB service without the previous permission of Competent Authority at CIAB in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Competent Authority at CIAB as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

**CLAUSE 40:- Apprentices Act provisions to be complied with**

The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the owner may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

**Clause 41:- Release of Security deposit after labour clearance**

Release of Security Deposit of the work shall not be refunded till the contractor produces a clearance deposit after labour certificate from the Labour Officer. As soon as the work is virtually complete the contractor shall apply for the clearance certificate to the Labour Officer under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the Labour Officer to intimate if any complaint is pending against the contractor in respect of the work. If no complaint is pending, on record till after 3 months after completion of the work and/or no communication is received from the Labour Officer to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate and the Security Deposit will be released if otherwise due.

## **OTHER CONDITIONS**

1. **The safety precautions/provisions as per CPWD Safety Code mentioned in CPWD General Condition of Contract 2020.**
2. **Model Rules for the Protection of Health and Sanitary Arrangements for Workers to be followed by Contractor as per CPWD General Condition of Contract 2020.**
3. **Contractor Should be follow C.P.W.D. Contractor's Labour Regulations as per CPWD General Condition of Contract 2020.**

## **SCHEDULE-B**

Reference to Conditions of Contract

**Name of Work:** work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India

- (i) Earnest Money : **Rs.50,000/- only**
- (ii) Performance Guarantee : 3% of tendered value
- (iii) Date of Publication of Tender : 01-08-2023
- (iv) Last date of receipt of tenders: 22-08-2023



## **FORM OF PERFORMANCE BANK GUARANTEE**

In consideration of the Chief Executive Officer, CIAB (hereinafter called "The Institute") having offered to accept the terms and conditions of the proposed agreement between.....and.....(hereinafter called "the said Contractor(s)") for the work..... (hereinafter called "the said agreement") having agreed to production of an irrevocable Bank Guarantee for Rs. ....(Rupees ..... only) as a security/guarantee from the Contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We, ..... (hereinafter referred to as "the Bank") hereby undertake to pay to the Institute an amount not exceeding Rs. .... (Rupees..... Only) on demand by the Institute.

2. We, .....(indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Institute stating that the amount claimed as required to meet the recoveries due or likely to be due from the said Contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. .... (Rupees .....only)

3. We, the said bank further undertake to pay the Institute any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We, ..... (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Institute under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in-Charge on behalf of the Institute certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

We, ..... (indicate the name of the Bank) further agree with the Institute that the Institute shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Institute against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the Institute or any indulgence by the Institute to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

7. We, ..... (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the Institute in writing.

8. This guarantee shall be valid up to satisfactory completion of work at site and as per successful completion of time schedule period given in tender document.....unless extended on demand by the Institute. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs..... (Rupees ..... ) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated the .....day of .....for.....(indicate the name of the Bank)

**ANNEXURE-1**

**PROFORMA FOR PERFORMANCE CERTIFICATE**

**Name of the work** - Work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India

**To Whomsoever it may concern**

S.No	Name of work executed at CIAB during last 05years (if any)	Name of contractor who executed the work	Time Period of execution of contract (dates to be given)	Performance Level during execution of contract (Satisfactory/Not Satisfactory)

Name and Signature of Authorized person/Engineer-Incharge

**Note:** This Performance certificate should be on the **letter-head of CIAB** and should be signed by an authorised person of CIAB/Engineer-Incharge of the work executed. It should be enclosed by the Bidder with the tender documents.

**ANNEXURE-2**

**MANDATORY SITE VISIT FORMAT**

**REF TENDER NO: CIAB/7(98)/2021-Works**

**NAME OF WORK: work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India**

This is to certify that I/We (Name of Representative, Designation) .....(Name of contractor/firm with address) have visited the site on .....and are thoroughly aware of the work, technology/machinery installed at CIAB campus in relation to the above-mentioned work. We understand the execution site, guidelines, working hours etc. and shall adhere to the contract stipulations, terms, conditions and clauses. We, understand that, if any equipment/machinery, other parameters had been missed out by us during site visit, it shall be deemed to be included in our scope of work as per NIT terms and conditions.

Date of visit:

Signature of Firm's Representative who had visited the site

Name of Representative & Designation

Verified that Firm had visited the site on .....

Signature of Engineer-In-Charge on behalf of CIAB

**Note: - Site visit is allowed only on working days (Monday to Friday: 9 am to 5 pm except on Holidays).**

**ANNEXURE-3**

**INDEMNITY BOND (VIOLATION OF LAWS, NORMS, ACCIDENTS, DAMAGES ETC.)**

(On Non-Judicial Stamp Paper of Rs.100/-only)

**Name of the work - work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India**

KNOW all men by these presents that I/We \_\_\_\_\_ (Name of Contractor with address)do hereby execute Indemnity Bond in favour of Center of Innovative and Applied bioprocessing (CIAB) having their office at Knowledge City, Sector-81, Mohali and for the project ..... Sector-81, Mohali under consideration.

On this day of .....2023

THIS DEED WITNESSETH AS FOLLOWS:

I/We, (Name of Contractor) hereby do indemnify and save harmless CIAB having their office at Knowledge City, Sector-81, Mohali from the following:-

1. Any third party claims, civil or criminal complaints/liabilities/material/life loss during site mishaps and other accidents such as snake bites etc or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed civil works by me/us.
2. Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me/us or any sub-Contractor/s if any, servants or agents.
3. Any claims by an employee of mine/ours or of sub-Contractors if any, under the workman compensation act and employers' Liability act, 1939 or any other law rules and regulations in force for the time being and any acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of execution of the Contract work and/or arising out of and in the course of employment of any workman/employee.
4. Any act or omission of mine/ours or sub-Contractor/s if any, our/their servants or agent which may involve any loss, damage, liability, civil or criminal action.

IN WITNESS WHEREOF THE HAS SET HIS/THEIR HANDS ON THIS DAY OF

SIGNED AND DELIVERED BY THE AFORESAID

IN THE PRESENCE OF WITNESSES:

- 1.
- 2.

**ANNEXURE-4**

**INTEGRITY PACT**

Date:

To,

The Chief Executive Officer,  
Center of innovative and Applied Bioprocessing,  
Sector-81, Mohali-Punjab

**Sub: work of partial modification in HVAC services which includes reconfiguration of AHUs with additional provision of redundancy, manufacturing and Rerouting of ducts with insulation, rerouting of chilled/Hot water lines and raising of AHUs enabling water proofing of floor slab at Top terrace in CIAB Lab building, CIAB campus, Knowledge City, Sector-81, Mohali-Punjab, India**

Dear Sir,

I/We acknowledge that CIAB is committed to follow the principles thereof as enumerated in the Integrity Agreement enclosed with the tender/bid document.

I/We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I/We will sign the enclosed integrity Agreement, which is an integral part of tender documents, failing which I/We will stand disqualified from the tendering process. I/We acknowledge that THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT.

I/We confirm acceptance and compliance with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by CIAB. I/We acknowledge and accept the duration of the Integrity Agreement, which shall be in the line with Integrity Agreement.

I/We acknowledge that in the event of my/our failure to sign and accept the Integrity Agreement, while submitting the tender/bid, CIAB shall have unqualified, absolute and unfettered right to disqualify the tenderer/bidder and reject the tender/bid in accordance with terms and conditions of the tender/ bid.

Yours faithfully,

(Duly authorized signatory of the Bidder)

NOTE: This Integrity pact shall be submitted by the bidder duly signed and stamped on their letter head. On award of work, the Integrity Agreement will be signed between CIAB and the successful bidder as per CPWD format.

## **TECHNICAL SPECIFICATIONS AND MAKE OF THE BOQ ITEMS**

### **NOISE AND VIBRATION CONTROLS**

1. The air conditioning contractor must take all necessary precautions to have minimum noise generation and its transmission. Minimum vibration as permitted by IS relevant code shall be ensured. A few points for guidance only are given below:
  - a) Double fire retardant flexible connections shall be provided from air discharge to outlet of air-handler to the duct.
  - b) Vibration isolation pads of suitable thickness commensurate to loading for isolation of vibration shall be provided under all pumps, air handlers fans etc. in consultation with manufacturer for proper selection of vibration isolators
  - c) Vibration isolation springs of suitable size to suit the weight of water chilling machine if recommended by the manufacturer for elimination of vibrations shall be provided as suitable for type & model of water chilling unit.
  - d) Flexible conduit connections of minimum diameter of 50mm to motors shall be provided. All loops should be large enough to allow connections to remain flexible.
  - e) All conduit connection where conduits are 60mm or larger shall be made of 1.2 meters minimum length conduit installed in the shape of U and grossly slack to provide maximum vibration isolation.
  - f) Operating clearance of 40mm shall be kept between the base and the inertia base.
  - g) All end suction pumps shall be bolted and grouted to the inertia base which in turn shall be supported on suitable vibration isolation rubber pads duly sandwiched with 24G GI sheets. Concrete inertia blocks shall be formed of suitable thickness and of adequate mass.
  - h) The floor supported piping shall be mounted on pipe supports with 7.5mm ribbed neoprene pads between the base plate of the pipes and the floors.
  - i) All items suspended from false ceiling shall be isolated on separate hangers.
  - j) In case of ducts, conduits, pipes & tubes the annular space between construction and penetrating element shall be sealed with sand cement plaster.
  - k) The air-conditioning contractor shall take all other precautions or shall make his own arrangements even if not specified in the tender documents for eliminating high noise levels & shall minimise vibrations in all mechanical equipments without any additional cost.

### **STANDARD SPECIFICATION FOR AIR CIRCULATION SYSTEM**

This section deals with supply, erection, testing & balancing of GI sheet metal duct work and air registers conforming to specifications as given below:

#### **MATERIAL FOR DUCTING (Site & Factory Fabricated)**

All the ducts shall of LFQ (Lock Forming Quality) grade prime G.I. raw material furnished with accompanying Mill Test Certificates. Galvanizing shall be 120gms/sq.m. ( total coating on both sides).

<b>MAXIMUM SIDE</b>	<b>THICKNESS OF GI SHEET</b>	<b>TYPE OF TRANSVERSE JOINT CONNECTIONS</b>	<b>BRACING</b>
(1) mm	(2) mm	(3)	(4)
Up to 300	0.63	S-drive, pocket or bar Slips, on 2.5m centers	None

301 to 600 601 to 750	0.63	S-drive, pocket or bar slips, on 2.5m centres S-drive, 25mm pocket or 25 mm bar slips on 2.5m centers.	None 25 x 25 x 3 mm angles, 1.2m from joint
751 to 1000  1001 to 1500	0.80	Drive, 25-mm pocket or 25mm bar slips, on 2.5 m centres 40 x 40 mm angle Connections, or 40-mm bar slips, with 35 x 3 mm bar reinforcing On 2.5 m centres.	25 x 25 x 3 mm angles, 1.2 m from joint  40 x 40 x 3 mm angles, 1.2 m from Joints
1501 to 2250	1.00	40 x 40 mm angle connections, or 40-mm bar Slips, 1 m maximum centres with 35 x 3 mm bar reinforcing .	40 x 40 x 3 mm diagonol angles, or 40 x 40 x 3 mm angle 60 cm from Joint.
2250 to above*	1.25	50 x 50 mm angle connections, or 40 mm pocket or 40 mm bar slips, 1 m max. centres with 35 x 3 mm bar reinforcing.	-40 x 40 x 4 mm diagonol angles, or 40 x 40 x 3 mm angles, 60 cm From joint.

\* Ducts 2250 mm and larger require special field study for hanging and supporting Methods.

In addition to above the following points should be also taken into account while fabrication of ducts.

- a) All ducts of size larger than 450mm shall be cross broken.
- b) All ducts shall be supported from the ceiling / slab by means of MS rods of dia 9mm with MS angle of size 40 x 40 x 5 mm at the bottom with neoprene pad in between the duct & MS angle. The ducts shall be suspended from the ceiling with the help of dash fasteners. Provision for necessary ancillary materials required for hanging the ducts shall be arranged by the contractor.
- c) The vanes shall be provided wherever required and shall be securely fastened to prevent noise & vibration.
- d) The rubber gasket shall be installed between duct flanges in all connections and joints.
- e) All flanges and supports should be primer coated.
- f) The flexible joints shall be fitted to the delivery side of AHU fans with Fire Retardant Double canvass. The length of flexible joints should not be less than 150 mm and not more than 300 mm between faces.
- g) The ducting work can be modified if deemed necessary in consultation with the Engineer in Charge to suit actual site conditions in the building.



### **Box Type Dampers & Splitters**

These dampers shall be provided in the ducting work for proper control and balancing of air distribution. All dampers shall be louver type robust construction. These dampers shall be fitted with easily accessible operating mechanism, complete with links, levers, quadrant for proper control and setting in a desired position. The position of the handle of the damper operating mechanism shall be clearly visible and shall indicate the position of the damper in the duct. All dampers, splitters shall be fabricated out of G.S. sheet of two gauges higher than the duct piece having these fittings. Dampers shall be installed in duct at all required locations. **No extra payment shall be made separately since these form part of Air Circulation System.**

**NOTE:** In case angle iron supports are not feasible to be installed for supporting the ducts due to height constraint then the contractor shall support the ducts with M.S flats of at least double the thickness of the angle iron supports.

#### **A) THE SUPPLY AND RETURN AIR GRILLS AND CEILING DIFFUSERS**

The supply and return air grills and ceiling diffusers shall be made of powder coated extruded aluminum sections. The supply air grills / diffusers shall be provided with screw operated opposed blade volume control device made of extruded aluminum in black anodised finish. All grills / diffusers shall have soft continuous rubber / foam gasket between the periphery of the grills / diffusers and surface on which it has to be mounted. The colour of grills / diffuser shall be as per the approval of the Engineer in Charge.

#### **B) LINEAR SUPPLY AND RETURN GRILLS**

The linear continuous supply / return air grills shall be made of powder coated extruded aluminum construction with fixed horizontal bars. The thickness of fixed bar louvers shall be 5mm in front and the flange shall be 20mm wide with round edges. The register shall be suitable for concealed fixing and horizontal bars of the grills shall mechanically crimped from the back to hold them.

The colour of grills shall be as per the approval of the Engineer in Charge. The volume control device made of extruded aluminum construction in black anodised finish shall be provided in supply air duct collars only.

#### **C) FRONT FIXED BAR REAR ADJUSTABLE LOUVERED GRILLS.**

The grills shall be made of powder coated extruded aluminum construction with front fixed horizontal bar at 0 degree inclination with one way or two way deflection with rear vertical individually adjustable louvers in black shade mounted on Nylon bushes to hold deflection setting under all conditions of velocity and pressure.

The colour of grills shall be as per the approval of the Engineer in Charge. The volume control device of extruded aluminum construction in black anodised finish shall be provided in supply air duct collars.

#### **D) SQUARE / RECTANGULAR CEILING DIFFUSERS.**

The square / rectangular ceiling diffusers shall be made of powder coated extruded aluminum construction with flush fixed pattern. The diffusers shall have Anti-Smudge ring and spring loaded removable central core in various pattern for air flow direction. The diffusers shall be mounted by concealed screw fixing arrangement. The volume control device of extruded aluminum construction in black anodised finish shall be provided in supply air diffusers. The colour of diffuser shall be as per the approval of the Engineer in Charge.

**E) VOLUME CONTROL DEVICE**

The opposed blade volume control device shall be made of Powder Coated extruded aluminum construction in black anodised finish. Opposed blades shall be pivoted to extruded aluminum frame with Nylon bushes. Specially designed blade shall have an overlapping lip which shall ensure a tight closure.

**F) FRESH AIR INTAKE LOUVERS WITH BIRD SCREEN**

The fresh air intake louvers at least 50mm deep will be made of powder coated extruded aluminum construction. Bird / insect screen will be provided with the intake louvers. The blades shall be inclined at 45 degree on a 40mm blade pitch to minimize water ingress. The lowest blade of the assembly shall be extended out slightly to facilitate disposal of rain water without falling on door / wall on which it is mounted.

The intake louvers shall be provided with factory fitted aluminum construction volume control dampers in black anodised finish.

**G) JET NOZZLE**

The material of construction of Jet Nozzle shall be aluminum and the angle of swivel of nozzle shall be 30 degree from the mean position. The nozzle shall be complete with adopter suitable for circular duct connection. The nozzle shall be supplied complete with anti-smudge design ring on the face of the nozzle.

The nozzle shall be painted white of finish RAL – 9010

**PAINTING**

All ducts collar / shoot behind the grills / diffuser shall be given at least two coats oil black enamel paints.

**TESTING**

The complete duct system shall be tested for air leakage & complete air distribution system shall be balanced in accordance with air quantities indicated on the approved drawing.

**STANDARD SPECIFICATION OF THERMAL / ACOUSTIC INSULATION**

This section deals with supply and fixing of **thermal / acoustic** insulation of pre insulated ducts, pipes etc. as per the specification given in this section.

**MATERIAL OF INSULATION (Class O)**

The insulation material of the following kind shall be used for cold insulation.

**Expanded Polystyrene for Pipe Insulation**

The density of expanded polystyrene shall not be less than 20 kg per cubic meter and the thermal conductivity shall not exceed 0.031 Kcal. /hr.C at 10C mean temperature. Adhesive used for the setting the insulation shall be non-flammable, vapor Proof CPRX Compound.

The sample of insulation material shall be submitted for approval to the Engineer in Charge and the sample shall be tested for thermal conductivity values by the contractor at his own expense. Adhesive used for setting the insulation shall be non-flammable, vapor proof, CPRX compound.

**For thermal insulation of duct work:-**

**a) Closed Cell Class O Nitrile Rubber**

Closed Cell Class O Nitrile Rubber Sheets shall be used for duct work insulation. Special Rubber based contact Adhesive free from benzene; specially formulated for the Duct insulation application and supplied by insulation manufacturer shall be used.

For Non Exposed Ducts, the above Nitrile Rubber shall be factory laminated with Aluminum Foil of minimum 60 Micron Thickness, having weight of 193 gsm as per EN ISO 2286-2, tensile strength shall be 90N/15mm as per EN ISO 527-3 with elongation > 10% as per EN ISO 527-3.

For Ducts exposed to outside areas, the above nitrile rubber shall be factory laminated with 3 Layered composite non-metallic cladding of 230 Microns thickness and of metallic finish having aluminum as an intermediate layer and UV protection as per EN ISO 4892-2 Method A.

**b) For acoustic lining of duct work:-**

a) Open Cell Nitrile Rubber Engineered Foam with built-in antimicrobial and antifungal properties.

Open Cell Nitrile Rubber Engineered Foam with built-in antimicrobial and antifungal properties shall be used for acoustic lining inside the duct. Special Rubber based contact Adhesive free from benzene; specially formulated for the Duct insulation application and supplied by insulation manufacturer shall be used.

**MATERIAL SPECIFICATIONS**

The insulation material shall satisfy the following requirements:-

i) For thermal insulation on ducts:

<b>Material</b>	<b>Density (kg/cu.m)</b>	<b>Maximum Thermal conductivity (W/mk at 20 deg C mean temp.)</b>	<b>Minimum Water vapour Effusion resistance</b>
Closed Cell Class O Nitrile Rubber	40 – 55	0.037	7000

## INSULATION THICKNESS

The thickness of insulation shall be as indicated below unless specified otherwise in tender specifications.

i) For Duct Thermal Insulation:

Supply Air Ducts		25mm
1	Material	Microcellular Closed cell Elastomeric Nitrile Rubber Insulation with factory Laminated with ALUGLASS glass fiber cloth facing
2	Temperature Range	+110 Deg C to - 50 Deg C *For applications at temperatures lower than -50°C please contact our technical office.
3	Thickness	06, 09, 13, 16, 19, 25, 32, 40 & 50mm thick
4	Thermal Conductivity (λ) EN12667(DIN52612)-ENISO 8497(DIN 52613)	@ 0 Deg - 0.035 W/m Deg K @ 20 Deg - 0.037 W/m Deg K @ 40 Deg - 0.039 W/m Deg K
5	Water Vapour Resistance ( μ ) EN12086 (DIN 52615)	Moisture Resistance Factor ≥ 7,000
6	Water Vapour permeability	Not more than 0.024 perm inch
7	Fire Performance BS476 Part 6	Class "O"
8	Fire Propagation (Accordance with BS476 Part 6)	Total Index Performance : less than 12 Sub Index : less than 6
9	Surface Spread of Flame Accordance with BS 476 part 7	Class 1
10	Reaction to Fire	Self-Extinguishing ,does not drip
11	F M Global Approval	F M Global Approved
12	Resistance to Building Material	Very good
13	Ozone Depletion Potential (ODP) Global Warming Potential (GWP)	Zero Zero
14	Health Aspects	Dust and Fibre free CFC/HCFC Free
15	Emission Of Volatile Organic Compound (VOC)	VOC /SVOC Free
16	UL 94	Approved
17	Nominal Density	40-60 kg/ m3
18	Thickness Of Covering	7 micron Foil / FR Glue / 90 GSM Glass cloth
19	Colors of covering	Silver
20	Tensile Strength	255N/25mm
21	Tolerance	± 1 -1.5 mm

- ii) For Acoustic Insulation:  
 For Duct Acoustic Lining 15mm  
 For AHU Rooms 25mm
- iii) For Pumps:  
 Same thickness as for the connecting pipes.
- iv) For Expansion Tank and Chiller Insulation:  
 For Non Coastal Areas 25mm  
 For Coastal Areas 32mm
- v) For Under-Deck Thermal Insulation:  
 For Building with Concrete 25mm  
 For Buildings with Metal Structure 32mm

## ACOUSTIC LINING OF DUCT.

- Material shall be engineered Nitrile Rubber open cell foam
- The Random Incidence Sound Absorption Coefficient (RISAC); tested as per ISO 354, should be minimum as per enclosed chart

Freq (Hz)	125	250	500	1000	2000	4000	NRC
10 mm	0.03	0.04	0.14	0.04	0.88	1.00	0.35
15 mm	0.01	0.09	0.29	0.74	1.08	0.83	0.55
20 mm	0.04	0.13	0.4	0.9	1.04	0.90	0.60
25 mm	0.02	0.25	0.86	1.14	0.88	0.99	0.80
30 mm	0.07	0.32	0.99	1.16	0.93	1.08	0.85
50 mm	0.23	0.73	1.29	0.99	1.09	1.11	1.05

- The material should be fibre free
- The density of the same shall be within 140-180 Kg/m<sup>3</sup>
- It should have Microban®\*; antimicrobial product protection, and should pass Fungi Resistance as per ASTM G 21 and Bacterial Resistance as per ASTM E 2180.
- The material should have a thermal conductivity not exceeding 0.047 W/m.K @ 20 Deg. C
- The material should withstand maximum surface temperature of +850C and minimum surface temperature of -200C
- The material should conform 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.
- The insulation should pass Air Erosion Resistance Test in accordance to ASTM Standard C 1071-05 (section 12.7).

Thickness of the material shall be as specified for the individual application. The insulation should be installed as per manufacturer's recommendation.

## INSULATION OF PIPES

The chilled water pipes & condensate drain water pipes shall be insulated with 50 mm & 25 mm thick expanded polystyrene (density of 20 kg per cubic meter) pipe section respectively. Expanded polystyrene of TF quality shall be used. The application of insulation on pipes should be carried out in workman like manner as mentioned below:

### INSULATION OF PIPES WITH ALUMINIUM CLADDING (INSIDE THE BUILDING)

- a) The pipe to be insulated should be cleaned thoroughly with steel brush for removing dirt, rust and grease.
- b) Apply a coat of Zinc chromate primer and two coats of cold setting adhesive CPRX compound on pipes.
- c) Fix insulation of specified thickness tightly and seal all joints with adhesive compound.
- d) Insulated surface should be wrapped in two layers with 400G polythene sheet with overlapping longitudinal & transverse joints.
- e) To apply self-adhesive tape for firm holding of polythene sheet in position at interval of 500 mm.
- f) Finish the surface with 0.5 mm thick aluminium sheet fixed with the hand operated roller machine (Grooving Machine) & finally to be fixed with self-tapping screws.

**NOTES: NO INSULATION TO BE APPLIED BEFORE LEAK TESTS.**

### INSULATION OF VALVES AND FITTINGS IN CHILLED WATER LINE

All valves, fittings, flanges, strainers etc. in the chilled water line shall be insulated in the same manner as described above for chilled water pipes with 50 mm thick uniformly cut pieces from slabs of expanded polystyrene duly aluminium cladded or with sand cement plaster as

finalised. Care should be taken to ensure that no damage would be caused to the insulation when valves or strainers are operated.

#### **PUMP AND ACCESSORIES**

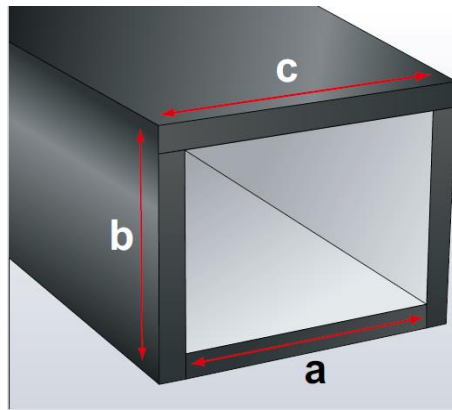
All chilled water pumps and accessories shall be insulated with 50mm thick expanded polystyrene.

#### **APPLICATION OF INSULATION (THERMAL) ON DUCT - APPLICATION PROCEDURE:**

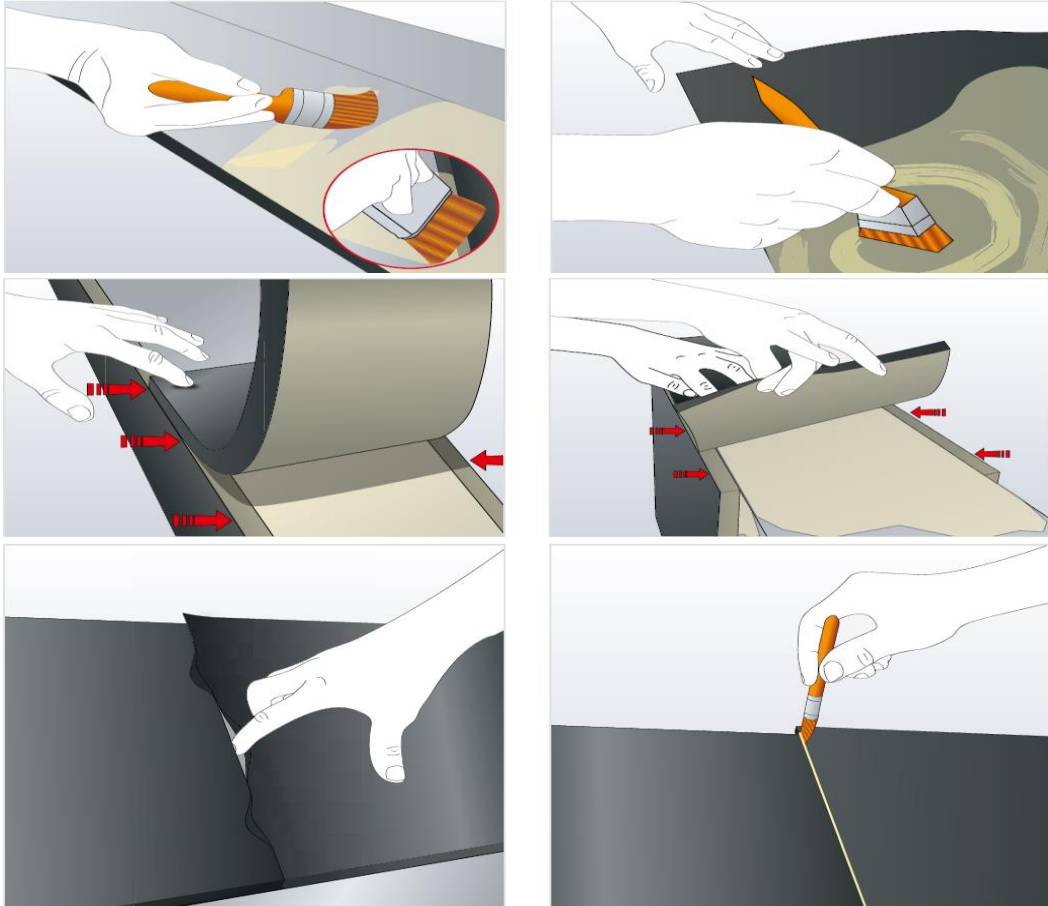
External thermal insulation shall be provided as follow:

The thickness of the nitrile rubber shall be as shown on drawing or identified in the schedule of quantity. Following installation procedure should be adopted:

- a) Duct surfaces shall be cleaned to remove all grease, oil, dirt, etc. prior to carrying out insulation work.
- b) Measurement of surface dimensions shall be taken properly to cut closed cell elastomeric rubbers sheets to size with sufficient allowance in dimension.
- c) Install the insulation material to the top surface of the ductwork.
- d) After installing the insulation material to the top sections, proceed to install the 2 sides.
- e) Finally install the insulation material sheet to the bottoms of the ductwork.
- f) After completing 1.2.3 above, install bracket covers around all 4 sides.
- g) Install additional section of sheet under and around the load support hanger type brackets.
- h) Ductwork load support fixing brackets and procedures for the covering of metal protruding joints:
  - a) All above types shall be installed with insulation material sheet equal to the thickness of the main ductwork installation as a minimum.
  - b) The insulation strip covers shall be applied to all the 4 sides, with minimum joints being present.
  - c) The width of the covers shall be 150mm on all ductwork sizes.
  - d) Ensure where possible, the covers are installed "in-line and straight", (check this before sealing with the adhesive).
  - e) Ensure all the covers are sealed, with adhesive applied to both of the insulation material surfaces.
  - f) Apply pressure to the covers when fixing, particularly at the 90° corners of the covers.
  - g) The adhesive vapour seal shall be as a minimum, equal to the thickness of the insulation material.
  - h) Keep a equal and clean run of adhesive on the edges of the insulation covers, remember if it looks a "mess" people will think it's a bad and unprofessional job.
  - i) Load support brackets should be removed from the underside of the duct to allow the complete coverage of the material to the ductworks surfaces.
  - j) After fixing the insulation sheet to the underside of the ductwork, insert an additional 150mm wide insulation strip under the load bearing bracket support. Line up the strip and bracket and re-fix the support and seal all the insulation strips with adhesive. Ensure the length of the insulation strip is in equal size to the width of the ductwork .
  - k) 90% heavy-duty metal type support brackets shall follow the procedure as above. The size of the insulation additional strips shall be a minimum of 150mm wide x 300mm in length.
- i) Material shall be fitted under compression and no stretching of material should be allowed.
- j) A thin film of adhesive shall be applied on the back of the insulating material sheet and then on to the metal surface. Adhesive shall be in compliance with Indian Green Building requirement, having VOC content less than 850 g/l.
- k) When adhesive is tack dry, insulating material sheet shall be placed in position and pressed firmly to achieve a good bond.
- l) All longitudinal and transverse joints shall be sealed.
- m) The adhesive shall be strictly as recommended per manufacturer.



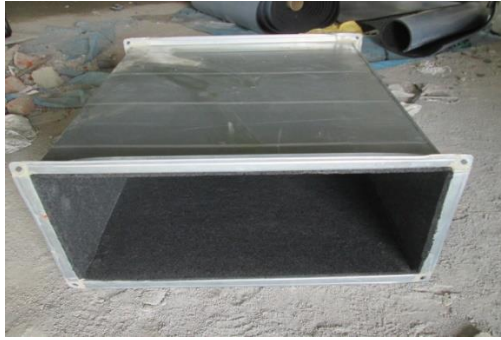
- a = width of duct + 5 mm
- b = height of duct + 5 mm + thickness of insulation
- c = width of duct + 5 mm + 2x thickness of insulation



#### APPLICATION OF DUCT LINING (ACOUSTIC INSULATION)

- a) The inside surface for the ducts shall be covered with adhesive recommended by the manufacturer.
- b) Cut Foamed sheets into required sizes apply adhesive on the foam and stick it to the duct surfaces.
- c) Install the insulation material to the inside surface of the ductwork.
- d) After installing the insulation material to the top section, proceed to install the 2 sides.

- e) Finally install the insulation material sheet to the bottoms of the ductwork.



#### **AIR SEPARATOR**

- Air Separator shall have required flange connections for the pipe connection. It shall be insulated with the same material of chilled water pipe.
- Air Separator is of centrifugal type with tangential enter/exit, it shall act like a hydro cyclone & removes air entrapped in water by a combination of low velocity & Centrifugal action.
- As there are no moving parts in the air separator, it does not require periodic maintenance.

#### **Installation guideline:**

1. The surface shall be cleaned and friction fixed in 600mm X 600 mm frame of 25X25X18 mm made out of 22 G thick GI sheet U shaped channel.
2. The Acoustic board should be placed in such a way that black glass cloth is visible from inside the AHU room. Complete as required and as per specifications.

#### **STANDARD SPECIFICATION ON PIPING WORK**

This section deals with supply, installation, testing & commissioning of chilled water / condenser water / drain water pipes, pipe fittings and valves etc. as detailed below in specifications. All pipes, fittings and valves etc. shall conform to relevant Indian standards.

#### **WATER PIPING**

The pipes, fittings and valves shall be of approved make given in the NIT.

Chilled water / Condenser water pipes shall be "C" Class M.S. E.R.W Black pipes & shall conform to IS:1239 (Part 1) - 1991 & IS:3589 - 1991 with latest amendments. The wall thickness of "C" Class M.S. E.R.W. Black pipes as per IS:1239 (Part 1) shall be as follows:-

Nominal Pipe Dia in mm	Wall Thickness of Pipe in mm
a) 25	4.00
b) 32	4.00
c) 40	4.00
d) 50	4.50
e) 65	4.50
f) 80	4.80
g) 100	5.40
h) 125	5.40
i) 150	5.40
j) 200	6.30
k) 250	6.30
l) 300	6.30
m) 350	6.30



Drain water / make up water pipes shall be "B" Class GI Pipe & shall Conform to IS: 4736.

The pipes shall be sized for individual liquid flow & shall ensure smooth noiseless balanced circulation of fluid.

All piping and their steel supports shall be thoroughly cleaned and primer coated before installation.

#### **PIPE FITTINGS**

The pipe fittings for screwed piping shall be malleable iron and for piping with welded joints shall of weldable quality. Also the fittings shall be suitable for same pressure ratings as for the piping system.

All bends up to sizes 150 mm dia shall be ready made of heavy duty wrought steel of appropriate class.

All bends in sizes 200 mm and above shall be fabricated from the same dia and thickness of pipe in at least four sections and having a center in radius of at least 1.5 times diameter of pipes. Fittings such as tees, reducers etc. shall be fabricated from the same pipe and its length shall be at least twice the diameter of the pipe.

The dead ends shall be formed with flanged joints & shall have 6 mm thick blank between flange pair for 150 mm and over.

#### **FLANGES**

All flanges shall be of mild steel as per IS: 6392 / 71 (with latest amendments) & shall be slip on type welded to the pipes. Flanged thickness shall be to suit Class II pressure. 3 mm thick gasket shall be used in between the flanges.

Flanged pair shall be used on all such equipment which are required to be isolated or removed for service for example condenser / chilled water pumps, chilling m/c, AHU etc.

#### **VALVES (BUTTERFLY VALVES)**

Butterfly valves shall be of PN 1.6 rating as per IS 13095 preferably with fixed linear design to suit duty and flanges as per IS 6392 Table "E". Valves of sizes 32 mm and above diameter shall be made of cast iron close end body, cast iron epoxy coated disc, Nitrile Seat and SS 410 Stem with teflon bush. Valves up to 150mm NB shall be with detachable hand lever operation whereas valves above 150 mm NB shall have worm gear operation.

These valves shall be installed in condenser / chilled water lines, make up / drain water piping lines. All valves shall be supplied with factory test reports and the manufacturer must have test facilities at their works.

#### **NON-RETURN VALVE (DUCT PLATE CHECK VALVES)**

The dual plate check valves shall be used for horizontal / vertical run of pipes & shall conform to PN 1.6 rating .The valve design shall conform to API 594 and tested as per ANSI SERIES.

The valves shall have cast iron body, and SS 410 plates, SS 410 Shaft & Nitrile Seat. All valves shall be supplied with factory test reports and the manufacturer must have test facilities at their works.

### **Y-STRAINER & POT STRAINER**

The Y-strainer shall be fabricated out of MS 'C' class pipe two size higher than that of strainer pipe size. Flanges as per BS 10 shall be provided at inlet & outlet of connections. The body shall be pressure tested at 10 Kg/Sq. cm and shall be hot dip galvanized. Permanent magnet shall be provided in the body of the strainer to arrest MS particles. Filter element shall be of nonmagnetic 20 gauge SS sheet with 3 mm perforation. Strainer shall be provided at inlet of each AHU & chilled water pumps,

Pot Strainer body shall be fabricated out of MS plate IS 226. Thickness of sheet shall be as per size of the strainer chamfered pipes with flanges shall be provided at inlet / outlet connections of the strainer. The tangential entry of water shall create a centrifugal action and due to velocity shall separate sediments and deposit on the inner surface of filter element and at bottom of the Strainer. Butterfly valves shall be provided at inlet/ outlet connections as shown in drawing and included in BOQ. The strainer body shall have two separate chambers properly sealed to avoid mixing of filtered and unfiltered water. A powerful magnet shall be provided in the body to arrest MS particles. Filter element of Pot Strainer shall be of non magnetic 18 gauge SS sheet properly reinforced to avoid damage of the element. A cone with sufficiently large drain pipe with butterfly valve shall be provided at the bottom chamber to flush-out foreign particles. This arrangement shall avoid frequent opening of Pot Strainer for cleaning of filter element. Gauge connection shall be provided at inlet and out let connection.

A set of MS flanges with tongue and groove arrangement and neoprene rubber gasket shall be provided on the top cover and Pot Strainer flange with sufficient bolts and nuts to make the joint water tight. Bearing loaded lope cover lifting and swinging arrangement shall be provided. The pot strainer body shall be properly de-rusted and epoxy coated from inside and outside. Manufacturers Test Certificate shall be provided with each Pot Strainer.

Size of various Pot Strainer, Filter Element and Thickness of MS sheet shall be as under.

Pipe Size (mm)	Pot Dia (mm)	Pot HT (mm)	Element Dia. (mm)	Element HT (mm)	MS Plate Thickness (mm)
50	300	400	200	240	6
80	350	450	250	250	6
100	450	500	300	280	6
125	500	600	330	340	8
150	540	700	360	390	8
200	610	815	400	470	8
250	710	915	500	570	8
400	910	1050	600	700	8
500	950	1150	700	800	8

The Y-Strainer & Pot Strainer conforming to SSPL 107 & SSPL 106 shall have cast iron body and factory tested at works at 16 Kg/sq. cm pressure. The screen shall be made out of 3 mm perforated stainless steel sheet. It should be easily removable when required to be cleaned. Isolating butterfly valves at either end of the pot strainer shall be provided.

### **BALANCING VALVES**

The automatic balancing control and shut off valves with built in pressure drop measuring facility shall be provided in return water lines for air-handling units, chillers, condensers as given in the tender drawings.

The valves of sizes 32 mm to 65mm dia. shall be of gun metal / cast iron construction with screwed ends angular design digital hand wheel with locking facility. Whereas valves of sizes 75mm and above shall be of cast iron construction with internal parts of SS 410 and EPDM / nitrile seat with flanged ends. The test cocks should be long enough to protrude out of valve insulation.

The valves shall be designed for PN 1.6 and tested for the seat at 1.1 times the design pressure and 1.5 times the design pressure for the shell. All valves shall be supplied with test certificates and the manufacturer must have test facilities at their works.

#### **SUPPORTS FOR PIPES**

**In plant room pipe shall not be supported from ceiling and shall have steel supports of adequate strength firmly fixed to the floor only.**

#### **LAYOUT AND SIZING OF PIPE LINES**

The sizes and layout given in the drawings / bill of quantities are for guidance purpose only. The A/C Contractor shall prepare and submit detailed drawings after the award of contract to the Engineer in Charge for his approval. No work at site shall be started before final approval of drawings if given. The drawings shall indicate sizes of pipes, quantity of water flow in each length of pipe. All details of fittings, location of all valves, air vents, pipe supports etc. shall be clearly indicated in the drawings.

#### **INSTALLATION OF CHILLED / CONDENSER / DRAIN / MAKE UP WATER PIPING**

- a) All pipes shall be securely supported or suspended on stands, hangers, clamps etc. as required. The Air-conditioning contractor shall design all brackets, saddles, anchors, clamps etc. & shall be responsible for structural adequacy.
- b) All pipe supports shall be of steel, coated with two coats of anti-corrosive paint and finally finished with paint.
- c) The pipe spacing shall be as follows :

Dia of Pipe	Spacing between supports
Up to 25mm	1.5 mt
30 mm to 50 mm	2.0 mt
65 mm to 75 mm	2.5 mt
100 mm to 125 mm	3.0 mt
150 mm	3.5 mt
200 mm & above	4.0 mt

- d) The vertical rises shall run parallel to walls and should be straight to wall duly checked with plumb line.
- e) In case pipes with/ without insulation while passing through the wall / slab, shall be provided with sleeve 50mm higher in size than the pipe with / without insulation.
- f) Wherever insulated pipes are running, it should be supported in such a way that no undue pressure is exerted on the insulated pipe.
- g) The expansion-joints or expansion-loops shall be provided to take care of the expansion and contraction in pipes due to temperature rises.

#### **TESTING OF PIPE SYSTEM**

- a) All tools, tackles, labours etc. shall be arranged by A/C Contractor.
- b) All pipes shall be tested hydraulically at 3 times the maximum operating pressure for a period of 48 hours. The test pressure should not be less than 10 Kg/sq.cm at any times. All leaks occurring during testing shall be rectified to the satisfaction of the Engineer in Charge. After repairs of leak it shall be tested again at the same pressure.
- c) In case piping is tested in parts, these sections shall be securely sealed and capped during testing.

- d) The A/C Contractor should ensure that there should be minimum vibration / noise in the chilled water / condenser water circuit due to water turbulence.

#### **AIR-VENTS**

Air vents for purging of air trapped in piping system shall be provided at the highest point. Globe valves of the size as indicated below shall be provided & **no additional price shall be paid.**

<b>Pipe Size</b>	<b>Valve Size</b>
Upto 100mm	25mm dia
Above 100mm to 300mm	40mm dia

#### **PRESSURE GAUGES / THERMOMETERS**

##### **PRESSURE GAUGES**

Pressure gauges of 100mm dia & of suitable range shall be provided at the following locations:

- a) Chiller / Condenser / Cooling coils of AHU - Inlets and outlets.
- b) All pumps - Suction & discharge

The water pressure gauge shall be made of stainless steel grade SS-304. All parts shall be made of copper alloy & stainless steel to prevent from corrosion. The dial plate shall be of white colour & numbers in black & in red colour for better visibility. Pressure gauge shall have a stainless steel "U" Tube of 15 mm dia & 400 mm in length both side threaded with stainless steel nut & a ball valve shall also be provided at one end of tube for protecting gauge during testing of system.

##### **INDUSTRIAL TYPE THERMOMETER**

Direct reading V form type thermometer alcohol filled of suitable range / length shall be provided at the following locations:

Condenser / Chiller / Cooling coil – Inlets and outlets in separate wells.

The V form thermometer shall be made of aluminium die casting with golden colour anodizing. The thermometer shall have a V groove in the body to protect the refill from the damages during the installation. The refill shall be filled with blue colour mercury. The thermometer shall be complete with brass well & the calibration of temperature shall be in Celsius & Fahrenheit

#### **STANDARD SPECIFICATION OF DUCT DAMPERS**

This section deals with supply, erection and commissioning of fire dampers and box type dampers, conforming to general specification and suitable for duty selected, indicated in **Schedule of Equipment & Bill of Quantities.**

- a) All supply air Ducts in AHU room crossing shall be provided with approved make Duct dampers.
- b) The duct damper blades & outer frame shall be formed of 1.6 mm galvanized steel sheet. The damper blade shall be pivoted on both ends using chrome plated spindles in self-lubricating bushes. Stop seals shall be provided on top & bottom of the damper housing made of 16G Galvanized steel sheet..
- c) The damper shall be installed in accordance with the installation method recommended by the manufacturer.
- d) Hinged access doors of suitable size complete with air tight gaskets shall be provided in all fire dampers & plenums.

**LIST OF APPROVED MAKES OF EQUIPMENTS / MATRICALS**

<b>EQUIPMENTS / MATRICALS</b>		<b>APPROVED MAKES</b>
Water Piping		- Jintal (Hissar)
		- Tata
Extruded aluminum Grills/Diffusers		- Tristar
		- Karft Aircon
		- Caryaire
GSS Sheet		- Sail
		- Tata
		- Jindal
Vibration Isolation spring		- Hira walldriven
		- Resistoflex
		- Easyflex
Open cell Nitrile Rubber		- Armacell
		- K-Flex
		- Supreme
Closed cell Cross Linked		- Aemacell
		- Supream
		- K Flex
a) High Range ability 2 way Control valve		- TA
		- Siemens
		- Anergy
b) Thermostat		- Honey well
		- Siemens
		- Anergy
11	Power cable	- Skytone
		- Gloster
		- Ploycab
		- Havells
12	MS Cable Tray(Factory Fabricated)	- Pilco
		- Ricco
		- Steelway
13	Factory Fabricated Duct	- jungdo
		- Dustech Engg.
		- RSP Air

# Proposed layout / Designs

