

TENDER DOCUMENT

Name of work: Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi.

CLIENT: DIRECTOR, NEW DELHI

TENDER DOCUMENT

Name of work: Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi.

Owner: Director, NIPGR New Delhi

Tender Issued to :

**Place for submission /
opening of tender document:** NIPGR Campus,
Aruna Asaf Ali Marg,
New Delhi-110067

Date & time of submission of tender documents: 26.11.2021 up to 1500 hrs.

Date & Time of Opening of Tenders: 29.11.2021 at 1500 hrs.

**Purchase cum Stores Officer
NIPGR**

TENDER FORM

To

**The Director
NIPGR CAMPUS, New Delhi.**

Dear Sir,

I/We have read and examined the following Tender Documents relating to “Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi.”

- Tender Notice
- General Conditions
- Instructions to Bidders
- General Information
- Memorandum
- General Conditions of Contract Agreement
- Special terms & conditions of contract.
- Instructions for On-line Bid Submission
- Special Instructions to bidders for registration with Competent Authority
- Terms & Conditions
- Annexure – I, II, III, IV, V, VI & VII
- Schedule of Quantity (not to be filled)

I/We hereby offer to execute the work complete in all respects specified in the under written Memorandum within the time specified therein or during the allowed extended time 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.

(Seal & Signature of Contractor)

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Department of Biotechnology, Ministry of Science and Technology, Govt. of India)
Aruna Asaf Ali Marg, New Delhi-110067
Phone: 011-26735161, 26735138 Fax: 011-26741658

TENDER NOTICE
(Tender No.: NIPGR/Engg./5/6/2021-22)

Online Tenders (in two bid system) are invited on behalf of the Director, NIPGR, Aruna Asaf Ali Marg, JNU Campus, New Delhi – 110067, from the eligible contractors who has experience in "S.I.T.C. of HVAC works comprising of ducting works" with Govt. departments or other reputed organizations.

Name of work: Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi.

Sl. No. 1.	Estimated Cost (In Lacs) 2.	Time for Completion 3.	Last date & Time of receipt of Tender 4.	Date & time of opening of tenders 5.
1.	Rs. 4,46,000.00	15 days	26.11.2021 15.00 Hrs.	29.11.2021 15:00 Hrs.

Tender documents can be downloaded on line free of cost from our website www.nipgr.ac.in and Govt. CPP Portal <https://eprocure.gov.in/cppp/>

The bids will be accepted in respect of those contractors having successfully completed at least three similar works of each value not less than Rs. 1.78 Lakhs OR two similar works of each value not less than Rs. 2.23 Lakhs OR one similar work of value not less than Rs. 3.57 Lakhs during the last seven years ending Sept-2021 and having annual financial turnover of Rs. 4.50 Lakhs during the last three years duly certified by the Statutory Auditors. Similar works means "S.I.T.C. of HVAC works comprising of ducting works" in Government organizations and reputed organizations.

Intending tenderers must enclose self-attested copies of Completion Certificates and work orders of having completed the work satisfactorily issued by an appropriate competent authority.

Submission of complete tender documents duly signed and stamped with Technical Bid, by the tenderer is mandatory.

The Director, NIPGR reserves the right to accept or reject all or any of the tender without assigning any reasons thereof.

Purchase cum Stores Officer
NIPGR

(Seal & Signature of Contractor)

GENERAL CONDITIONS

1. Online tenders are hereby invited from the eligible bidders for the work of **"SUB.: Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi"**. **Tender documents can be downloaded from our website www.nipgr.ac.in free of cost.** The tender document is obligatory on the part of the tenderers & bid in no other form will be accepted.
2. The time allowed for the completion of said work is **15 Days** from the date of written order.
3. The agency shall submit the Bid Security Declaration with the tender as per format enclosed in Annexure-IV.
4. The Tenderer will submit his tender on-line in prescribed format after examining the tender documents, scope of work, specific conditions of contract, Instructions to bidders, General Information, Terms and Conditions of contract agreement, technical specification, Price Bid, special terms and conditions of contract, specific conditions of contract.
5. The tender shall be submitted online in two parts, viz., Technical bid and Financial bid. Submission of complete tender document duly stamped and signed by tenderer with technical bid is mandatory.
6. The offer shall remain valid for 90 days from the date of opening of Tender. The validity of rates is further extendable from the date of issue of award letter with mutual consent of both the parties.
7. The tenderer shall submit a copy of the audited balance sheets of the last three financial years.
8. If a tenderer whose tender is accepted fails to undertake the work as per terms of the contract within 10 days to be reckoned from the date of issue of work order. The agency shall submit the Bid Security Declaration with the tender as per format enclosed in Annexure-IV
9. NIPGR does not bind itself to accept the lowest or any tender and reserves the right to reject any or all tenders without assigning any reason as well as for the transportation of samples.
10. NIPGR will not pay any expense, whatsoever incurred by tenderer for the preparation and submission of tenders as well as for the transportation of samples.
11. This notice inviting tender, will form part of the contract agreement to be executed by the successful tenderer.
12. All the correspondence on the tender shall be addressed to the Director, NIPGR, Aruna Asaf Ali Marg, New Delhi and any communication addressed to anyone else shall not in any manner to be binding upon the NIPGR, Aruna Asaf Ali Marg, New Delhi.
13. The submitted documents / certificates may be verified with originals after opening of Technical Bid.

**Purchase cum Stores Officer
NIPGR**

**Accepted
(Seal & Signature of Contractor)**

INSTRUCTIONS TO BIDDERS

1. GENERAL INSTRUCTIONS:

The works referred here-in shall cover the entire scope of the proposal which includes supplying and installation of material including the successful completion and the tests which the desires to get carried out. The "Owner" where appearing in these documents shall mean Director, NIPGR.

2. TENDERERS TO STUDY ENTIRE TENDER DOCUMENT CAREFULLY:

Submission of a tender by a tenderer implies that he has read all the stipulations contained in this tender document and has acquainted himself of the nature, scope and specifications of the works to be followed.

3. TENDERER TO SUBMIT THE ENTIRE TENDER DOCUMENT ON-LINE.

The tenderer shall submit all documents issued to him for the purpose of this tender after duly filling the same in all respects. Tenders which are found to be vague or incomplete shall be rejected summarily.

4. INSTRUCTION FOR FILLING THE TENDER.

Tenders shall be submitted ON-LINE, it shall be signed by one who has been authorized by the Board of Directors through a resolution. Copy of resolution and the authority letter in favour of the person signing must accompany the tender.

5. TENDERERS TO QUOTE FOR ALL ITEMS AND IN FIGURES:

The tenderer shall quote his rates in figures with reference to each item and must enter for all the items shown in the attached Bill of quantities. Incomplete offer shall be liable for rejection. The total amount shall be written both in figures and in words.

6. VALIDITY PERIOD OF OFFERS:

The rates quoted in the tender shall hold good for 90 days from the date of opening of the tender. If a tenderer on his own withdraws or revokes the tender or revises or alters or modifies the tender for any item or condition within the period mentioned in the tender notice, in such cases the Institute reserves the right to reject the bid and take any other action as deemed appropriate. In case the successful tenderer after award of acceptance of tender fails to perform as per contract or violates any condition of tender, the Agency shall be suspended from being eligible for bidding in any contract with the NIPGR, New Delhi for the period of 2 years starting from the last date of receipt of this bid/tender. The validity of accepted rates is further extendable from the date of issue of award letter with mutual consent of both the parties.

7. TENDERER TO STAMP & SIGN ALL PAGES:

The tenderer shall stamp and sign at the bottom right-hand corner of every page of the tender documents in token of acceptance of tender conditions and for the purpose of identification.

8. ERASURES AND ALTERATIONS:

Tenders containing erasures and alterations of the tender documents are liable to be rejected unless these are authenticated by the person signing the Tender Documents.

9. TENDERER TO SATISFY HIMSELF OF SITE CONDITIONS:

Tenderers are advised to inspect and examine the site and its surroundings and also signed a certificate of site visit enclosed as per Annexure 'II' and satisfy themselves before submitting their tender regarding nature of the site conditions, the means of access of the site, the accommodation they may require and in general obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender in any manner. A tenderer shall be deemed to have full knowledge of the site, whether he inspects it or not and no compensation or otherwise of any charges incurred or to be incurred consequent on any misunderstanding or otherwise shall be admissible.

10. EARNEST MONEY:

The agency shall submit the Bid Security Declaration with the tender as per format enclosed in Annexure-IV.

11.TENDERER TO QUOTE BOTH IN FIGURES AND WORDS:

The bidder shall quote their rates for all the items both in figures as well as words given as per the attached format of Price bid. The amount of each item shall be worked out and the requisite total given. Special care shall be taken to write percentage in figures and words, and the amount in figures only in such a way that interpolation is not possible. The total amount shall be written both in figures and in words.

12. TENDER LIABLE TO REJECTION:

Tenders which do not fulfill all or any of the conditions laid down in this notice, or contain conditions not covered and / or not contemplated by the Conditions of tender document and/or expressly prohibited therein or stipulate additional/alternative conditions shall be liable to be rejected. Tenders shall also be liable for rejection on any of the following grounds: -

- i)Tenders containing remarks uncalled for.
- ii)Conditional tenders
- iii)Tenders not submitted on prescribed Performa.
- iv)Telegraphic/Fax/Postal tenders.
- v) Tenders without Bid Security Declaration in the format of Institute.

13.CORRESPONDENCE:

Tenderers must mention their postal address and telephone number(s) of the Chief Executive/authorized agent or attorney in the tender. The tender submitted by the tenderer will be rejected if he or his agent cannot be contacted on the last known address or on the intimated telephone number(s) after reasonable search in this event the agencies / bidders shall be debarred from tendering with the Institute.

14.NIPGR NOT TO ASSIGN ANY REASON FOR REJECTION OF TENDER:

NIPGR hold absolute discretion to accept or reject the lowest or any other tender without assigning any reason. No claim on this account shall be entertained.

15.AMENDMENT IN TENDER DOCUMENTS:

NIPGR reserves the right to revise or amend the Bid Documents up to the date prior to the date notified for opening of the tenders and also the right to postpone the date of submission and opening of tenders without assigning any reason, whatsoever.

16.REFERENCE IN TENDER DOCUMENTS:

Director, NIPGR, shall be referred as "Owner" in all the documents of Tender documents/contract agreement.

**Purchase cum Stores Officer
NIPGR**

(Seal & Signature of Contractor)

GENERAL INFORMATION

1. Accepting Authority Director, NIPGR
New Delhi.
2. Earnest money The agency shall submit the Bid Security Declaration with the tender as per format enclosed in Annexure-IV
3. Performance Security deposit The contractor shall be required to deposit an amount equal to 3% of the tendered value of the contract as Performance Security within the period prescribed for commencement of work in the letter of award issued to him.
4. Authority competent to grant extension of time Director, NIPGR
5. Tools & plants To be arranged by contractor
6. Authority competent to reduce the compensation amount Director, NIPGR
7. Defect Liability Period 12 months from the date of acceptance of completion by the Institute.
8. Release of Performance Security The performance security shall be refunded to the contractor after completion of the defect liability period and recording of completion certificate by Institute
9. Authority Competent to Appoint Arbitrator Director, NIPGR
10. Authority Competent to reduce the compensation amount Director, NIPGR

Purchase cum Stores Officer
NIPGR

(Seal & Signature of Contractor)

MEMORANDUM

- a) Name of work Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi
- b) Estimated cost Rs. 4,46,000.00
- c) Earnest money The agency shall submit the Bid Security Declaration with the tender as per format enclosed in Annexure-IV
- d) Time allowed for the completion of work (to be reckoned from 10th day after the date of issue of written order to commence work) 15 Days

Place
Date:

(Seal & Signature of Contractor)

GENERAL CONDITIONS OF CONTRACT AGREEMENT

1. PERFORMANCE SECURITY

The bidder / bidders whose tender may be accepted (herein after called the contractor) shall permit NIPGR at the time of making any payment to him for works done under the contract to deduct such sum as will amount to 3% of all moneys so payable to be held by the Institute, by way of performance security.

2. COMPENSATION CLAUSE

The time allowed for carrying out the work as entered in the tender shall be strictly observed by the contractor, and shall be reckoned from the 10th day of the date on which the order to commence the work is given to the contractor, and within ten days of award of work the contractor. The work on the contract shall be executed according to the approved drawings as aforesaid and shall throughout the stipulated period of the contract be proceeded with all due diligence (time being deemed to be the essence of the contract on the part of the contractor) and the contractor shall pay as compensation an amount equal to one percent per week of work order amount or on the value of work as per contract, . Provided always that the entire amount of compensation to be paid under the provisions of this clause shall not exceed ten percent of the awarded cost of work as shown in the tender. The Director, NIPGR on a representation from the Agency, is however; empowered to reduce the amount of compensation and his decision in writing shall be final.

3. TIME EXTENSION

If the contractor shall desire an extension of the time limit for completion of the work on the grounds of his having been unavoidably hindered in its execution or on any other ground he shall apply in writing to the NIPGR, within 15 days of the date of the hindrance on account of which he desires such extensions as aforesaid but before the expiry of time limit and the NIPGR, if in his opinion(which shall be final)reasonable grounds as shown thereof, authorized such extension of time if any, as may, in his opinion be necessary or proper.

4. COMPLETION OF WORK

Without prejudice to the rights of NIPGR under any clause hereinafter contained on completion of the work, the contractor shall be furnished with a certificate by NIPGR or his representative of such completion, but no such certificate shall be given nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work has been executed, all scaffolding, surplus materials and rubbish, and cleaning off the dirt from all doors, walls, floors, or any other parts of buildings said to have been completed, and the measurements in the said certificate shall be binding and conclusive against the contractor, if the contractor shall fail to comply with the requirements of this clause as to the removal of scaffolding, surplus materials, and rubbish and cleaning off dirt on or before the date fixed for the completion of the work, NIPGR, may at the expense of the contractor have removed such scaffolding, surplus materials and rubbish and dispose of the same as he thinks fit and clean off such dirt as aforesaid and the contractor shall forth with pay the amount of all expenses so incurred, and shall have no claim in respect of any such scaffolding or surplus materials as aforesaid except for any such sale proceeds actually realized by the sale thereof.

5. ADDITIONS/ALTERATIONS/ DEVIATIONS

The NIPGR, shall have power to make any alterations or omissions or additions or substitutions in the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and the contractor shall be bound to carry out the work in accordance with any instructions which may be given to him in writing signed by the NIPGR and such alterations, additions or substitutions shall not invalidate the contract and any altered, additional or substituted work which the contractor may be directed to carry out in the manner above specified as part of the work shall be carried out by the contractor on same conditions in all respects on which he agreed to do the main work. The time for the completion of the work shall be extended in the proportion that the altered additional or substituted work has to the main work at the sole discretion of the Director, NIPGR, and his decision in this regard shall be final and binding on the contractor.

All tenderers are required to quote as per specifications stipulated hereunder. Rates for all items shall be quoted as specified hereunder. After the award of the contract, the work shall be carried out as per

approved samples. Rates for extra/substituted items, should they become necessary during the execution of the work shall be settled on analysis of rate to be submitted by the contractor for such items.

Quantities in the B.O.Q. or estimated quantities which can vary up to $\pm 50\%$ during the execution of the work. Payment shall be made as per actual quantum executed without any change in the contracted rate due to variation in quantity, if any.

6. CARRYING OUT OF WORK

All the work shall be carried out in accordance strictly as per the specifications given in the tender to the total satisfaction of the Institute. In the case of an item for which specification are not available in the said specifications relevant CPWD / BIS specifications applicable as on the date of tenders shall be followed.

7. QUALITY CONTROL OF MATERIAL

If it shall appear to the authorized representative of the Institute, 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 are unsound, or of a quality inferior to that contracted for or otherwise not in accordance with contract, the contractor shall on demand in writing from the authorized representative of the Institute specifying the work materials or articles complained of not with standing that the same may have been inadvertently passed, certified and paid for forthwith rectify, or remove & reconstruct the work so specified in whole or in part, as the case may require, or as the case may remove the materials or articles so specified and provide other proper and suitable material or articles at his own charge and cost and in the event of his failing to do so within a period to be specified by authorized representative of the Institute, in his demand as aforesaid then the contractor shall be liable to pay compensation at the rate of 1% on the contract agreement of work for everyday till rectify or remove, and re-execute the work or replace with other, materials or articles complained of as the case may be at the risk and expense in all respects of the contractor.

8. INSPECTION OF WORK

All work under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of authorized representative of the Institute, or his subordinate in-charge of the work and the contractor shall at all times, during the usual working hours and at all other times at which reasonable notice of the intention of the Engineer to visit the works shall have been given to the contractor, either himself be present to receive order 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.

The work during its progress shall be inspected by the authorized representative of the Institute and the contractor shall extend all co-operations to the engineers inspecting the work.

9. AGENCY'S RISKS

All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the contract other than the excepted risks are the responsibility of the contractor.

**Purchase cum Stores Officer
NIPGR**

(Seal & Signature of Contractor)

SPECIAL TERMS AND CONDITIONS OF CONTRACT

1. SPECIFICATIONS:

If specifications for an item of work are not covered as per approved Specifications (CPWD / BIS) of tender, the same shall be decided by the Institute and shall be binding on the contractor.

The Director shall have the power to insist upon the contractor to purchase and use such materials of approved make which may in his opinion be necessary for proper and reasonable compliance with the specifications and execution of work.

In the event of any variation/discrepancy in the specification of tender documents the decision of the Institute shall be final binding and conclusive on the contractor.

2. CONTRACTOR TO BE LIABLE FOR ALL TAXES ETC. - The rates specified in the tender shall be inclusive of GST, royalty and other taxes, etc. However if any fresh taxes are imposed by State/Central/Statutory bodies during the currency of contract, the same shall be borne by Institute.

3. FORCE MAJEURE:

The right of the contractor to proceed with the work shall not be terminated because of any delay in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the contractor, including not limited to acts of God, or of the public enemy, restraints of a sovereign state, firms, floods, unusually severe weather.

4. JURISDICTION:

Not with standing any other courts having jurisdiction to decide the questions forming subject matter of a suit any and all actions and proceedings arising out of or relative to this contract (including any arbitration in terms thereof) shall lie only in the court of competent Civil jurisdiction in this behalf at New Delhi., where this contract is to be signed on behalf of and only the said court shall have jurisdiction to try any such actions and/or proceedings to the exclusion of all other courts.

5. SITE WORKING RULES AND REGULATIONS:

a) The contractor shall furnish NIPGR, the Power of Attorney name and signature of his authorized representative who will be in-charge of the execution of the works at site. The contractor shall also furnish the list of technically qualified persons employed by him for execution of the works. Daily reports of number of men employed by crafts and weekly reports of progress achieved, expected date of completion of the works and any actual or potential delays stating the reasons thereof shall be furnished by the contractor.

b) Save as otherwise specifically provided in this Agreement the rates and prices herein, unless otherwise stipulated elsewhere in this Agreement, include all the costs, expenses and outlays of the contractor for executing the works and fulfilling all the obligations of the Contractor under this agreement.

6. SCOPE OF WORK

The scope of work is as per schedule of Bill/quantity. All aspects of Firefighting including site alignment. Electric supply and water, if any, required for the execution of work shall be provided by institute from one point free of cost.

7. CONTRACTOR'S RESPONSIBILITY FOR THE MANNER OF EXECUTION OF WORKS

The contractor shall be solely responsible for the manner and the method of executing the work. The work shall be subject to the approval of NIPGR from time to time for purposes of determination of the question whether the work is executed by the contractor in accordance with the contract.

8. NO WORK SHALL BE UNDERTAKEN WITHOUT APPROVED WORKING DRAWINGS:

No work shall be undertaken at site by the contractor until detailed approved working drawings marked "Good" for execution/construction is issued by the NIPGR in writing. Any work done without the aforesaid working drawing shall be at the contractor's own risk and costs.

9. TIME LIMIT : The entire work is required to be completed within 15 days after the date of award of contract.

10. SUBMISSION OF BILLS:

Contractor is to submit the bills and record of measurements in approved Performa of the NIPGR or his representative for works executed by him. The Bill can be submitted per month for release of payment on pre-rata basis and final payment will be made after completion of work.

11. TERMS OF PAYMENT

The entire work executed under this contract shall be guaranteed by the contractor to give Zero defect and trouble free usage for one year after the date of completion of this contract, during this period, any defect in any component of the job on account of bad workmanship or use of sub-standard materials shall be replaced/rectified to the entire satisfaction of the Institute at his cost. The contractor shall be required to deposit an amount equal to 3% of the tendered value of the contract as Performance Security within the period prescribed for commencement of work in the letter of award issued to him.

12. ACTION AND COMPENSATION PAYABLE IN CASE OF BAD WORK:

If it shall appear to NIPGR, or our representatives, that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of any inferior description or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to the contracted for, or otherwise not in accordance with the contract and provide other and suitable materials or articles so specified at his own cost and in the event of his failing to do so within a period to be specified by the NIPGR in his demand aforesaid, **then the contractor shall be liable to pay compensation at the rate of one percent on the amount of the work order** for every week not exceeding ten days while his failure to do so that continue and in the case of any such failure NIPGR, may rectify or remove, and re-execute the work or remove and replace with other materials or articles complained of, as the case may be at risk and expenses in all respects of the contractor.

1. The works shall be inspected by authorized representative of NIPGR. The contractor shall extend full co-operation and render all necessary facilities for inspection of the work to the inspecting authority without any additional cost to NIPGR,. It must be noted that any observations/ comments/ recommendations of the said Technical representative of NIPGR shall be binding on the contractor.

2. It shall always prevail, unless otherwise specifically stated, that the entire provisions of Tender document been opened upon and accepted for compliance by the contractor without any reservation.

**Purchase cum Stores Officer
NIPGR**

(Seal & Signature of Contractor)

Instructions for Online Bid Submission

1. The tender documents are available on our website www.nipgr.ac.in & www.eprocure.gov.in and same can be downloaded.
2. Tender documents may be downloaded from ITPO's website www.nipgr.ac.in and CPPP site <https://eprocure.gov.in/eprocure/app> as per the schedule as given in the tender document.
3. Bids shall be submitted online only at CPPP website: <https://eprocure.gov.in/eprocure/app>. Tenderers/Contractors are advised to follow the instructions provided in the 'Instructions to the Contractors/Tenderer for the esubmission of the bids online through the Central Public Procurement Portal for eProcurement at <https://eprocure.gov.in/eprocure/app>'. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
4. Not more than one tender shall be submitted by one contractor or contractors having business relationship. Under no circumstance will father and his son(s) or other close relations who have business relationship with one another (i.e when one or more partner(s)/director(s) are common) be allowed to tender for the same contract as separate competitors. A breach of this condition will render the tenders of both parties liable to rejection.
5. The bidders are advised to visit CPPP website <https://eprocure.gov.in/eprocure/app> at least 3 days prior to closing date
of submission of tender for any corrigendum / addendum/ amendment.
6. Bids will be opened as per date/time as mentioned in the **Tender Document**. After online opening and evaluation of technical bids, the results of their qualification as well Price-Bid opening will be intimated.

Submission of Tender

The tender shall be submitted online in two parts, viz., Technical bid and Financial bid.

All the pages of bid being submitted must be sequentially numbered by the bidder irrespective of nature and content of the documents before uploading.

The offers submitted by hand/Post/Fax/email shall not be considered. No correspondence will be entertained in this matter.

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at:
<https://eprocure.gov.in/eprocure/app>.

REGISTRATION

7. Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>) by clicking on the link "**Online Bidder Enrolment**" on the CPP Portal which is free of charge.
8. As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
9. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

10. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra/ Nic etc.), with their profile.
11. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
12. Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR TENDER DOCUMENTS

13. There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
14. Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
15. The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

Bidder should take into account any corrigendum published on the tender document before submitting their bids.

16. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
17. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
18. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, GST Certificate etc.) has been provided to the bidders. Bidders can use "My Space" or "Other Important Documents" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

19. Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
20. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

21. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.
22. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
23. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.
24. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
25. Upon the successful and timely submission of bids (i.e after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
26. The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

27. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 3070 2232, 91-7878007972 and 91-7878007973.

**SPECIAL INSTRUCTIONS TO BIDDERS FOR REGISTRATION
WITH COMPETENT AUTHORITY**

Bidders Registration

- 1) Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).
- 2) **"Bidder"** for the purpose of this tender (including the term 'tenderer', 'consultant' 'vendor' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency, branch or office controlled by such person, participating in a procurement process.
- 3) **"Bidder from a country which shares a land border with India"** for the purpose of this tender means:
 - a) An entity incorporated, established or registered in such a country; or
 - b) A subsidiary of an entity incorporated, established or registered in such a country; or
 - c) An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - d) An entity whose beneficial owner is situated in such a country; or
 - e) An Indian (or other) agent of such an entity; or
 - f) A natural person who is a citizen of such a country; or
 - g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- 4) **"The Beneficial owner"** for the purpose of (3) above will be as under:
 - 1) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.

Explanation: -

 - a) "Controlling ownership interest" means ownership of, or entitlement to, more than twenty-five per cent of shares or capital or profits of the company;
 - b) "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
 - 2) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

Tenderers Signature and Seal

- 3) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
- 4) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
- 5) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

“An Agent” for the purpose of this Order is a person employed to do any act for another, or to represent another in dealings with third persons.

Sub-contracting in works contracts

In works contracts, including turnkey contracts, contractors shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

***Please note that the bidders shall provide the mandatory Certificates in the following formats on their registered Company's letter heads:**

Certificate for Tenders involving procurement

“I/We have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I/we certify that we are not from such a country or, if from such a country, have been registered with the Competent Authority. I/we hereby certify that we fulfill all requirements in this regard and are eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

Certificate for Tenders for Works involving possibility of sub-contracting

“I/We have read the clause regarding restrictions of procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I/we certify that we are not from such a country or, if from such a country, have been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I/we Hereby certify that we fulfill all requirements in this regard and is/are eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

Tenderers Signature and Seal

TERMS & CONDITIONS

Name of Work:- Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi.

1. The firm's office establishment should be based in NCR/Delhi.
2. The site of the work is at NIPGR Campus, Aruna Asaf Ali Marg, New Delhi-110067.
3. The bidder must visit the site before quoting the rates and make him acquainted with the location of site. The Institute shall entertain no extra claim later on.
4. The rates are inclusive of Transportation/travelling, lodging/boarding, loading, unloading & handling and nothing extra will be paid.
5. The rates shall be inclusive of GST & other taxes and nothing extra will be paid, **however rate and amount of GST charged should be shown separately in Financial Bid.**
6. The agency must get the prior approval of the material from the Institute.
7. The agency shall have to arrange his own tools & plants including skilled & non-skilled manpower, testing apparatus etc. required for execution of work and nothing extra will be paid.
8. The payment shall be made after completion of work after deductions of taxes at source as per Rules; no advance payments will be made.
9. The work must be completed within 15 days after the date of issue of work order. In case the work is not completed within stipulated period, a compensation @ 1% of the work order amount per day beyond the stipulated date of completion, subject to maximum of 10% of the work order amount shall be levied.
10. Installation of the all the items will be done in the presence of Engineer-in-Charge or his authorized representative.
11. All papers attached with this tender should be signed by tenderer & may be verified with original. Tender shall be submitted in prescribed format issued by the department.
12. The performance security deposit @ 3% shall be deposited by the contractor before the start of work as performance security and shall be refunded after completion of defect liability period.
13. All safety precautions shall be taken so as to avoid any accident or inconvenience to the members of the staff.
14. All works along with equipment / material supplied shall be guaranteed for 12 months or for the period of standard guarantee & handover to the department. Against unsatisfactory performance and/or breakdown the equipment or component or any other part of the installation so found defective in guarantee period shall be repaired by the contractor free of cost to the satisfaction of Engineer-in-Charge.
15. Any alteration / modification / Civil works shall be done free of cost by the contractor in good manner etc.
16. In case the site clearance and damages are not attended, a recovery as per actual cost shall be made.
17. The Institute also reserved the right to reduce / increase the scope of work.
18. The water & electricity supply shall be given free of cost at one point in the Institute.
19. Agency shall inform to the Institute in advance with schedule of work for taking over the site to start the work.

20. The below standard work shall be redone and nothing extra will be paid.
21. Bidder will support all the claims by product catalogue, public website of the manufacturer.
22. In case of any part taken out dismantle material during the work, the same shall be handed over to the Institute.
23. The above work shall be executed by the trained manpower under the supervision of agency's engineer.
24. The Institute reserves the right to reject/accept any or all tender without assigning any reason.
25. The Institute also reserves the right to reduce/ increase the scope of work/item of work or delete a particular item.
26. In case of any dispute, the decision of the Institute shall be final & binding on the agency.
27. Any damage to the existing installations during the execution of work will be the responsibility of the agency and will be made good to the satisfaction of the Institute and nothing extra will be paid. In case the site clearance and damages are not attended, a recovery shall be made as per Institute rules.
28. Any kind of accident / electrocution caused due to negligence or during the course of normal work etc. shall be responsibility of the agency and nothing extra will be paid.
29. All safety precautions shall be taken so as to avoid any accident or inconvenience to the members of staff. The agency shall coordinate the work with the Institute's timing schedule.
30. A copy of the GST & PAN No. issued by the concerned authority must be enclosed with the tender.
31. The material supplied / replaced shall be similar to existing installation. No difference in make / specification shall be accepted.
32. Make of GI steel: JINDAL / TATA

Purchase cum Stores Officer

Seal & Signature of Contractor

(Undertaking on a Non-Judicial Stamp Paper worth Rs. 100/- duly notarized)

I / We (bidder) hereby give an undertaking that:

- (a) I/We have not been blacklisted / not on holiday list during last three years by any Govt. Department/Govt. Autonomous Body / Institution, etc.
- (b) I/We do not have any dispute with any of the Govt. Department/Govt. Autonomous Bodies/Institutions, etc.;
- (c) I/We have never been certified as 'Unsatisfactory Performer' for the said services provided to the Govt. Department/Govt. Autonomous Bodies/Institutions;
- (d) I/We have not submitted any fake/forged certificates/documents and later, if any such 'Certificates/Documents' found to be fake/forged or contains willful wrong/incorrect information, suitable legal action may be initiated against me/us/agency besides "Blacklisting" etc.
- (e) I/We shall not withdraw my/our bid after opening of Technical Bid and if done so, the NIPGR shall be authorized to take action as deemed appropriate against me/us.

(Signature of Authorized Signatory with Company Seal)

Place:

Date:

'CERTIFICATE FOR SITE INSPECTION'
Pre-qualification criteria of NIT

Certificate that we have visited the site on and assessed the nature and amount of work involved before submitting our offer. We will be able to complete the works within the stipulated time and also that we will be able to execute the work suit to the site conditions.

(Signature of Bidder with Seal)

Name:

Address:

Date:

Purchase and Store Officer

CHECK-LIST FOR PRE-QUALIFICATION BID FOR NAME OF WORK: Replacement of A.C. ducts (fresh air and exhaust) for cooling the DG room installed at NIPGR Campus, New Delhi

Sl. No.	Documents asked for	Page number at which document is placed
1.	Tender Documents	
2.	Name of authorized person of the firm/agency, designation, address and office telephone numbers. If the bidder is a partnership firm/private or limited company, name designation, address and office telephone numbers of partners/ Directors also.	
3.	Undertaking on a Non-judicial Stamp Paper of Rs.100/- (as per format prescribed in Annexure-I)	
4.	Self-attested copy of the PAN card, issued by the Income Tax Department.	
5.	Self-attested copy of EPF, ESI & GST Registration.	
6.	Proof of experiences / Completion Certificates of last seven years ending 30 th September, 2021 as specified in the NIT along with satisfactory performance certificates and work order copy from the concerned employers.	
7.	Annual turnover of last three financial years during the last three years duly certified by the Statutory Auditors.	
8.	Certificate for Tenders involving procurement	
9.	Certificate for Tenders for works involving possibility of sub-contracting	
10.	Any other documents, if required.	

**Signature of the Bidder
(Name and Address of the Bidder)
Telephone No.**

BID SECURING DECLARATION IN FAVOUR OF NIPGR, NEW DELHI

Tender/Bid No.:

Date:.....

I/we, the undersigned, declare that: I/we understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration. We accept that we will automatically be suspended from being eligible for bidding in any contract with the NIPGR, New Delhi for the period of 2 years starting from the last date of receipt of this bid/tender, if we are in breach of our obligation(s) under the bid conditions, because we:

- (a) have withdrawn our Bid during the period of bid validity specified in the Tender Notice.
- (b) having been notified of the acceptance of our Bid by the NIPGR, New Delhi during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with terms and conditions of the tender/bid.

I/we understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name and Signature of the Bidder:

Registered Address of the Company:

Company seal

Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid.

**Self-Certification on the registered Company's letter head in respect of Class -I/
Class-II Supplier Certificate.**

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017, P-45021/2/2017-PP (BE-II) dated 28.05.2018, P-45021/2/2017-PP (BE-II) dated 29.05.2019 and P-45021/2/2017-PP (BE-II) dated 16.09.2020, we hereby certify that we M/s are local supplier meeting requirement of minimum local content i.e 50% or 20% (Please tick the applicable criteria) defined in as above orders for the material/goods being quoted for

Details of location at which local value addition will be made is as follows:

.....We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Date:

Signature of Authorized Signatory with Company Seal

Place:

Mobile No:

Office Telephone No:

Email ID: Office Seal:

Certificate for Tenders involving procurement

“I/We have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I/we certify that we/our principles are not from such a country or, if from such a country, have been registered with the Competent Authority. I/we hereby certify that we fulfill all the requirements in this regard and are eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

(Signature of Authorized Signatory with Company Seal)

Note: The Certificate should be printed on the Company's letter head.

Certificate for Tenders for Works involving possibility of sub-contracting

“I/We have read the clause regarding restrictions of procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I/we certify that we/our principles are not from such a country or, if from such a country, have been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I/we Hereby certify that we fulfill all requirements in this regard and is/are eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]”

(Signature of Authorized Signatory with Company Seal)

Note: The Certificate should be printed on the Company's letter head.

SCHEDULE OF QUANTITIES

ITEM NO.	DESCRIPTION OF ITEM	QTY.	UNIT	RATE	AMOUNT
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Attached at pages _____ to _____

Should this tender be accepted, in whole or in part I/We hereby agree to abide by and fulfill all the terms & provisions of the conditions of tender as applicable or in default. The agency shall submit the Bid Security Declaration with the tender as per format enclosed in Annexure-IV

I/We agree:

- (i) that should I/We fail to commence the work specified in the above-mentioned Memorandum the without prejudice to any other right or remedy shall be at liberty to debar from tendering with the Institute.
- (ii) to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein.

The names and postal addresses and contract phone nos. of our representative(s) authorized to deal with this tender are:

1)

2)

3)

Dated the _____ day of _____ 2021

(Seal & Signature of Contractor)

SPECIFICATIONS FOR SHEET METAL WORKS

1. SCOPE

The scope of this section includes supply, fabrication, installation & testing of all sheet metal ducts as per specifications & drawings. Except as otherwise specified all ductwork and related items shall be in accordance with these specifications. Duct work shall mean all ducts, casings, dampers, access doors, joints, stiffeners, hangers & all accessories.

2. DUCT MATERIALS

- 2.1 The ducts shall be fabricated from galvanized steel sheets class VIII - Light coating of Zinc conforming to ISS: 277-1962 (REVISED) with accompanying Mill test Certificates. Galvanizing shall be of 120gms/sq.mtr. (total coating on both sides). In addition, if deemed necessary, samples of raw material, selected at random by owner's site representative shall be subject to approval and tested for thickness and zinc coating at contractor's expense.

Only new, fresh, clean (unsoiled) and bright GI / Aluminum sheets shall be used. The Owner / Consultants reserve the right to summarily reject the sheets not meeting these requirements. Fabrication of ducts shall be through Lock forming machines.

In case of factory fabricated duct the G.I. raw material should be used in coil-form (instead of sheets) so as to limit the longitudinal joints at the edges only irrespective of cross-section dimensions

3 SPECIFICATIONS FOR SITE FABRICATED DUCING

All duct work, sheet metal fabrication unless otherwise directed, shall strictly meet requirements, as described in IS: 655-1963 with Amendment-I (1971 Edition)

Longer size of Duct	Sheet Thickness GI (MM)	Type of Joints	Bracing
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Up to 750	0.63	GI Flange	-
751-1000	0.80	25x25x3 mm angle iron frame with 8 mm Dia nuts & bolts	25X25X3 MM @ 1M
1001-1500	0.80	40x40x5 mm angle iron frame with 8 mm Dia nuts & bolts	40x40x5 MM @ 1M
1501-2250	1.00	50x50x5 mm angle iron frame with 10 mm Dia nuts & bolts at 125 mm center	40x40x3mm @ 1.2m to be braced diagonally.
2251 & above	1.25	50x50x6 mm angle iron frame with 10 mm Dia nuts & bolts at 125 mm center	40x40x3mm @ 1.6m diagonally braced

Ducts larger than 450 mm shall be cross broken, duct sections up to 1200 mm length may be used with bracing angles omitted.

Changes in section of ductwork shall be affected by tapering the ducts with as long a taper as possible. All branches shall be taken off at not more than 45 Deg. Angle from the axis of the main duct unless otherwise approved by the Engineer-in-Charge.

All ducts shall be supported from the ceiling/slab by means of M.S. rods of 10 MM Dia with M.S. angle at the bottom of size 40 mm x 40 mm x 6 mm for sizes up to 1500 mm at 3 m intervals. Above size 1500 mm upto 2250, support shall be provided with 10 mm dia. MS rod and MS angle size 50 mm x 50 mm at bottom at 2.5 m intervals. Above size 2250 mm support shall be provided with 12 mm dia MS rod and MS angle size 50 mm x 50 mm at bottom

3. INSTALLATION

All ducts shall be fabricated and installed in workman like manner, generally conforming to relevant BIS codes.

Ducts shall be straight and smooth on the inside with neatly finished joints. All joints shall be made airtight.

All exposed ducts upto 60 cm width within conditioned spaces shall have slip joints. The Internal ends of the slip joints shall be in the direction of airflow. Ducts and accessories within ceiling spaces visible from air-conditioned areas shall be provided with two coats of matt black finish paint.

Change in dimensions and shape of ducts shall be gradual. Air turns shall be installed in all vanes arranged to permit the air to make the turn without appreciable turbulence.

All ducts shall be rigid and shall be adequately supported and braced where required with standing seams, tees of ample size to keep the ducts true to shape and to prevent buckling, vibration or breaking.

All sheets metal connections, partitions and plenums required to confine the flow of air to/ through the filters and fans shall be constructed of 18 Gauge GSS thoroughly stiffened with 25mm x 25mm x 3mm angle iron braces and fitted with all necessary inspection doors as required to give access to all parts of the apparatus. Doors shall be not less than 45cm X 45cm in size.

Plenums shall be panel type and assembled at site. Fixing of MS angle iron flanges of duct pieces shall be with rivet heads inside i.e. Towards G.S. sheet and riveting shall be done from outside.

Rubber gasket 3 mm thick shall be used between duct flanges and between duct and duct supports instead of felt in all ducting installation for complete sealing.

During the construction, the Contractor shall temporarily close duct openings with sheet metal covers to prevent debris-entering ducts and to maintain opening straight and square, as per direction of Engineer-in-Charge.

Great care should be taken to ensure that the ductwork does not extend outside and beyond height limits as noted on the drawings.

All duct work shall be of high quality approved galvanized sheet steel guaranteed not to crack or peel on bending or fabrication of ducts. All joints shall be tight and shall be made in the direction of airflow.

The ducts shall be reinforced where necessary, and must be secured in place so as to avoid vibration of the duct on its support.

All air turns of 45 degrees or more shall include curved metal blades or vanes arranged so as to permit the air to make the abrupt turns without an appreciable turbulence. Turning vanes shall be securely fastened to prevent noise or vibration. All ducts shall be fabricated and installed in accordance with modern design practice. The sheet metal gauges and fabrication procedures as given in I.S. specifications shall be adhered to and shall be considered as an integral part of these specifications.

The ductwork shall be varied in shape and position to fit actual conditions at building. All changes shall be in accordance with accepted duct design and subject to the approval of the engineer-in-charge. The Contractor shall verify all measurements at building and shall notify the Engineer-in-Charge of any difficulty in carrying out his work before fabrication.

Sponge rubber or approved equal gaskets shall be installed between all connections of sheet metal ducts to walls. Sheet metal connections shall be made to walls and floors by means of galvanized steel angles anchored to the building structure with anchor bolts and with the sheet bolted to the angles.

All ductwork shall be independently supported from building construction. All horizontal ducts shall be rigidly and securely supported, in an approved manner, with trapeze hangers formed of galvanized steel rods and galvanized steel angel/channel under ducts. All vertical

ductwork shall be supported by structural members on each floor slab. Duct supports may be through galvanized steel insert plates left in slab at the time of slab casting. Galvanized steel cleat with a hole for passing the hanger rods shall be welded to the plates. Trapeze hanger formed of galvanized steel rods and angles / channels shall be hung through these cleats. Wherever use of metal insert plates is not feasible, duct support shall be through dash / anchor fastener driven into the concrete slab by electrically operated gun. Hanger rods shall then hang through the cleats.

Where ducts pass through brick or masonry openings, it shall be provided with 25 mm thick TF quality thermo Cole around the duct prior to sealing of the opening.

All ducts shall be totally free from vibration under all conditions of operation. Whenever ductwork is connected to fans, air handling units or blower coil units that may cause vibration in the ducts, ducts shall be provided with a flexible connection, located at the unit discharge. Flexible connections shall be constructed of fire retarding flexible heavy canvas sleeve at least 100 mm long but not more than 200 mm, securely bonded and bolted on both sides. Sleeve shall be made smooth and the connecting ductwork rigidly held by independent supports on both sides of the flexible connection. The flexible connection shall be suitable for pressure at the point of installation.

Flanges and supports are to be black, mild steel and are to be primer coated on all surfaces before erection and painted with aluminum thereafter. Accessories such as damper blades and access panels are to be of materials of appropriate thickness and the finish similar to the adjacent ducting, as specified.

The ductwork should be carried out in a manner and at such time as not to hinder or delay the work of the other agencies especially the boxing or false ceiling Contractors.