

E -Tender Document

PROPOSED HVAC WORKS FOR 2ND, 3RD & 4TH FLOOR OF MPCB OFFICE AT SION, MUMBAI.

Tender No.:- MPCB/EE/PT/e-Tender-1/2018-19



Maharashtra Pollution Control Board

Kalpataru Point, 3rd& 4thFloor, Sion Matunga Scheme Road No.8

Opp.SionCircle,Sion (East), Mumbai-400 022

Website:<http://mpcb.gov.in>

Price: Rs.7500/-

(Non Refundable)

(2018 – 2019)

Maharashtra Pollution Control Board

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E – Tender are invited from Original Equipment Manufacturers (OEM’s) for Proposed HVAC works for 2nd, 3rd & 4th floor of MPCB Office at Sion, Mumbai.

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Tender Notice

1) Tender Notice Details

Tender Reference no.	MPCB/EE/2/2018-19 Date :05/01/2018
Name of Work / Item	Proposed HVAC work for 2nd, 3rd & 4th floor of MPCB Office at Sion, Mumbai.
Cost of blank tender document & Mode of Payment	Rs. 7,500/- (Rupees Seven Thousand Five Hundred Only) (Non Refundable) to be paid through Online Payment Modes i.e. Net Banking, Debit Card and Credit Card during Tender Document Download Stage.
EMD Amount & Mode of Payment	Rs.2,00,000/- (Rupees Two Lakhs Only) to be paid through Online Payment Modes i.e. Net Banking, Debit Card, Credit Card and NEFT/RTGS during Bid Preparation Stage.
Date ,Time and Place of Pre Bid Meeting	09th March. 2018 14:30 Hrs at MPCB Conference Hall, Kalpataru Point, 4th Floor, Sion Matunga Scheme Road No.8, Opp. Sion Circle. Sion (E), Mumbai-400 022
Completion Period Of Project	02 Months
Venue of online opening of tender	MPCB Conference Hall, Kalpataru Point, 4th Floor, Sion Matunga Scheme Road No.8, Opp. Sion Circle, Sion (East), Mumbai - 400 022
Address for Communication	Member Secretary MPC Board, Kalpataru Point, 4th Floor, Sion Matunga Scheme Road No.8, Opp. Sion Circle, Sion (East), Mumbai - 400 022
Contact Telephone & Fax Numbers	Tel.No. - 022- 240 87 295, 022- 240 10437 Fax - 022- 240 87 295 Email - ee@mpcb.gov.in
e-Tendering Helpline Support:	<u>Telephone:</u> 020 - 3018 7500 <u>Email: support.gom@nextenders.com</u>
Monday-Friday: 09:00 AM - 08:00 PM	
Saturday - 09:00 AM - 06:00 PM	

2) **E – TENDER TIME SCHEDULE**

Please Note: All bid related activities (Process) like Tender Document Download, Bid Preparation, and Bid Submission will be governed by the time schedule given under Key Dates below:

Sr. No	Activity	Performed By	Start		Expiry	
			Date	Time	Date	Time
1	Release of Tender	Department	27-02-2018	11.00	27-02-2018	17.00
2	Tender Download	Bidders	27-02-2018	17.01	07-03-2018	17.00
3	Bid Preparation		27-02-2018	11.01	12-03-2018	17.00
4	Superhash Generation & Bid Lock	Department	13-03-2018	11.01	13-03-2018	17.00
5	Control Transfer of Bid	Bidder	13-03-2018	17.01	15-03-2018	17.00
6	Envelope 1 Opening	Department	16-03-2018	14.00	16-03-2018	17.00
7	Envelope 2 Opening		21-03-2018	14.00	21-03-2018	17.00

Dates mentioned here, are scheduled dates for Bid Opening Activities. Any changes in dates of opening of technical and commercial bids shall be notified in 'Press Notice / Corrigendum' section on the e-Tendering sub portal of the department before opening of the same.

3) **INSTRUCTION TO BIDDERS**

3.1 General Instruction:-

Maharashtra Pollution Control Board invites E – tenders from **Original Equipment Manufacturers (OEM's)** having relevant experience for **“Proposed HVAC Works Of 2nd, 3rd & 4th Floor At MPCB Office, Sion, Mumbai.**

OEM should give only one Authorized Vendor from each as per approved make.

In case of Bid received from more than one dealer /Vendor for respective OEM, MPCB has right of rejection for same.

The bidders are requested to familiarize themselves with the use of the e - Tendering portal of Government of Maharashtra well in advance.

To view- Tender Notice, Detailed Time Schedule, Tender Document for this Tender and Subsequently purchase the Tender Document and its supporting documents, kindly visit following e-Tendering website of Government of Maharashtra <https://maharashtra.etenders.in>

The Contractors/suppliers participating first time for e-Tenders on GoM e-tendering portal will have to complete the Online Registration Process for the e-Tendering portal. A link for enrollment of new bidders has been provided on [**https://maharashtra.etenders.in**](https://maharashtra.etenders.in)

All bidders interested in participating in the online e-tendering process are required to procure Class II or Class III Digital e-Token having 2 certificates inside it, one for Signing/Verification purpose and another for Encryption/Decryption purpose. The tender should be prepared & submitted online using individual's Digital e-Token.

e -Tendering Tool Kit for Bidders (detailed Help documents, designed for bidders) has been provided on e-Tendering website in order to guide them through different stages involved during e-Tendering such as online procedure for Tender Document Purchase, Bid Preparation, Bid Submission.

Bidders will have to pay cost of **Tender Document** through online modes of payment such as **Net Banking, Debit Card and Credit Card** during **Tender Document Download stage**. This payment will not be accepted by the department through any offline modes such as Cash, Cheque or Demand Draft.

Similarly, Bidders will have to pay **Earnest Money Deposit** through online modes of payment such as Net Banking, Debit Card, Credit Card and NEFT/RTGS during Bid Preparation stage. This payment will not be accepted by the department through any offline modes such as Cash, Cheque or Demand Draft.

The interested contractors / bidders will have to make online payment (using credit card/debit card/net banking) of Rs. **7500/-** (inclusive of all taxes) per bid per tender to online service provider of e-Tendering system (SifyNexTenders) at the time of entering **Online Bid Submission** stage of

the tender schedule.

If any assistance is required regarding e-Tendering (registration / upload / download) please contact GoM e-Tendering Help Desk on number: **020 – 3018 7500 (Pune Helpline)**, **Email: support.gom@nextenders.com**

For a bidder, online bidding process consists of following 3 stages:

- 1. Online Tender Document Purchase and Download*
- 2. Online Bid Preparation*
- 3. Online Bid Submission*

All of 3 stages are mandatory in order for bidders to successfully complete Online Bidding Process.

4) TENDER DOCUMENT PURCHASE AND DOWNLOAD:-

4.1. The tender document is uploaded / released on Government of Maharashtra,(GOM) e-tendering website <https://maharashtra.etenders.in>. Tender document and supporting documents may be purchased and downloaded from following link of **Organizations of Government of Maharashtra** on e-Tendering website of Government of Maharashtra, <https://allgom.maharashtra.etenders.in> by making payment through **Online Payment Modes i.e. Net Banking, Debit Card and Credit Card**.

4.2. If for any reason a bidder fails to make this payment through online modes, system won't allow the bidder proceed further for next stage resulting in his/her elimination from Online Bidding Process.

4.3. This payment will not be accepted by the department through any offline mode such as Cash, Cheque or Demand Draft.

4.4. Subsequently, bid has to be prepared and submitted online ONLY as per the schedule.

4.5. The Tender form will be available online only. Tender forms will not be sold / issued manually from **Maharashtra Pollution Control Board (MPCB)** office.

4.6. The bidders are required to download the tender document within the pre-scribed date & time mentioned in online tender schedule. After expiry of the date and time for tender document download, Department / Corporation will not be responsible for any such failure on account of bidders for not downloading the document within the schedule even though they have paid the cost of the tender to the Department / Corporation. In such case the cost of the tender paid by the bidders will not be refunded.

5) PREPARATION & SUBMISSION OF BIDS:-

Both the Bids (Technical as well as Commercial) shall have to be prepared and subsequently submitted online only. Bids not submitted online will not be entertained.

6) ONLINE BID PREPARATION:-

6.1. EARNEST MONEY DEPOSIT (EMD)

Bidders are required to pay Earnest Money Deposit (if applicable) through Online Payment modes i.e. **Net Banking, Debit Card, Credit Card and NEFT/RTGS** during Bid Preparation Stage.

This payment will not be accepted by the department through any offline modes such as Cash, Cheque or Demand Draft.

If for any reason a bidder fails to make this payment through online modes, system won't allow the bidder to complete Bid Preparation stage resulting in his/her elimination from Online Bidding Process.

In case EMD is mandatory to all the bidders for a tender, offers made without EMD shall be rejected.

In Bid Preparation stage, bidders get access to Online Technical and Commercial Envelopes where they require uploading documents related to technical eligibility criteria and quote commercial offer for the work / item in respective online envelopes.

7) TECHNICAL BID:-

Following documents should be uploaded in Online Technical Envelope (T1) in PDF format, if required can be zipped as well and then uploaded during **Online Bid Preparation stage**.

The list of documents for Technical Envelope is as follows:

Sr. No	List of Document	Compulsory (C) / Additional (A)
	Pre-Qualification Documents to be submitted as per schedule – I:	
1	The Contractor shall submit experience certificate for execution of single renovation and refurbishment work of similar nature consisting of HVAC works- VRF system costing in the range of not less than Rs. 100 Lakhs to 200 lakhs (1 to 4Jobs – Maximum job reference shall earn maximum points in evaluation by system of grading) in any Government/ Semi Government Department / local bodies such as MIDC/MJP/CIDCO etc in last Three financial years signed by an officer not below the rank of Executive Engineer OR Similar works consisting of HVAC works-VRV system costing not less than Rs. 150 Lakhs in Private Offices in last three years signed by the Client not below the rank of Director.(Note: The weightage of costing for private works executed shall be considered 50% ie If the party has executed private work worth 100 lacs , then the same shall be considered as	C

	50 lacs for the purpose of evaluation).	
2	Professional Tax Registration Certificate for employees in E category for tenders without PQ and both i.e. 'E' & 'R' category for tenders where PQ is applicable.	C
3	Registration Certification with GST Tax Deptt. under GST Act 2017, of Govt. of Maharashtra.	C
4	Income Tax Returns for last 3 years & Certified copy of PAN card	C
5	The photo copies duly attested, of the above certificates will have to be uploaded in Envelope No.1. Original shall be produced in the office of for verification on the day of opening of the tender as mentioned elsewhere	C
6	Goods & Service Tax Registration	C

8) **COMMERCIAL BID:-**

All commercial offers must be prepared online (An online form will be provided for this purpose in Online Commercial Envelope (C1), during **Online Bid Preparation** stage).

Any bidder should not quote his offer anywhere directly or indirectly in Technical Envelope (T1), failing which the Commercial Envelope (C1) shall not be opened and his tender shall stand rejected.

Note: During Online Bid Preparation stage, bidders are allowed to make any changes or modifications in the bid data uploaded by them in Technical (T1) as well as Commercial (C1) envelope

Towards the end of Bid Preparation, once verification of EMD payment is successful, bidder completes the Bid Preparation stage by generating the Hash Values for T1 and C1. Post this, system won't allow him/her to make any further changes or modifications in the bid data.

9) **ONLINE BID SUBMISSION:-**

In this stage, bidders who have successfully completed their Bid Preparation stage are required to transfer the data, already uploaded by them during Bid Preparation stage, from their custody to department's custody.

Note: During this stage, bidders won't have any capability to make any kind of changes or editing into technical as well as commercial data.

10) **INSTRUCTION TO BIDDERS FOR ONLINE BID PREPARATION & SUBMISSION:-**

Bidders are required to pay Earnest Money Deposit (if applicable to them) through Online Payment modes i.e. **Net Banking, Debit Card, Credit Card and NEFT / RTGS** during Bid Preparation Stage.

If for any reason a bidder fails to make this payment through online modes, system won't allow the

bidder to complete Bid Preparation stage resulting in his/her elimination from Online Bidding Process.

Hence, it is strongly recommended to bidders to initiate this payment well in advance prior to expiry of Bid Preparation stage in order to avoid elimination from Online Bidding Process on grounds of failure to make this payment.

During the activity of Bid Preparation, bidders are required to upload all the documents of the technical bid by scanning the documents and uploading those in the PDF format. This apart, bidders will have to quote commercial offer for the work / item, for which bids are invited, in an online form made available to them in Commercial Envelope. This activity of Bid Preparation should be completed within the pre-scribed schedule given for bid preparation.

After Bid Preparation, the bidders are required to complete Bid Submission activity within pre-scribed schedule without which the tender will not be submitted.

Interested contractors / bidders will have to make online payment (using credit card/debit card/net banking/Cash Card) of Rs. 7500/- (inclusive of all taxes) per bid per tender to online service provider of e-Tendering system (SifyNexTenders) at the time of commencing Online Bid Submission stage of the tender schedule.

Non-payment of processing fees will result in non submission of the tender and Department will not be responsible if the tenderer is not able to submit their offer due to non- payment of processing fees to the e-tendering agency.

Detailed list of different modes of online payment to e-tendering service provider (**E-Payment Options**) has been provided under **E-Tendering Toolkit for Bidders** section of **<https://maharashtra.etenders.in>**

The date and time for online preparation followed by submission of envelopes shall strictly apply in all cases. The tenderers should ensure that their tender is prepared online before the expiry of the scheduled date and time and then submitted online before the expiry of the scheduled date and time. No delay on account of any cause will be entertained. Offers not submitted online will not be entertained.

If for any reason, any interested bidder fails to complete any of online stages during the complete tender cycle, department shall not be responsible for that and any grievance regarding that shall not be entertained.

Any amendment to the tender will be placed on sub portal of the Department, who have invited the bids, on e-tendering portal of the Govt. of Maharashtra. The tenderer will not be communicated separately regarding the amendment.

11) OPENING OF BID:-

The bids that are submitted online successfully shall be opened online as per date and time given in detailed tender schedule (if possible), through e-Tendering procedure only in the presence of bidders (if possible).

Bids shall be opened either in the presence of bidders or its duly authorized representatives. The bidder representatives who are present shall sign a register evidencing their attendance. Only one representative per applicant shall be permitted to be present at the time of opening the tender.

12) TECHNICAL ENVELOPE (T1):-

First of all, Technical Envelope of the tenderer will be opened online through e-Tendering procedure to verify its contents as per requirements.

At the time of opening of technical bid the tenderer should bring all the original documents that have been uploaded in the Online Technical Envelope (T1) so that same can be verified at the time of opening of technical bid.

If the tenderer fails to produce the original documents at the time of opening of technical bid then the decision of the committee taken on the basis of document uploaded will be final and binding on the tenderer.

If the various documents contained in this envelope do not meet the requirements, a note will be recorded accordingly by the tender opening authority and the said tenderer's Commercial Envelope will not be considered for further action but the same will be recorded. Decision of the tender opening authority shall be final in this regard.

The right to accept or reject any or all tenders in part or whole without assigning any reason thereof is reserved with Tender Opening Authority and his decision(s) on the matter will be final and binding to all.

The commercial bids shall not be opened till the completion of evaluation of technical bids.

The commercial Bids of only technically qualified Bidders as mentioned above will be opened.

13) COMMERCIAL ENVELOPE (C1):

This envelope shall be opened online as per the date and time given in detailed tender schedule (if possible), through e-Tendering procedure only.

14) Final List of Commercial Documents to be uploaded Online:

The following documents related to commercial envelope should be uploaded by the bidders in the form of PDF Files in the same order as mentioned below, on the e-Tendering website during **Online Bid Preparation** stage.

15 SUBMISSION OF TECHNICAL BID: COVER - 1

15.1 CRITERIA FOR MINIMUM ELIGIBILITY AND BID RESPONSIVENESS:

The Bidder shall fulfill all of the following Minimum Eligibility Criteria to participate in the bidding process. The Bidder should provide necessary documentary evidences of compliance as follows. Failure to do so for any of the Criteria mentioned below shall result in disqualification of the Bidder.

The Contractor shall submit experience certificate for execution of single renovation and refurbishment work of similar nature consisting of HVAC works-VRV system costing in the range of not less than Rs. 100 Lakhs to 200 lakhs (1 to 4Jobs – Maximum job reference shall earn maximum points in evaluation by system of grading) in any Government/ Semi Government Department / local bodies such as MIDC/MJP/CIDCO etc in last Three financial years signed by an officer not below the rank of Executive Engineer OR Similar works consisting of HVAC works-VRV system costing not less than Rs. 150 Lakhs in Private Offices in last three years signed by the Client not below the rank of Director.(Note: The weightage of costing for private works executed shall be considered 50% ie If the party has executed private work worth 100 lacs , then the same shall be considered as 50 lacs for the purpose of evaluation).

Professional Tax Registration Certificate for employees in E category for tenders without PQ and both i.e. 'E' & 'R' category for tenders where PQ is applicable.

Registration Certification with GST Deptt. under GST Act 2002, of Govt. of Maharashtra.

Income Tax Returns for last 3 years & Certified copy of PAN card

The photo copies duly attested, of the above certificates will have to be uploaded in Envelope No.1. Original shall be produced in the office of for verification on the day of opening of the tender as mentioned elsewhere

Goods & Service Tax Registration

15.2 TECHNICAL BID: EVALUATION CRITERIA & PROCESS

The Bidder shall necessarily submit in Cover 1 of the Bid Document, the Technical Bid detailing his credentials for executing this project and the highlights of the equipment & services offered by him with respect to scope of work defined in the Bid Document and the benefits that would accrue to MPCB. The Screening Committee appointed for this purpose will do this evaluation. The Technical Bid will contain all the information required to evaluate the bidder's suitability to MPCB for the purpose of this project.

The guidelines for evaluation have been designed to facilitate the objective evaluation of the Technical Bid submitted by the bidder. The information furnished by the bidders in the technical bid shall be the basis for this evaluation. In case any of the information is not made available, the Committee will assign zero (0) marks to that item.

While evaluating the Technical Bid, MPCB reserves the right to seek clarifications from the Bidders. Bidders shall be required to furnish such clarifications in a timely manner.

MPCB also reserves the right to seek additions, modifications and other changes to the submitted Bid. Bidders shall be required to furnish such additions / modifications / other changes in a timely manner.

15.2.1 Evaluation of Technical Bid

The technical evaluation of the bidders will be done based on the criteria and marking system as specified as follows:

Sr. No	Criteria	Graded Marks	Max. Marks	Testimonial to be presented
1	HVAC jobs- VRV system executed during last 3 years for Government/Semi Government and Private offices to achieve comfort cooling(Note: The weightage of value of works and HP of VRV system executed shall be considered at 50% for Private offices)			
a	HVAC jobs executed			
i	HVAC works-VRV system for office building (value bet. Rs. 1 crore to 2 crore in each case)		15	Copies of the orders executed in the designated period
	1 to 2 nos.	5		
	3 to 4 nos	10		
	Over 4 nos	15		
ii	HVAC works for offices (value of job executed in HP)		15	
	100HP to 150HP.	5		
	150HP to 200HP	10		
	200HP and above	15		
2	Value of jobs currently under execution			
a	HVAC work : (Value work should be above 1 crore in each case)		10	Copies of Work order
	1 to 2 nos.	5		
	3 to 4 nos	7.5		
	Over 4 nos	10		
3	Establishment of the firm (Max. 10 Marks)		10	Documentary evidence to be attached
	1 to 3 years	5		
	4 to 6 years	7.5		
	7 to 10 years	10		

Sr. No	Criteria	Graded Marks	Max. Marks	Testimonial to be presented
4	Solvency certificate			Certificate from Bank
	More than Rs. 35 Lakhs	10	10	
5	Annual turnover of during last three years (information must be supported with latest income tax certificate / Audited balance sheets)		10	Certificate from CA
a	Turnover of 100 to 200 lacs	5		
b	Turnover of more than 200 to 400 lacs	7.5		
c	Turnover of more than 400 to 600 lacs	10		
6	Permanent employee strength of the party(should be working in the firm from past 2 years)		10	Salary register/ Bank payment statement
	Upto 20 Nos- Maximum of 15 labourers and 5 Engineering/Administration staff	5		
	Above 20 Nos- Minimum of 15 labourers and 5 Engineering/Administration staff	10		
7	Technical presentation by the prospective Bidder	20	20	A presentation has to be made by the Bidder to MPCB/Consultant/Architect show casing the technical details of the respective make of VRV system selected by the Bidder for supply. Supporting test certificates, catalogues and brochures to be submitted high lighting the technical aspects and below mentioned required points.

The Technical presentation should cover the technical aspects of the VRV system proposed by the Bidders, superiority of the VRV system proposed by the Bidder over other makes, energy efficient features of the system etc. . Supporting test certificates, catalogues and brochures to be submitted highlighting the technical aspects and below mentioned required points.

The Technical presentation should cover the below mentioned points:

Sr No	Technical requirement
1	Coefficient of Performance -COP @ 100% load at ARI conditions (35deg C outside and 27 deg C inside) of VRF machines
a	48HP
b	20HP
c	10HP
d	8HP
e	6HP
2	Indoor Unit Maintenance
	In case of malfunction / power failure on any indoor unit the remaining indoor units and its corresponding outdoor unit should continue to perform without total system break down.
3	Outdoor Units
	All top discharge Outdoor units (for capacity 20 HP and Above) should have minimum of 2 Modules of ODU for emergency backup operation .
4	Any other additional technically superior features other than above mentioned ones.
5	Aesthetics of the products (Indoor units/Control system)

Testimonials, test certificates, catalogues, brochures etc. supporting the above technical points to be submitted for verification and validation.

Each responsive Bid will be attributed a technical score denoted by symbol “S(t)” .

The technical score shall be out of a maximum of 100 marks.

If in MPCB’s opinion, the Technical Bid does not meet the minimum technical specifications & service requirements or is otherwise materially deficient / inconsistent in any other aspect; the Bid shall be declared Technically Evaluated & Non-Responsive and shall not be considered for further evaluation.

After technical evaluation, MPCB will rank the bidders in descending order of their technical scores with the top ranked bidder having the highest technical score. If any bidder is found to be technically inadequate to the requirements of MPCB, i.e. if the technical marks are lower than 70, then that bidder’s bid would be deemed non-responsive for further evaluation and would not be considered further in the bidding process.

If in case, after technical evaluation, only one bidder is found to be responsive & eligible, i.e. if the technical marks of only one bidder are more than or equal to 80, the Board will decide an acceptable price band and open Price Bid of the only eligible bidder. If the price bid of the bidder falls within the price band specified by the Board, the bidder will be declared as the SUCCESSFUL BIDDER.

16.0 EVALUATION OF PRICE BID: COVER 2

16.1 PRICE BID PARAMETERS

Bidders are required to offer their best prices in terms of cost of the work including all taxes and levies as on the last date of submission of bid (detailed break-up of all applicable taxes and levies over and above the quoted price should be mentioned)

16.2 EVALUATION OF PRICE BIDS AND RANKING

The price bids of only technically successful bidders whose technical Bids have been awarded 70 or more marks by the Committee will be opened.

The evaluation will carried out if Price bids are complete and computationally correct. For the purpose of evaluation, only the Grand Total Price Z arrived at by addition of Sub Total X & Sub Total- Y will be considered. For the purpose of arriving at Grand Total Price Z, the locations to be covered under implementation priority -1 will only be considered. Additional and/or optional charges if any will not be considered for the purpose of price bid evaluation. Lowest Price bid (denoted by symbol “P (m)”) will be allotted a Price score of 100 marks. The Price score will be denoted by the symbol “S (p)”. The Price score of other bidders will be computed by measuring the respective Price bids against the lowest bid.

These Price scores will be computed as: $S(p) = 100 * (P(m) / P)$ where P is the Price bid of the bidder whose Price score is being calculated. The Price score shall be out of a maximum of 100 marks.

16.3 COMPUTING THE FINAL SCORE

The composite score is a weighted average of the Technical and Price Scores. The weightages of the Technical vis-à-vis the Price score is 0.50 of the Technical score and 0.50 of the Price score. The composite score (S) will be derived using following formula:

$$S = (S (t) * 0.50) + (S (p) * 0.50).$$

Thus the composite score shall be out of a maximum of 100 marks.

The responsive bidders will be ranked in descending order according to the composite score as calculated based on the above formula. The highest-ranking vendor as per the composite score will be selected. However in order to ensure that MPCB gets best solution in technical terms, MPCB reserves the right to enter into negotiation with bidder having highest technical score and place order with this bidder at a suitable price.

16.4 AWARD CRITERIA

Final choice of MPCB to award this project to a suitable bidder to execute this project shall be made on the basis of composite scoring arrived as per formula mentioned above.

16.5 NOTIFICATION OF AWARD

MPCB will notify the successful bidder in writing that his bid has been accepted. Upon the successful bidder's furnishing of performance security, MPCB will promptly notify each unsuccessful bidder and will discharge their bid security.

GENERAL CONDITIONS OF CONTRACT (GCC)

1. DEFINITIONS AND INTERPRETATIONS:

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

- A. The client / Employer shall mean **Maharashtra Pollution Control Board (MPCB)** having its office at Kalpataru Point, Sion Circle – East, Mumbai – 400022 Or any other place as modified subsequently and shall include its Manager or other officers authorized to deal with these presents are concerned on his behalf posted in the any of the Offices of Client and shall also include client's successors and assignees. Wherever the words "Client", "Employer" appear, these shall be deemed to mean MPCB and these words shall convey the same meaning.
- B. The Tender shall mean the tender including addendum and drawings submitted by the tendered for acceptance by Employer.
- C. The **Project in-charge** shall mean the Head of the Project of the employer, or his successor in office or authorized representative nominated by the employer.
- D. The **Contractor** shall mean the person or persons, firm or company whose tender has been accepted by Client and includes the Contractor's legal representatives, its successors and permitted assigns.
- E. The **Sub-contractor** shall mean any person or firm or company (other than the Contractor) to whom any part of the work has been entrusted by the Contractor, with the written consent of the Consultants & / or the legal representatives, successors and permitted assigns of such person, firm or company.
- F. The **Architect / Consultants** shall mean M/s. ARK Designs Pvt. Ltd. or any other consultant / the person nominated by the employer from time to time and shall include those who are expressly authorized by the client to act for and on his behalf for all functions pertaining to operation of this Contract.
- G. **Consultant's Representative** shall mean any Engineer or Architect of the Consultants appointed from time to time to perform the duties set forth in the Tender Document whose authority shall be notified in writing to the Contractor.
- H. The Works shall mean and include all works to be executed in accordance with the Contract or part there of as the case may be and shall include all extras, addition, altered, or substituted works as required for the purpose of the Contract.
- I. The Contract shall mean the agreement between the client and the Contractor for the execution of the works including there in all documents such as the invitation to Tender, Instructions to Tenders, General and Special Conditions of Contract, Specifications, General Requirements, addendum, Time Schedule of Completion of Job, Drawings, Letter of Intent awarding the work, Agreed Variations, if any etc.

- J. The Contract "**Document**" shall mean collectively the Tender Documents, addendum if any, Designs, Drawings, Specifications, agreed variations if any and other documents constituting the E-Tender and acceptance thereof.
- K. **Construction Plant** shall mean all appliances or things of whatsoever nature required in or about the execution, completion or maintenance of the works or temporary works (as hereinafter defined) but does not include materials or other things intended to form or forming part of the permanent work.
- L. **Temporary Works** shall mean all temporary works of every kind required in or about the execution, completion or maintenance of the works.
- M. **Specifications** shall mean all directions, various technical specification, provisions and requirements attached to the Contract, which pertain to the method and manner of performing the work or works to the quantities and qualities of the work or works and the materials to be furnished under the contract for the work or works, as may be amplified or modified by the client or the Consultants during the performance of Contract in order to provide for the unforeseen conditions or in the best interest of the work or works. It shall also include the latest edition including all addenda/corrigenda of relevant Indian Standard Specifications and other relevant codes.
- N. **Plans** shall mean all maps, sketches and layouts as are incorporated in the Contract in order to define broadly the scope and specifications of the work or works and all reproductions thereof.
- O. **Drawings** shall include maps, plans and tracings or prints thereof with any modifications approved in writing by the Consultants/ Architects and such other drawings as may, from time to time, be furnished or approved in writing by the Consultants.
- P. **Site** shall mean the lands, buildings and other places on, under, in or through which the permanent works are to be carried out and any other lands or places provided by the client for the purpose of the Contract.
- Q. **Notice in writing or written notice** shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been noticed) by registered post to the last known private or business address or registered office of the addresses and shall be deemed to have been received in the ordinary course of post it would have been delivered.
- R. The **Completion Certificate** in relation to the work shall mean the certificate to be issued by the Consultants /Architects and countersigned by the Representative of client, when the works have been completed to their satisfaction.
- S. The **Final Completion Certificate or No dues certificate** in relation to the work shall mean the certificate regarding the satisfactory compliance of the various provisions of the Contract to be issued by the Consultants/ and the Architects countersigned by the representative of client, after the period of defects liability is over. (Defect Liability period is 12 months from the date of completion).
- T. **Approved** shall mean approved in writing including subsequent written confirmation of previous verbal approval.

2. Employer's decision regarding interpretation of drawings etc., shall be final

In the event of there being any discrepancy, ambiguity or omission or any error or difference of opinion regarding the interpretation or granting of any specification designs, drawings, description or instructions relating to the works to be executed the decision of the Project-in-charge thereon shall be final and binding on the Contractors and the Contractors shall not be entitled to claim any additional or extra payment or claim any other benefit or advantage for the same.

3. Liability of Contractors:

In any case in which any of the power conferred upon Employer shall have become exercisable and the same shall not have been exercised, the non exercisable portion thereof shall not constitute a waiver of any of the conditions thereof and such powers shall notwithstanding the same be exercisable in the event of future case of default by the Contractors and the liabilities of the Contractors shall remain unaffected thereby.

4. Completion of Work:

On completion of the works, the Contractors shall be issued the Completion Certificate jointly by the authorized representative of Client and the Consultants, but no such certificate shall be given nor shall the works be considered to be completed until the Contractors shall have removed from the premises in which the work shall have been executed all scaffoldings, surplus materials and rubbish and shall have cleaned of all dirt from such works or other parts of any building in or upon which the work have been executed.

If the Contractors shall fail to comply with the requirement of this clause as to removal of scaffolding, surplus materials and rubbish and cleaning of dirt on or before the date fixed for the completion of the works, the Client may at the expense of the Contractors remove such scaffoldings, surplus materials and rubbish and dispose of the same as it thinks fit and clean of such dirt as aforesaid, and the Contractors shall forthwith pay the amount of all expenses so incurred and shall have no claim in respect of any such scaffolding or surplus materials aforesaid, except for any sum actually realized by the sale thereof.

5. Extension of time:

If the Contractors shall desire an extension of time for completion of the work on the ground of his having been unavoidably hindered in its execution or on any other ground he shall apply in writing to the Client through the Consultants within 15 days of the schedule date of completion on account of which he desires such extensions as aforesaid and the Client shall if in his opinion (which shall be final) finds reasonable grounds, authorizes such extension of time if any as may deem in his opinion necessary and proper. Any extension of time even if granted shall be without prejudice to Client's right to recover loss or damages suffered from delay in waiver thereof. Any application for extension of time made by the Contractor after the expiry of due date for completion of the work as per Terms of Contract and the Work Order shall not be entertained or be deemed to be valid. The contract

shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not. Liquidated damages at the rates specified in Appendix to form of tender shall be levied on the Contractor for the period of delays attributed to him.

6. Contractors to supply plant, ladders, scaffoldings etc:

The Contractors shall supply at their own cost materials, plant, tools, appliance, implements, ladders cordage, tackle, scaffoldings and temporary works requisite or proper for the execution of the work.

7. Execution of additional work:

The Contractors shall execute the whole and every part of the work in the most substantial and workman like manner both as regards materials and in every other respect in strict accordance with the specifications. The Contractors shall also conform exactly, fully and faithfully, to the designs, drawings and instructions in writing relating to the work. Any additional work which the Contractors may be directed to do as the part of the original work shall be carried out by the Contractors on the same basis in all respects on which they have agreed to do the main work at the same rates as are specified in the Tender for the main work provided that if any additional or altered work includes any class of work for which no rate is specified in this Contract, then such class of work shall be carried out at the rate mutually agreed upon between the Client/Consultants and the Contractors having regard to the nature of the said work and the rates of the main work. The rate of such item shall be derived on the basis of rate analysis considering prevailing market rates for labour and material and as per CPWD method. The Contractors shall however, have no claim or compensation by reason of any alternations having been made in the original specification etc., which may entail any curtailment of the work as originally contemplated.

8. No compensation for alternation in or reconstruction of work to be carried out:

If at any time after the commencement of the work the Consultants shall, for any reason whatsoever, not require the whole or any part of the work as specified in the Tender to be carried out, the Consultants shall give notice in writing thereof to the Contractors who shall have no claim to any payment of compensation whatsoever on account of any profit or advantages which he may have derived from the execution of the work in full but which he did not derive in consequence of the full amount of work not having been carried out and having been cancelled by the Client. Neither shall they have any claim for compensation by reason of any alterations having been made in the original specifications, drawings, designs and instructions which shall be involve any curtailment of the work as originally contemplated.

9. Work to be done to the satisfaction of the Consultants and Client:

The Contractors shall carry out and complete the work in accordance with this Contract and the directions, in every respect, to the entire satisfaction of the consultants and Client. If the Contractors shall find any discrepancy in or divergence between the Contract, Drawing and/or Schedule of quantities, they shall have to apply in writing for any necessary instructions from the Consultants/client in relation thereto.

10. Defective work and materials:

If at any time before the Security Deposit is refunded to the Contractors it shall appear to Client or the Consultants that any work has been executed with unsound, improper or unskillful workmanship or with materials of inferior quality or not otherwise in accordance with the Contract, it shall be lawful for the Client or the Consultants to intimate this fact in writing to Contractors either in the site order book or by letter thereupon. The Contractors shall be bound forthwith to rectify or remove and reconstruct the work so specified in whole or in part and provide with proper and suitable materials at their own charge and cost to the entire satisfaction of the Consultants. In the event of the Contractors failing to do so within a period to be specified by the Consultants. The Contractors shall be liable to pay compensation at the rate of one percent of work order value per day, not exceeding ten days of the value of the Whole Work Order. In the case of any such failure the Consultants may rectify or remove and re-execute the work or remove and replace with others the materials or articles complained of, as the case may be, at the risk and expense in all respects of the Contractors.

11. Client not to be liable for temporary suspension in work:

The Contractors shall on being so directed by the Consultants postpone any work to be executed under this contract and/or suspended further progress of all or any part of the work and shall not resume execution of the same until they receive written orders from the Consultants to proceed. The Contractors shall not be entitled to claim any payment from Client for damages arising from the postponement or suspension of such work.

12. Measurement of work to be covered:

The Contractors shall give at least 15 days notice in writing to the Consultants and their authorized site representatives / Client before covering or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof taken before the said work is so covered or placed beyond the reach of measurement. Without such notice having been given or consent obtained the same shall be uncovered at the Contractors expense, for taking such measurements and dimensions. In default thereof Client shall not make any payment or allowance for such work or the materials with which the same is executed.

13 Measurement / Assessment of work:

All work to be done under this Contract shall be in accordance with the mode of measurement mentioned in the tender. Any item not mentioned in the tender shall be measured as per the procedure laid down in relevant ISI standards (Bureau of Indian Standards - latest edition). Detailed measurements of works carried out shall be taken jointly by the representatives of the client / Consultants, in the presence of the Contractor's representative and final payment will be made as per measured quantities and not as per the tender quantities.

14. Defect Liability Period:

The Contractors has to maintain the work for 12 months after the work has been completed (the date of completion shall be one as recorded in virtual completion Certificate) the Contractors shall maintain and uphold the same in an efficient condition and shall be bound to

remove any omission or defects discovered or appearing in the work during such time as directed by the Consultants. The Security Deposit will be released to the Contractors only after the expiry of the aforesaid period and subject to it being ascertained that there is no defective work or material requiring repairs or maintenance under any conditions herein provided.

If the Contractors or their work people or servants shall break, deface, injure or destroy any part of the building in which they may be working or any building road, kerbs, fence enclosure, water pipes, cables drains, electric or telephone post or the work wires, trees, grass land or cultivated ground contiguous to the premises on which the work or any part of it is being executed or if any damage shall happen to the work, while in progress, from any cause whatsoever, or any imperfection become apparent in it within 24 months after completion date of entire works covered by the works order as indicated in the Final Measurement Certificate, the Contractors shall make the same good at their own expenses or, in default, the Consultants may cause to be made good through alternative means and deduct the expense from any sums that may be then or at any time thereafter may become due to the Contractors, balance Security Deposit / BG for RMD of the Contractors shall not be refunded before the expiry of twenty four months from the completion date indicated in the Completion Certificate.

15. Prevention of fire and insurance of works against fire etc.

The Contractors shall take all measures for prevention of fire to the proposed works building and any other buildings or other structures adjacent there to. Should any injury irrespective of whether it results in death or not to any life or damage to the property occur as a result of Contractors negligence to observe the preventive measures the Contractors shall be held responsible for the consequences thereof. If as a result of any fire the work under construction is in any event lost, damaged or destroyed, then irrespective of whether the Client may have made payment in respect of the said work or not, the Client will be entitled to claim compensation, reimbursement or further amount by reason of such reinstatement to the extent of the insurance money payable under the policy or up to a reasonable extent the cost of such reinstatement, if the cost exceeds the quantum of insurance money payable under the policy as may be considered reasonable by the Consultants.

The Contractors will be required to take out without claim to any extra a proper and effective insurance policy CAR POLICY from any nationalized Insurance Company approved by the Client fully insuring against loss or damage by fire, storm tempest, lightning flood, earthquake, aircraft or anything dropped there from, aerial objects, riots and civil commotion or other risks as indicated by the employer and it's satisfaction for:

(a) CAR POLICY for 125% of the Contract Value. (Contract Value plus 25% of the Contract Value).

(b) Work man compensation policy – 100% of contract value.

(c) Third party Liability - Rs. 10.00 Lakhs

Should the Contractor fail to take out such insurance cover, the Client may itself insure against the said risks and deduct a sum equivalent to the amount paid by the Client towards premium

from any moneys due to or become due to the Contractor. The benefit of any such insurance policy shall be assigned in favor of the Client and such assignment shall be duly registered with said Insurance Company. The Contractor agree that the insurance moneys payable under such insurance policy shall be utilized by Client for reinstating the work affected by such fire or other risk.

The Contractor shall indemnify Client against all claims made against Client by any member of the public or other third party in respect of the works or in consequence thereof and shall at his own expense arrange to effect and maintain until the Completion of the works, a policy of Insurance with an approved office, in the joint names of Client and the Contractor (clients name will appear 1st of the policies) against such risks and deposit such policy or policies with the Client from time to time. All the policies shall be valid till the date of completion and handing over of the work to the Employer.

16. Transfer or assignment of Contract:

This contract shall not be assigned or transferred or sublet in any manner whatsoever without the previous written approval of Client. If the Contractors shall assign or transfer or sublet or attempt to do so, Client may by notice in writing rescind the Contract and in that event the security Deposit of the Contractors shall stand forfeited and be absolutely at the disposal of the Client and the same consequences shall ensue as if this Contract had been rescinded under clause 24 hereof and in addition thereto the Contractors shall not be entitled to recover or to be paid for any work thereto performed under this Contract.

17. Insolvency attempts to bribe etc.:

If the Contractors become insolvent or commence any insolvency proceedings or make any compensation with their creditors or attempt to do so, or if any bribe, gratuity, gift, loan requisites reward or advantage whether pecuniary or otherwise, shall either directly or indirectly be given, promised or offered by the Contractors or any of their servants or agents to any officer or persons in the employment of Client 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, Client on behalf of the Chairman shall have the power to adopt any of the courses specified in clause 24 shown as he may deem best suited to the interest of the Bank and in the event of any of these courses being adopted the consequences specified in the said clause 24 shall ensue.

18. Change in Constitution:

Where the Contractors are a Partnership Firm, the previous approval in writing of Client shall be obtained before any change is made in the constitution of the firm. Where the Contractor is an individual or a Hindu Undivided Family business concern, such approval as aforesaid shall likewise be obtained before the Contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the work hereby undertaken by the Contractors. If previous approval as aforesaid is not obtained, the Contractors shall be deemed to have been assigned in contravention of clause mention in contract hereof and the same action may be taken and the same consequence shall ensue as provided in the said Clause in

works contract. The Contractors shall hand over to Client a certified true copy of the Deed of Partnership, which is entered into by the Contractor or to with Client as evidence of the names of the partners and of their shares in the said partnership. In the event of the Contractors being a Joint Hindu Undivided Family business concern the Contractor shall also hand over the full names, address and ages of the co-partners or members concerned and duly satisfy Client that such Joint Hindu Undivided Family has authority and power in law to enter into the said Contract. These Documents and particulars aforesaid shall be handed over by the Contractors to Client along with the quotations and offer placed by the Contractors in response to the notice inviting tenders.

19. Engagement of Apprentices:

The Contractor shall during the currency of the Contract when called upon by the Consultants engage and also ensure engagement by subcontractors and other employed by the Contractor in connection with the works, such number of apprentices in the categories mentioned in the Act 1961 and the Rules made there under and shall be responsible for all obligations of the employer under or as required under the said Act.

20. Workmen's Compensation liability:

The Contractors shall be responsible for and pay any compensation as specified in the Workmen's Compensation Act, 1923 and 1933 and amendments thereto for injuries caused to the workmen. The Contractor shall be responsible for and pay the expenses for providing medical treatment to any workmen who may suffer any bodily injury as a result of any accident. The Contractors shall be liable for all payments to their staff, labourers and workmen employed for the performance or carrying out the said work and the Client shall in no event be liable or responsible for any payment and the Contractors shall keep Client indemnified against the same and from all proceedings in respect thereof. The Contractors shall at his own expense effect and maintain during the currency of the Contract, a policy of Insurance with an approved office, in the joint names of Client and the Contractor against risks under the Workmen's compensation Act or any other statute in force during the currency this Contract and Deposit such policy or policies with Client from time to time.

- 21.** In every case in which by virtue of the provisions of Section 12, Subsection (1) of the Workmen's Compensation Act, 1923 Client is obliged to pay compensation to a workmen employed by the Contractors in execution of the works, Client will recover from the Contractors the amount of the compensation under subsection (2) of section 12 of the said Act and Client 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 the Client to the Contractors, whether under this Contract or otherwise. Client shall not be bound to contest any claim made against it under sub-section (1) of Section 12 of the said Act, except on the written request of the Contractors and upon their giving to Client full security for all costs for which Client might become liable in consequence of contesting such claim. The contractor shall also submit an Indemnity Bond to the client on the approved proforma regarding workman compensation.

22. The Consultants may require the Contractors to dismiss or remove from the site of the work any person or persons in the Contractors' employment who in the opinion of the Consultants may be incompetent or misconduct himself or themselves and the Contractors shall forthwith comply with such requirements

23. Indemnity:

The Contractors shall assume all liability for and give to Client a complete indemnity against all actions, suits, proceedings, claim or demands arising out of or in connection with the carrying out of the work by or from any person whomsoever. In this connection the contractor shall submit an Indemnity Bond on the proforma approved by employer covering Indemnity for all claims or demands including workman compensation.

24. Determination of contract on account of abandonment of work:

The Consultants may without prejudice to the rights of Client against the Contractors mentioned in clause of the Agreement or in respect of any delay or inferior workmanship or otherwise or to any claim for damages in respect of any breach of Contract and without prejudice to any rights or remedies under any of the provisions of the Contract or otherwise and whether the date for completion of the works has or has not expired by a notice in writing absolutely, determine the Contract in any of the following cases:

- (i) If the Contractor having been given by the Consultants 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 and shall omit to comply with the requirements of such notice for a period of seven days of such notice thereafter or if the Contractor shall delay or suspend the execution of the work with the judgment of the Consultants (which shall be final and binding) they will be unable to secure completion of the work by the date for completion or he has already failed to complete the work by that date.
- (ii) 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 liquidator on behalf of a creditor shall be appointed or if circumstances shall be appointed or if circumstances shall arise which entitle the Court to make a winding up order.
- (iii) If the Contractor commits breach of any of the Terms and Conditions of this Contract.
- (iv) If the Contractors commit breach of any acts mentioned in clauses 16 to 19 hereof.

When the Contractor have made themselves liable for action under any of aforesaid cases or in any case in which under any Conditions of this Contract the Contractors shall have rendered themselves to forfeiture of their Security Deposit or in cases of abandonment of work by the Contractors for any cause whatsoever, the Consultants on behalf of Client shall have a power to adopt any of the following courses as Client may deem best suited to their own manufacture:

- (a) To rescind the Contract (of which recession notice in writing to the Contractor under the hand of the Consultants shall be conclusive evidence) and in that case the Security Deposit of the Contractors shall stand forfeited and be absolutely at the disposal of Client.
- (b) To employ labour and to get supply of materials to carry out the work or any parts of works, debiting the Contractors with the cost of the labour and the price of the materials as to correctness of which costs and price of the materials as per the certificate of the Consultants which shall be final and conclusive against the Contractors.
- (c) To order that the work of the Contractors be measured by and to take such part thereof as shall be unexecuted out of their hands and to give it to another Contractor to complete, in which case any expenses which may be incurred in excess of the sum which would have been payable to the original Contractors if the whole work had been executed by them (as to the amount of which excess of expense, the certificate in writing of the Consultants shall be final conclusive) shall be borne and paid by the original Contractors and shall be deducted from any money due to them by Client under the contract or otherwise or from the Security Deposit or a sufficient part thereof.

In the event of any one or more of the above courses being adopted by the Consultants, Contractors shall have no claim to compensation for any loss sustained by them by reason of their having purchased or procured any materials or entered into any engagements or made any advance on account or with a view to the execution of the works or the performance of Contract. And in case action is taken under any of the provisions aforesaid, the Contractor shall not be entitled to recover or be paid any sum for any work actually performed under this Contract unless and until the Consultants has certified in writing the performance of such work value payable in respect thereof and the Contractors shall be entitled to be paid the value so certified subject to the claims if any of Client against the Contractors.

25. Termination of contract in the event of death of Contractor:

Without prejudice to any of the rights or remedies under this Contract, if the Contractor being an individual dies, the Consultants shall have the option to terminate the contract without any liability on the Client for compensation or damages to the Contractors. Measurement of work done till the death of the Contractor will be recorded by Client which shall be final and binding on the legal representative of the Contractor.

26. Substitution of Contractors:

Client may if desired may take possession of all or any of the machines, tools, plants, materials and stores in or upon the works or the site thereof or belonging to the Contractors or procured by them and intended to be used for the execution of the works or any part thereof by paying or allowing for the same an amount at the Contract rates or in the case of Contract Rates not being applicable at current market rates to be certified by the Consultants and the certificate thereof shall be final. The Contractor shall not have any claim on the materials that have not been actually brought on site of work irrespective of the fact that the Contractor may have purchased the same for use under this Contract. Client shall have also full power by giving notice in writing by the Consultants or through the Consultants to the Contractors or

any of their representatives or authorized agents to require them to remove such machines, tools, plants, materials and stores from the premises within time to be specified in such notice and in the event of the Contractor failing to comply with any such requisition the Client may remove them at the Contractor's expenses or sell them by auction or private sale at the risk and on account of the Contractors in all respects and the certificates of the Consultant as to the expenses of any such removal and the amount of proceeds and expense of any such sale shall be final and conclusive.

27. Any breach or violation or non-observance of any of the Terms and Conditions and provisions contained in the agreement or the General Terms or otherwise in relation to the Contract or Works Order shall be deemed and considered as a breach of the entire Contract and entitle the Client to exercise and enforce the various rights and powers conferred on Client under the Contract.

28. Infringement of Patents:

The Contractor shall assume all liability and fully indemnify and save harmless, Client, their successors or assigns from and against all claims, suits, proceedings, damages, losses, expenses, fees, any royalties, arising from any infringement, real or claimed, of any patent on any articles, machine manufacture, structure, composition, arrangement, improvement, design, device, methods or progress embodied or used in the performance of this contract. The Client and their successors and assigns will give written notice of all such claims and patent infringement suits or proceedings instituted against them to the Contractor who will defend the same and will give the Contractor authority, assistance and all available information to enable them to do so.

29. Escalation :

No escalation is allowed /permitted in quoted rates in the tender the same should be valid at least for completion of the project from the date of awarding the job to the successful contractor.

29A.Contract Agreement:

Contractor shall execute the contract agreement on the proforma given in Annexure I to this document immediately after issue of work order. Employer shall not make any payment to the Contractor before execution of contract agreement..

30. Initial Security Deposit

The Contractors shall within seven days of issue of acceptance letter (LOI) or before the execution of this Agreement deposit with the client a sum of equivalent to 2.5 % of accepted contract value by demand draft in favour of MPCB. The client shall not be liable to pay any interest to the Contractors on the amount of such Security Deposit and shall hold this amount as a guarantee for timely and proper performance of the said work by the Contractors. The said amount shall be liable for forfeiture in addition to all other rights and remedies which are available to the client under the said General Conditions of Contract.

31. Retention Money Deposit (RMD)

An amount equivalent to 10% of the value of each interim bill shall be deducted from interim bills of the contractor towards RMD, subject to a maximum limit of 10% of contract value inclusive of Initial Security Deposit.

32. Appropriation of Security Deposits towards The client's Dues.

All sums by way of damages, Compensations or otherwise howsoever and all other sums of money payable by the Contractors to The client under the terms of this Agreement or the said Work Order may be deducted from the cash amount of the Security Deposit or be realized from the Demand Draft of the Initial Security Deposit lying with The client under this Agreement or from any sums which may be due or may become payable by the client to the Contractors on any account whatsoever and in the event of the Contractor's Security Deposit being reduced by reason of any such deduction or as aforesaid, the Contractors shall, within 15 days thereafter, make good in cash or DD / Government securities approved by The client and endorsed as aforesaid any sum or sums which may have been deducted from, or raised by the DD, cash or Security Deposit or any part thereof. Subject to the other provisions of this Agreement and the General Conditions of Contract relating to the right of the client to retain and deduct any amount that may be due to The client on any Payment for Work done account whatsoever the 50% of total Security Deposit made by the Contractors shall be refunded after the completion of the work in all respects. This date will be the same as indicated in the completion Certificate. Balance 50% of SD (i.e 5% of contract value) retained in cash shall be refunded after completion of defects liability period of 12 months and on issue of final completion certificate. The client on the request of Contractor may release this balance SD (RMD) of 5% against Demand Draft from a nationalized Bank valid for defects liability period of 12 months on the proforma approved by the Client.

33. The client will pay to the Contractors in respect of the said work mentioned in the said contract document on the basis of the rates specified therein at the times and in the manner specified in the said Work Order and/or in the General Conditions of Contract.

34. Manner and period in which the work is to be carried out

The Contractors agree and undertake to duly perform and execute and complete the said work set forth in the contract documents and the subsequent amendments, if any, issued from time to time thereto in the manner authorized by and under the General Conditions of Contract. The said work shall throughout the stipulated period of the Contract be proceeded with all due diligence, promptness, care and accuracy and in a workman like manner to the satisfaction of Consultants and The client and would be completed in accordance with the said Specifications, Designs, Drawings, Schedule of quantities and instructions on or before the due date mentioned in the said Contract agreement, time being the essence of the Contract on the part of the Contractors.

35. Compensation for delay for unfinished work

Without prejudice to the rights and remedies of the client against the Contractors under any of the provisions of this agreement and the General Conditions of Contract or the said

Work Order or otherwise if the Contractors commit any default or breach of the Terms and Conditions of this Agreement and/or the General Conditions of the Contract and/or the said Work Order or fail in the due performance thereof within the time fixed by the Contract (which is the essence of the Contract) and do not complete the entire work on the stipulated due date, The client shall be entitled to recover from the Contractors and the Contractors hereby agree to be bound to pay to the client as and by way of Compensation or liquidated damages, an amount calculated at the rate of 1% (1 percent) of the contract value per week or part thereof subject to maximum 10 % (Ten percent) of the contract value for delay beyond stipulated date of completion as mentioned in the Contract / Work Order and both the parties hereby confirm, record and declare that the amount of compensation or liquidated damages fixed as above represent the genuine, fair and reasonable pre-estimate thereof considering all the facts and circumstances as the loss and damages that would be likely suffered by The client on account thereof. It is further hereby agreed and confirmed that the sum payable by the Contractors under this provision shall be considered as reasonable compensation irrespective of whether actual loss or damage has or has not been sustained and The client would not be required to render any proof in support thereof. Liquidated damages / compensation for delay shall not be recovered for the delays which are not attributed to the Contractor and client has authorized extension of time for such delays.

It is further specifically declared that any extension of time granted by The client shall not amount to abandonment, waiver against The client of its claim for compensation or liquidated damages under this provision and the acceptance of delivery of any item of the work by The client will not be deemed to constitute any waiver of The client's right nor shall be deemed to be executed completely only when full and final measurements duly certified by The client and the Consultants have been made and till then the Contractors shall not be deemed to be discharged or absolved from all their obligations in terms of the Contract including specifically the provision relating to the payment of reasonable compensation and damages as aforesaid. It is specifically agreed and declared that in the event of the Contractors not completing the work even after the stipulated date, the aforesaid provision shall not be deemed to prevent or stop The client from exercising any other rights or remedies available to The client against the Contractors including the completion of the work through any other Contractor or agency or otherwise however at the risk and the account of Contractors and The client shall be entitled to recover and the Contractors shall bound to pay all such losses and damages to The client rights and remedies which are available to The client under clause of works contract of the General Conditions of the Works Contract.

36. Supervision of work

In addition to adequate number of technical supervisory staff, the Contractors shall keep constantly at the work site a competent Engineer or such other competent person as may be required to set the work. Any direction or explanation given by The client's or the Consultant's authorized representative to such person in writing shall be held to have been given to the Contractors.

37. Inspection of Work

Site engineers deputed by the consultant shall supervise the work constantly and inspection will be made periodically during the progress of the work by the representative / representatives of The client as well as by the senior representative of the Consultants and all materials and workmanship must be of acceptable quality and efficiency to the said representatives. The decision of the Consultants in this respect will however be final and binding on the Contractors. If the progress of any particular portion of the work is unsatisfactory, The client shall notwithstanding the fact that the general progress of the work is satisfactory, be entitled to take action after giving the Contractors 15 days notice in writing and the Contractors will have no claim for compensation for any loss sustained by them owing to such action. All works under or executed in pursuance of this contract shall at all times be open to the inspection and supervision of The client and their authorized representatives and agents as well as the Consultants or their representatives.

38. (a) It is specifically and distinctly understood and agreed to between The client and Contractors that the Contractors shall have no right, title or interest in the site made available by The client for execution of the works or in the building structures or works executed on the said site by the Contractors or in the goods, articles, materials, etc., brought on the said site (unless the same specifically belongs to the Contractors) and the Contractors shall not have or deemed to have any lien whatsoever charge for unpaid bills nor will be entitled to assume or retain possession or control of the site or structures and The client shall have an absolute and unfettered right to take full possession of the site and to remove the Contractors, their servants, agents and materials belonging to the Contractors and lying on the site.

(b) The Contractors shall be allowed to enter upon the site for execution of the works only as a licensee and shall not have any claim, right, title or interest in the site or the structures erected thereon and The client shall be entitled for such license at any time without assigning any reason.

39. Measurement of work

As soon as the item of work is completed, notice thereof should be given forthwith by the Contractors to the Consultants. A representative of the Consultants / Site Engineer representative will then measure the work completed and record the measurements in measurement books (MB) supplied by the client which will constitute the basis for payment of such works by The client to the Contractor. The Contractor shall sign each and every Measurement sheet and Certificate in token of acceptance thereof. Client's representatives / Engineer shall have right to check / verify the measurements jointly recorded by the contractor and consultant's representative. The contractor shall submit the bills in duplicate on the proforma approved by the consultant / client along with all supporting papers to consultant for certification.

40. Provisional Payment

No payment shall be made for any item of works till the whole of the item shall have been completed and certified by the consultant. The client may however at their option and on recommendation of consultant pay to the Contractors provisional amount (part rate)

proportionate to the part of the work as approved and passed by Consultants. The certificate of such approval and passing of the part sums so payable shall be final and conclusive against the Contractors.

41. Final payment

The final measurement Certificate / Bill shall be prepared by the Consultants and Contractors within three months from the date of completion of the work subject to the claim of The client against the Contractors for compensation or liquidated damages or otherwise as provided in the said Contract, agreement and the General Conditions of Contract. (50% of the total security deposit (including initial security deposit) shall be refunded to the contractor on issue of completion certificate.

42. Bills to be in The client's prescribed form

The Measurement Certificate/Bill shall be prepared jointly by the Consultants' representative and Contractors and shall be submitted in duplicate along with all the supporting documents to the consultants for certification.

43. Liability for payment of taxes, duties etc.

The Contractors shall be bound and liable to pay all local taxes, ceases, excise and customs duties, VAT, service tax, sales tax, work contract tax, income tax or any taxes to Govt. / other public authorities. Under no circumstances shall The client be liable to pay any such taxes, ceases, duties etc. on the work order or any part or component thereof or any materials or stores bought by the Contractors or supplied by The client or otherwise howsoever to the end and intent that all such liabilities shall be borne and discharged solely by the Contractors who shall keep indemnified The client against the same.

44. Settlement of dispute and Differences

a) The Contractor shall try to settle all matters pertaining to this contract first with the Consultant. The decision of the Consultant may be in the form of a certificate, instruction or otherwise. The decision, opinion, direction, certificate for payment with respect to all or any of the accepted matters (which are indicated hereinafter), of the Consultant shall be final and conclusive and binding on the Contractor and shall be without appeal.

b) All other disputes and differences of any kind whatsoever between the Contractor and the Consultant arising out of or in connection with the contract or carrying out the works (whether during progress of work or within defects liability period and whether before or within 365 days of determination / abandonment / breach of the contract) shall then be referred by the Contractor to the Employer giving interalia full details of matter under dispute and the reasons thereof. The Employer shall within a period of 60 days from the receipt of such reference from the Contractor, give his decision in writing. If the Contractor is dissatisfied with the decision of the Employer, or if the Employer does not convey his decision within 60 days, he can refer the matter for arbitration by serving a written notice on the Employer, through the Engineer within a period of 28 days of such decision. The notice shall specify the matters with full details and amount which are in dispute and referred for arbitration. However if the Contractor does not make any demand for arbitration in respect of any claims within 60 days of receiving the

intimation from the Employer that the final bill is ready for payment, the claim if any received after 60 days period shall be absolutely barred from reference to the arbitration.

45. Arbitration

The disputes and differences between the Contractor and the Employer arising out of this contract shall be referred to a sole arbitrator. The sole arbitrator shall be selected by the Contractor from a panel of 3 arbitrators suggested by the Employer. The arbitration proceedings shall strictly be according to the Arbitration and Conciliations Act-1996 or any statutory modification thereof. The place of arbitration shall be at Mumbai.

The arbitrator shall have power to open up, review and revise any certificate, opinion, decision, requisition or notice and any matter required in his opinion, save in regard to excepted matters referred to in the Clause no. 46 and to determine all matters in dispute which shall be submitted for arbitration.

The arbitrator shall make his award within 1 year (or such further expected time as may be decided by him with the consent of the parties) from the date of entering on the reference. In case, during the arbitration proceedings the parties mutually settle / compromise or compound their dispute or difference, the reference to arbitration and the appointment of the Arbitrator shall deemed to have been revoked and the arbitration proceedings shall stand withdrawn or terminated, with effect from the date on which the parties file a joint memorandum of settlement thereof, with the Arbitrator.

This submission shall be deemed to be a submission to arbitration within the meaning of the Arbitration & Conciliation's Act – 1996 or any statutory modification thereof.

It is agreed that the Contractor shall not delay the carrying out of the works by reason of any such matter, question or dispute being referred to arbitration, but shall proceed with the works with all due diligence and shall, until the decision of the Arbitrator is given, abide by the decision of the Consultant and no award of the Arbitrator shall relieve the Contractor of his obligations to adhere strictly to the Consultant instructions with regard to the actual carrying out of the works. The Employer and the Contractor hereby also agree that arbitration under this Clause shall be a condition precedent to any right of action under the contract.

46. Excepted matters

Following matters referred in General Conditions (GCC) and special conditions of contract

(SCC) shall be considered as excepted matters.

- GCC –**
- Clause no 4 (Completion of work)
 - Clause no 5 (Extension of time)
 - Clause no 10 (Defective work and material.)

Clauses no 13 (Measurement of work)

Clause no 16 (Assignment)

Clause no 35 (Compensation for Delay)

SCC-

Scope of work

Clause no 9 (Testing of work and material)

Clause no 11 and 12 (Measurement and dimensions)

Clause no 25 (Mock up)

47. Extra items

The contractor is required to execute the tender items only at site as per the requirements of client. Non-tender items i.e. extra items shall not be executed under any circumstances before taking approval from client/consultants. In case it is required to execute such items on sites, contractor shall intimate the same to the consultant & client & will have to produce the expected quantity of that particular item after taking site measurements & the lowest possible rate supported with rate analysis along with necessary supporting invoices, quotations duly certified by Consultants. The contractor's OH & profit shall be 10 %, + Work contract tax @ 4 % of final rate to be added. The Project-in-charge from client's end shall reserve the right of checking, correcting & certifying the rate jointly with Consultants representative & permission of executing such items shall be given after entire satisfaction of rate analysis produced by contractor. As far as possible, the rates for extra items shall be derived from the rates quoted by the contractor for other similar item in the tender.

48. Deviated Items

Contractor shall not execute any deviated item without the written permission from the consultant / client. The rates for such deviated items shall be derived from the tender items.

49. Mobilization Advance

A mobilization advance up to 10 % of the contract value can be paid by the client on request of the Contractor against Bank guarantee. This advance shall carry a simple interest of 10% p.a. and secured against Bank guarantee issued by a Nationalized / Scheduled Bank of principal plus interest. The mobilization advance shall be recovered proportionately from interim bills so that the entire amount and interest thereon shall be recovered when 80% of the work is completed and billed or within 4 months from date of commencement.

50. Secured Advance against materials brought at site.

The Contractor will be paid secured advance against materials brought and stacked at site for use in permanent work and in the opinion of Consultant are required to be procured in advance. The advance paid shall be maximum up to 65% of the item rate as decided by the Consultant or 75% of the net cost of material stacked at site upon submission of "Indenture for Secured

Advance” as per proforma given in Annexure – at the discretion of Consultant and the Contractor shall produce necessary vouchers / invoices in support of cost of each materials. Such advance shall not be paid on materials which are perishable and consumable in nature.

The advance granted on materials as above shall be adjusted / recovered from the bills after the materials are used in the work. The Contractor cannot remove the materials from site without written consent of the Consultant and Contractor shall be liable for loss or damages to such material.

Grant of advance against material stacked at site shall not be deemed to imply any approval by the Consultant for materials and so it shall not prevent the Consultant for rejection of any material at any time.

51. The cost of each item shall be quoted after deducting the discount and exclusive of GST.

52. No extra charges shall be paid for Insurance, Transportation etc.

53. The bidder is expected to examine all instructions mentioned in tender documents forms and terms & conditions.

54. Failure to furnish all information required by the tender documents or submission of all documents, not substantially responsive to the tendering document in every respect will be at the risk and may result in the rejection of bid.

55. This call of e-tender does not bind the M.P.C.B. to place order. The offer/Bids submitted in response to this invitation may be rejected without assigning any reasons.

56. The Board at its discretion may extend the last date of submission of tender and opening of tenders. The authority does not bind itself to accept the lowest e-tender and is vested with authority to reject any or all of the tenders received without assigning any reason.

57. Documents enclosed in the e-tender, shall become the property of M.P.C.B. without any payment.

58. In case of dispute, the decision of Member Secretary, Maharashtra Pollution Control Board shall be final.

59. The proposal from the firms / Bidders putting their own terms and conditions will be rejected.

60. The validity of the tender will be for the duration of 03Months

61. Each folio of the tender document shall be signed by the bidder otherwise the bid will be treated as rejected.

62. The e-tender must be filled in English and all the entries must be made by hand written in ink or may be typed. If any of the document is missing, or unsigned tender will be considered

invalid.

63. The prospective bidder shall have not been disqualified by the Maharashtra Pollution Control Board for any reason for specific period.
64. The price bid of only those bidders will be opened whose Pre-qualification Criteria (schedule - I) are found to be acceptable.
65. The e-tender shall contain no interlineations erasures or overwriting of words except as necessary to correct errors made by e-tenders, in which case such correction shall be initialized by the person or persons.
66. Bids received after due date and time mentioned in the tender notice shall not be accepted.
67. In no case hard copy of tender should be handed over to any employee of the Board.
68. Canvassing in any form will disqualify the tender.
69. All tenders shall be addressed to:
The Member Secretary,
Maharashtra Pollution Control Board, Kalpataru Point, 3rd & 4th Floor, Sion
Matunga Scheme Road No.8, Opp. Sion Circle.
Sion (East), Mumbai - 400 022, Tel No. 24010437, 24086916.
70. Earnest Money of the unsuccessful bidder will be refunded without any interest after the tender is finalized or within one month whichever is earliest and that of successful bidder will be refunded without any interest after 04 months of the finalization tender or can be readjusted as a security deposit, on their request.
71. The successful bidder shall deposit Rs. 2,00,000 as a security deposit in the form of D.D. drawn in favour of **Maharashtra Pollution Control Board** which will be refundable, without interest, after the successful completion of the contract period.
72. In case of any dispute, the Mumbai is the jurisdiction.

Date:-

Place: -

(Name & Seal & Signature of Bidder)

SPECIAL CONDITIONS OF CONTRACT (SCC)

Scope of Work

The scope of work consists of the HVAC works-VRV system in the existing 2nd, 3rd & 4th floor office at Sion, Mumbai.

1. Time Limit

The entire work shall be completed within the stipulated days as per the tender notice from date of commencement (i.e 2 Months).

2. Terms of Payment

The following terms of payment shall apply:

- a) MPCB may pay 10% of the Contract value as mobilization advance against Bank Guarantee, on acceptance of work order. The mobilization advance shall be interest bearing (@ 10% simple interest).
- b) 10% mobilization advance paid will be adjusted on pro-rata basis from certified bill amount.
- c) Entire amount of advance together with interest will be recovered by the time bill for 80% of contract value is certified or within four months from the date of commencement.
- d) Any work done at factory will not be counted in the 75% running account bills until the material is brought to the site of work.
- e) Minimum value of first and second running bills shall be at least 10% of work order value and subsequent bills shall be 15% of the work order value. Any bill of lesser amount shall be processed or rejected as per Project-in-charge's description.
- f) Retention money @10 % shall be retained from every running bill subject to a maximum of 10% of contract value including ISD and the 50% of total SD shall be released on completion of work and balance 50% shall be released after completion of defects liability period of 12 months and on issue of Final Completion Certificate.
- g) No payment shall be made to the Contractor unless the contract agreement is executed and all insurance policies as stipulated in the tender are taken and submitted to the Employer.

4. Right to distribute work

The Consultants/Client reserve all rights to divide, distribute the tender items to more than one agency, delete any item or operate items quoted as rate only.

After Consultants / client's approval, the manufacturing of loose furniture can be carried out at the Contractors factory/premises and the rates quoted should be inclusive of free delivery to the site.

5. Identity Cards

The Contractor shall be given approved identity cards to all his workers, which will have to be produced by the Contractors' workmen as and when demanded by the Consultants / Client's representatives or Security men.

6. Electric Supply & water supply

The contractor shall make his own arrangement for power and water required for the work and pay the charges for the same. In case the power is provided by client, contractor shall install a submitter and pay the bill as per actual power consumed in the works.

7. Program of work and progress reports.

The successful Contractor will have to submit a detailed Bar Chart indicating the schedule of various activities from the date of commencement till completion and get the same approved by the Consultants/Client. Once the Bar Chart is approved by Client, Contractor shall strictly adhere to the same. This program shall form part of the Contract and shall be binding on the Contractor. However, the Client reserves the right to alter the program, if necessary, from time to time. No claim whatsoever of any nature by the Contractor on his account shall be entertained by Client. They shall also have to indicate their requirements about co-ordination from other agencies working at site. In addition to this, following further information should also be furnished by the contractor.

- (1) Nature of labour force required for the work.
- (2) Material procurement program.
- (3) Details of machinery/equipment to be used.
- (4) Details of work to be executed at site and in Contractor's factory/shop.
- (5) Requirements of electric power at site.
- (6) Arrangements made for Contractor's own security.
- (7) Requirement of funds requirement from time to time to be intimated in advance.

The Contractor will also have to furnish weekly progress report incorporating necessary details of work under execution.

8. Office/Stores on the site

The Contractor shall provide for all necessary storage on the site in a specified area for all materials, which is likely to deteriorate by the action of the sun, rain or other material causes due to exposure, in such a manner that all such materials, tools, etc., shall be duly protected from damage by whether or any other cause. All such stores shall be cleared away and the ground left in good and proper order on completion of this Contract unless otherwise expressly mentioned therein.

9. Testing of works and materials and preparation of samples

The Contractor shall, as required by the Consultants, arrange to test materials and/or portions of the works at his own cost in order to prove their soundness and efficiency. If after any such test, the work or portions of the works are found, in the opinion of the Consultants to be defective or unsound, the Contractor shall pull down and re-erect the same at his own cost. Samples of each class of materials and workmanship shall be submitted by the Contractor for the approval of the Consultants/Client before procurement and execution.

10. Notice

The Contractor shall comply with all acts and regulations for the successful completion of the Contract works and shall pay necessary attention to all notices and pay all fees / charges.

11. Measurement to be recorded before work is covered up

The Contractor shall take joint measurements with the Consultants' representative before covering up or otherwise placing beyond the reach of measurement any item of work. Should the Contractor neglect to do so, the same shall be uncovered at Contractor's expense or in default thereof, no payment or allowance shall be made for such work or the materials with which the same was executed.

12. Dimensions

Figured dimensions are to be followed in all cases. Large scale details take precedence over small scale drawings. In general, the drawings shall indicate the dimensions, positions and type of construction; the specifications shall indicate the qualities and methods, and the bill of quantities shall indicate the quantum and rate for each item of work.

Any work indicated in the drawings and not mentioned in the specifications or vice-versa, shall be furnished as though fully set forth in both. Any ambiguity, conflict of interpretation, errors or inconsistencies discovered in the drawings/documents shall be promptly brought to the attention of the Client and the Consultants. Generally, the provisions giving more rigorous interpretation shall prevail, but in the event of disagreement between the Contractors and the supervisor, decision of Project-in-charge shall be final. In case of any discrepancy, the Contractor is to ask for an explanation before proceeding with the work.

13. Action where there is no specification

In case of any class of work over which there is no specification mentioned, the same shall be carried out in accordance with the latest Indian Standard Specifications subject to the approval of the Consultants and Client.

14. Clearing the site of works

The Contractor shall clear the site of works as per the instructions of the Consultants. The site of works shall be cleared of all men, materials, sheds etc., belonging to the Contractor. The site shall be delivered back to the Client in a clean and neat condition as required by the Consultants within a period of one week after the job is completed. In case of failure by the

Contractor, the Client will have the right to get the site cleared at the risk and cost of the Contractor

15. Occupation of partially completed portion by the Client

The Client shall be entitled to and will be at liberty to occupy even the partially completed portion of the work by themselves or through their agents and servants if they so desire. Necessary extension of time for completing the work shall, however, be granted to the Contractor but he shall have no claim for any compensation whatsoever due to the delay, if any, involved in completing the work on account of partial occupation.

16. Typographical or Clerical Errors

The Consultants clarifications regarding partially omitted particulars or typographical or clerical errors shall be final and binding on the Contractor.

17. Information to be furnished to Client on completion of work

The Contractor, on completion of work shall furnish in a tabulated form, all pertinent and necessary information regarding the material, hardware, metal work, glass etc., used in the items of work. The information also to contain the names of such agencies who are specialized for certain items like melamine polishing, exclusive hardware etc. This tabulated information is to help the Client in maintaining their office after defects liability period is over.

18. Performance Guarantee for all bought out items

Contractor shall submit written performance guarantee for all bought out items from him as well as from manufacturers.

19. As Built Drawings

Contractor shall within one month of completion of work submit 'As Built' drawings (original tracings and 3 sets of prints) of all the works carried out by him. Contractor will not receive final payment in case of failure to comply with this condition.

20. Language of Tender

"English" is the official language of Tender.

21. Documents to be complementary

All Sections of Contract Documents and working drawings shall be complementary to each other. In case of ambiguities, discrepancies or contradictions between any two sections, Client / Consultants' decision shall be final and binding on the Contractor for interpretation of same.

22. **Contractors Superintendence**

The Contractor shall appoint technically qualified and experienced persons to supervise the work at site. The Contractor shall obtain the approval from Client/Consultants about competence of such persons.

23. **Inspection by Contractor**

The Contractor shall inspect all the works and satisfy himself before same is offered for inspection to the Client/Consultants.

24. **Removal of Debris**

Contractor shall arrange to dispose off debris, wood shaving and any other waste product created while carrying out the work, outside Client's premises. The Contractor shall take due care while disposing of such waste materials and ensure that any rules/regulations laid down by Municipal / Client or any other statutory Body are not violated. The Contractor shall be responsible and answerable to any complaint arising out of improper disposal of wastage. Quoted rate shall include the cost of same and no extra payment shall be made towards this account.

25. **Mock-up**

The Contractor shall prepare a mock-up of each item, if required, strictly in accordance with the specifications **free of cost**, for approval of Consultants and Client. The work on these items shall proceed further only after the approval of the mock-up.

26. Rates quoted by the Contractor for the works to be carried out shall be valid for all floors.

27. The Contractor shall submit original copies of invoices, order forms for any materials purchased for project work, to Client/Consultants.

28. The Contractor shall calculate realistic quantities after receipt of drawings and after submitting first interim bill but before submitting the second interim bill to Client/Consultants.

29. **Works at Night**

If the Contractor is required to work at night in order to complete the work within the time schedule, the Contractor shall provide and maintain at his own cost sufficient lights to enable the work to proceed satisfactorily without danger. Approach road to the site also shall be sufficiently lighted by the Contractor. No extra payments will be made for night work.

30. The rates quoted by the tenderer in the schedule of quantities will be deemed to be for the finished work and shall include all charges for:

- a) Materials, Labour, maintenance, fixing, arranging, cleaning, making good, hauling etc.
- b) Plant, double scaffolding, frame work, English ladders, ropes, nails, spikes, tools, materials and workmen, protection from weather, temporary supports, platform and the maintenance of the same.

- c) Covering for the walling and other works during inclement weather or strikes or whenever directed, as necessary.
- d) All temporary canvas, lights, tarpaulin, barricade, water shoots etc.
- e) All measures required to be taken for protection of existing works.
- f) All such temporary weather-proof sheds at such places and in a manner approved by the Consultants for the storage and protection of materials against the effects of sun and rain.
- g) All testing of materials.
- h) No tools and plants shall be issued by the Client under the Contract.
- i) All present and future taxes, levies, duties, fees etc.

31. Rates to valid for additional scope of work

Rates quoted by the tenderer shall be valid for a period of 90 days from the date of awarding the tender or till completion of work whichever is later. If client decides to place work order for additional scope of work in the same premises or to amend the original work order for additional scope of work in the same premises, the contractor shall be bound to accept the same at rates contained in the original tender; provided such work order or amendment is issued prior to completion of the work contained in the original tender. However, any decision in this regard shall be taken by the client only.

32. Dimensions written on drawings are to be followed. No scaling of any drawings shall be carried out at site by workmen/labor during execution of work. The clarifications, if any, required for the execution of any item shall be timely given by the client/consultants in weekly co-ordination site meetings.

33. The running bills whenever submitted to the consultant for certification process should accompany the running measurement sheets containing those items which are billed in that particular running bill. The measurement sheets produced by the contractor should be jointly checked fully/partly as desired by the client/consultants.

34. No disturbances should be observed/ noticed in measured quantities written in measurement sheets & billed quantity for which the measured quantity takes precedence on billed quantity & the bill shall be corrected & certified accordingly.

35. No escalation is allowed/ permitted in quoted rates in the tender which should be valid at least for 90 days from the date of awarding the job to the successful contractor, or till the completion date, whichever is later.

36. Weekly site co-ordination meetings shall be conducted for the contractors working on site & proper intimation should be given to the client/consultants in order to monitor the project more efficient way. The relative decision for the execution of tender items shall be given in these meetings by client/consultants by producing working drawings/hand-made sketches if any. Contractors's, senior representatives / partner / director shall attend these meetings.

37. **Working on holidays**

The contractor is required to take permission from local authorities of client/consultants for working of extra hours at night & on public holidays by ensuring no inconvenience to inhabitants of the premises & other offices as well as neighbours. For timely completion of project, contractor is required to produce more labors & regular material supply as required on site as directed by consultants.

38. The contractor shall shift the existing furniture to other destination as directed by client/consultants if any, for which inventory for furniture shall be made & submitted to client for further record for which no claims shall be entertained by client/consultants. Any loose furniture's such as chairs, tables, etc. to be handed over to the client.

39. The contractor shall submit test report from the manufacturers of various materials used in the work as instructed by the consultant / client.

40. **INSPECTION TO WARE HOUSE**

The HVAC Contractor should arrange for warehouse inspection before dispatching the HVAC machines (Outdoor and Indoor units) .The HVAC machines offered for inspection shall be specific to MPCB project. The rate quoted shall include warehouse inspection for **3 persons inclusive of travelling expenses, boarding and food.**

ADDITIONAL TERMS AND CONDITIONS OF CONTRACT

1. The work covered by the contract shall be carried out in accordance with the relevant specifications contained in the specifications Book, published by Govt. of Maharashtra, P.W.D. department, as per the latest edition of the same (hereinafter called the standard Book of Specifications) subject further to the attached specifications. Where these two contradict, the latter holds good.
2. A work order will be maintained by Department, on the site of the work, and the Contractor will sign orders given therein by the Engineer in charge, his representative and his superior officers and comply with them.
3. The site of work shall be cleared by the Contractor before starting the work & after completing it to the satisfaction of the Engineer (which means the Engineer-in-charge or his representative). This will include cutting of trees, shrubs and removing grass, dismantling and removing remains of old masonry, loose boulders and stone etc. The cost of this will be deemed to have been included in the tendered rate for the several items.
4. The Contractor shall provide free of charge all labour and material required for lining out, surveying and measurement of work etc. He will similarly provide such aids as decided by Engineer in Charge, as are considered necessary for the proper and systematic execution of the work.
5. Where the proper measurement of work, it is necessary to have an initial setup levels taken, the same as recorded in the authorized field book by the Engineer in charge or his authorized representative will be signed by the Contractor who will be entitled to have a true copy of the same on demand. Any failure on the part of the Contractor to get such levels before starting the work will tender him liable to accept the decision of the Executive Engineer as to the basis of taking measurements. Likewise the Contractor will not cover any work which will render its subsequent measurement difficult or impossible, without first getting the same jointly measured by himself & the authorized representative. The record of such measurements on to department's side will be signed by the Contractor and he will be entitled to have a true copy of the same on demand.
6. All work before being finally taken over by MPCB will be entire liability of the Contractor for guarding, maintaining & making good any damage of any magnitude interim payments made for such work will not alter this position. The handing over by the Contractor & taking over by the Member Secretary, or his authorized representative, will be always in writing, of which copies will go to the member secretary, his authorized representative & the Contractor. It is, however, to understand that before taking over such work MPCB will not put it to its regular use distinct from casual/incidental one.
7. Orders issued by the member secretary of MPCB from time to time regarding the conduct of the work shall be binding on the Contractor.

8. The quantities, specified in the Contract are only approximate & may vary on either to any extent. No claims/demand for compensation / increased rate shall be entertained for variation in quantities on higher/lower side to any extent.
9. It will be deemed that the Contractor before tendering has thoroughly inspected the work site & carried out his own investigations to arrive at the rates quoted in the tender. In this regard he will be given necessary information to the best of the knowledge of the Department but without any guarantee about its full Proofness.
10. The material supplied or used in the work under this contract will be according to the following and other specifications herein the tender and those specified in the Standard Book of specification for the relevant items. Where these two contradict, the former holds good.
11. The tendered rates for supply of materials are for delivery of materials properly stacked in regular heaps or otherwise as directed for facility of measurement before use. In case of road materials the same will be stacked by the roadside as directed.
12. No material shall be removed from the road/land, except for excavation of gutters, or any other adjoining land unless permitted in writing subject to such conditions as the Exe. Engineer may specify. The Contractor is liable for the damages/compensation arising out of this condition.
13. Material will not be stacked at places where they are likely to be damaged or lost. The Contractor will have no claim for any loss on this account. If such material has been paid for and is subsequently lost before use in the work the Contractor will make good the loss.
14. Before staking any approved material, the same shall be freed from all foreign materials, if any. The material shall be stacked on cleared and leveled ground.
15. The order of collection and utilization of materials will be decided by Engineer in charge so as to ensure orderly work.
16. The materials will be stacked in a natural way without any attempt whatever to leave voids.
17. The measurement of the road and building materials shall be without any deduction for voids.
18. For the item so indicated, no materials will be used without first having been measured by regular stacks. The whole of the quantity of a particular material required for a sizeable section of work shall have been first collected before it can be measured & used. The same material will either have been all collected/the collection will not have been started at all before the material collected in the section under reference has been all used.

19. All materials used and supplied under the contract items shall conform to the specifications in the Standard Book on Specification and those given herein, if any, and in every case, a sufficiently large sample will be got approved from the Engineer in charge before hand before bringing any further quantities on site for use on work & these samples shall be maintained for all the time for verification of materials brought thereafter on the site.
20. Any material not conforming the approved sample shall be removed from the site forthwith & in any case not later than time specified by the Engineer in charge failing which the same will be removed & disposed of by Engineer in charge at the risk and cost of the Contractor, as he deems fir and the Contractor will have no claim whatsoever for the same. If at any time it is found that under specification materials (and also workmanship) have been used in the work notwithstanding the fact that the work has been carried out under the supervision of the department the Executive Engineer's decision as to how the case is to be disposed off will be final; he may get such work entirely removed or may accept it at any reduced rate in his unfettered discretion, including no payment whatever.
21. The Contractor will have to construct a shed for storing controlled and valuable materials issued to him under Schedule 'A' of the agreement, at work site, having double locking arrangement. The material will be taken for use in the presence of the departmental person. No material will be allowed to be removed from site of work.
22. Under no circumstances shall any Contractor be entitled to claim enhanced rates for any items in this contract.
23. The contractor shall study all the plans, specifications & other items & conditions of the contract carefully before tendering & shall also inspect the site & get self acquainted with nature of work & local conditions regarding the availability of labour, material, source & sufficiency of water supply required for the execution of the work and site conditions rivers, nalla's topography etc. existing roads, means of communications & access to site of work etc.
24. The Contractor shall, if necessary, construct temporary roads & maintain these in proper condition till the completion of work at his own cost. If necessary, he shall also at his own cost, make necessary arrangement for acquisition of land for construction of such temporary road or for any other purpose in connection with the execution of work.
25. The Contractor shall comply with all proper and legal orders & direction of local/public authority/municipality & abide by their rules & regulations and pay all such fees and charges which he may be liable to. No reimbursement of such fees and charges will be made by the Department.
26. The Contractor shall inform the Engineer-in-charge in writing when any portion of the work is ready for inspection giving him sufficient notice to enable him to inspect the same without regarding the further progress of work. The work shall not be considered to

have been completed in accordance with terms of contract until the Engineer – In - Charge shall have certified in writing to the effect.

27. If Contractor desires to use any design/material/process covered by letter “patent” or “Copy Right”, it shall be responsibility of the Contractor to observe all legal formalities for the use of the same.
28. In the event of there being reasonable doubt as to the quality of workmanship & material used in the construction, the Engineer-in-charge may order to the contractor to satisfy the Dept. by carrying out suitable test of structure or thereof. In the manner as prescribed of the Indian Std. Code for practice for PCC & RCC for general building construction and as per Std. Specification Of Dept. as may be approved by the Engineer-in-charge regarding the sufficiency wherever necessary at his own cost to the entire satisfaction of the Engineer in charge.
29. All the laboratory equipment required for the field test of materials, concrete, steel shall be arranged by Contractor at his own cost.
30. The Contractor shall take all precautions, due care against by floods, rains, storms, out break of fire & accidents. No compensation will be allowed to the Contractor for his plants/materials lost, damaged by way of the above cause or other cause which in charge of the Contractor.

SAFETY CODE

1. First aid appliances including adequate supply of sterilized dressings and cotton wool shall be kept in a readily accessible place.
2. An injured person shall be taken to a public hospital without loss of time, in cases where the injury necessitates hospitalization.
3. Suitable and strong scaffolds should be provided for workmen for all works that cannot safely be done from ground.
4. No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm.(clear) and the distance between two adjacent rungs shall not be more than 30 cm. When a ladder is used an extra mazdoor shall be engaged for holding the ladder.
5. Every opening in the floor of a building or in a working platform is provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one meter.
6. No floor, roof or other part of the structure shall be so overloaded with debris or materials as to render it unsafe.
7. Workers employed on mixing and handling material such as asphalt, cement mortar or concrete and lime mortar shall be provided with protective footwear and rubber hand gloves.
8. Those engaged in welding works shall be provided with welder's protective eye-shields and gloves.
9. (i) No paint containing lead products shall be used except in the form of paste or readymade paint.

(ii) Suitable facemasks should be supplied for use by the workers when the paint is applied in the form of spray or surface having lead paint dry rubbed and scrapped.
10. Overalls shall be supplied by the Contractor to the painters and adequate facilities shall be provided to enable the working painters to wash during the periods of cessation of work.
11. Hoisting machines and tackles used in the works, including their attachments, anchorage and supports shall be in perfect condition.
12. The ropes used in hosting or lowering material or as a means of supervision shall be of durable quality and adequate strength and free from defects

PRICE SCHEDULE

NAME OF WORK: PROPOSED HVAC WORK FOR 2ND, 3RD & 4TH FLOOR OF MPCB OFFICE AT SION, MUMBAI.					
ABSTRACT					
Sr. No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
A	HIGH SIDE WORKS				
	SUPPLY OF VARIABLE REFRIGERANT AIRCONDITIONERS - R-410 A(100% Imported Machines)				
1.0	OUTDOOR UNITS				
a	20 HP Inverter Based Top discharge type	1	No		
b	20 HP Inverter Based Top discharge type	1	No		
c	48 HP Inverter Based Top discharge type	1	No		
d	48 HP Inverter Based Top discharge type	1	No		
e	20 HP Inverter Based Top discharge type	1	No		
f	32 HP Inverter Based Top discharge type	1	No		
g	10 HP Inverter Based Top discharge type(TFA)	3	Nos		
h	06 HP Inverter Based Side discharge type(TFA)	1	No		
i	08 HP Inverter Based Top discharge type(TFA)	1	No		
2.0	INDOOR UNITS				
a	1.0TR Cassette Unit(Compact)	11	Nos		
b	1.3TR Cassette Unit(Compact)	7	Nos		
c	1.6TR Cassette Unit(Compact)	4	Nos		
d	2.0 TR Cassette Unit	5	Nos		
e	2.6 TR Cassette Unit	18	Nos		
f	3.0 TR Cassette Unit	12	Nos		
g	4.125 TR Cassette unit	9	Nos		

Sr. No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
h	2.0 TR Hiwall	1	No		
3.0	DX Split Machine				
	2.0 TR Split Ac Units (Conventional)	1	No		
4.0	TFA UNITS				
a	8.0 TR	3	Nos		
b	4.6 TR	1	No		
c	6.0 TR	1	No		
5.0	EXHAUST FANS TOILET				
a	1200CFM	1	No		
b	1000 CFM	1	No		
c	1000 CFM	1	No		
d	700 CFM	1	No		
e	400 CFM	1	No		
6.0	Controllers				
a	Corded Remote for Indoor Units	66	Nos		
b	Refnuts /Joints	67	Nos		
c	Touch Screen Central controller with necessarily ODU Unit data Display and Weekly scheduling and BMS Compatibility .	3	Nos		
	SUB TOTAL OF A				
B	LOW SIDE WORKS				
1	Standard Installation, Testing & Commissioning Charges for VRF				
	Installation, Testing & Commissioning of VRV Equipment including pipe pressure testing & flushing with Nitrogen.				
a	For VRF Outdoor Units (20 HP)	1	No		
b	For VRF Outdoor Units (20 HP)	1	No		
c	For VRF Outdoor Units (48 HP)	1	No		

Sr. No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
d	For VRF Outdoor Units (48 HP)	1	No		
e	For VRF Outdoor Units (20 HP)	1	No		
f	For VRF Outdoor Units (32 HP)	1	No		
g	10 HP Inverter Based Top discharge type(TFA)	3	Nos		
h	06 HP Inverter Based Side discharge type(TFA)	1	No		
i	08 HP Inverter Based Top discharge type(TFA)	1	No		
	Indoor Units				
j	Cassette Type Unit	65	Nos		
k	Split Type Unit	2	Nos		
2	Room Thermostat Built in with Occupancy sensor				
	Supply, Installation, testing & commissioning of Room Thermostat Built in with Occupancy sensor for Officer rooms. Thermostat shall be provided with digital display (minimum 4" display) with indication of Temperature (setpoint & room temperature), Occupancy (Room wise), Indoor unit ON/OFF switch. Unit shall be complete with electrical accessories required for communication with indoor unit.	31	Nos		
3	Refrigerant Piping with Rubber Nitrile insulation				
	Supply & Installation of Copper Refrigerant Piping between Indoor & Outdoor unit with Rubber Nitrile insulation & GI Perforated TRAY (19mm & 13 mm	1725	Rmt		

Sr. No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
4	INSTALLATION Refnets Joints(insulated with aertape)				
	Refrigerant Control "Y" joints with insulation for piping (Multi-kit)	69	Nos.		
5	Drain U-PVC OR GI Pipe Fully Insulated with 9 mm rubber nitrile insulation				
	25mm	2150	Rmt		
6	Control Cabling				
	Supply & Installation of Control Cabling with U-PVC OR GI Conduit from Indoor units to Outdoor units	1725	Rmt		
7	Miscellaneous fittings and accessories				
a	Refrigerant Charging with R-410 GAS.	12	Nos		
b	MS Framework for Outdoor Unit with epoxy painting	12	Nos		
c	Lifting, Shifting and Platmate location for outdoor unit	3	Lot		
d	Installation Of I-Touch Manager	3	Nos		
e	L-Type Alluminum Powder Coated Stand For Split	1	No		
f	Sequencing Controller	1	No		
8	Fresh Air -PVC Pipe				
a	6" Dia	1050	Rmt		
b	4" Dia	910	Rmt		
9	Exhaust Air -PVC Pipe				
a	6" Dia	450	Rmt		
b	4" Dia	650	Rmt		
10	MS Stand FOR TFA & Exhaust Units				

Sr. No.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
a	TFA Units	5	Nos		
b	Exhaust Fans	5	Nos		
c	Disc Value 4" Dia	46	Nos		
d	Supply Installation Testing & Commissioning Of Canvass Connection For Exhaust Units	10	Nos		
e	Supply Installation Testing & Commissioning Of Canvass Connection For TFA Units	10	Nos		
	SUB TOTAL OF B				
C	ANNUAL MAINTENANCE CONTRACT				
1	AMC for 1st year after DLP	1	Job		
2	AMC for 2nd Year	1	Job		
3	AMC for 3rd Year	1	Job		
	SUB TOTAL OF C				
	Add GST @ 28% on A				
	Add GST @ 18% on B				
	Add GST @ 18% on C				
	TOTAL				
	GRAND TOTAL				

SUMMARY SHEET

SR.NO	DESCRIPTION	AMOUNT
1.	High Side Works- Sub Estimate-A	
2.	Low Side Works- Sub Estimate –B	
3.	Annual Maintenance Contract –Sub Estimate C	
4.	GST – 28% of Sub Estimate A	
5.	GST -18% of Sub Estimate B	
6.	GST – 18% Sub Estimate C	
	TOTAL	
	SAY	

GENERAL SPECIFICATION FOR HVAC WORK

C O N T E N T S

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SYSTEM DESCRIPTION AND SCOPE OF HVAC WORK

1.0 DESIGN CONSIDERATIONS:

The following space of Cabin, Open office, Conference Room, Service Room ,Server Room etc. for MPCB shall be provided with VRF type HVAC System.

2.0 BASIS OF DESIGN:

2.1 Air Conditioning System:

- Ambient Conditions
 - Summer : 43°C DB & 34 °C WB
 - Winter : 22 °C DB & 8.0 °C WB
 - Relative Humidity : 90%
- Lighting Load : 1.2 Watt/sq. ft. (or actual as per lighting design)
- Fresh air : As per ASHRAE 62.1, or 1 ACPH, whichever is higher.
- The VRV System should be designed to deliver 22deg C +/- 1deg C tolerance

3.0 PROPOSED AIR CONDITIONING SYSTEM:

VRF system:

The office cabin, open office area ,Conference room, Service room, Server room etc shall be covered by the VRF (Variable Refrigerant Flow) system .

The Outdoor units of VRF system shall be placed on terrace. The indoor units in VRF system shall be Ceiling cassette type, placed in the false ceiling.

Refrigerant piping from terrace to each floor shall be run through service shafts provided in the building.

Refrigerant and drain piping shall run above false ceiling, on GI perforated cable trays. The condensate drain shall be taken to toilet block and connected to floor traps.

A treated fresh air system shall be provided to supply cool filtered fresh air to the rooms covered by the VRF system through GI duct work running above false ceiling.

All Toilets should be provided with exhaust system with inline fans and accessories as in BOQ.

4.0 SPECIFICATIONS

All the equipment and ancillary work shall conform to the technical specifications and standards of workmanship described in Chapter on Technical Specifications.

5.0 CONTRACTOR’S SCOPE

Contractor shall be responsible to work out the heat load, capacity of all equipment and ducting, piping and insulation etc. based on the architectural drawings and the design basis indicated above, and shall be responsible to achieve the desired room conditions in all seasons.

All equipment and ancillary work shall conform to the technical specifications described in the next chapter. Contractor shall submit design calculations and detailed technical submittals for each equipment and material, and working drawings of layouts, piping and ducting, for approval of consultant before execution.

* * * * *

TECHNICAL SPECIFICATIONS
FOR HVAC SYSTEM WORK

1.0 VARIABLE REFRIGERANT FLOW (VRF) SYSTEM

The system shall be air-cooled, type central air conditioning system consisting of outdoor units, indoor units and refrigerant piping, cabling between indoor and outdoor units.

The system shall be based on refrigerant R-410.

1.0 Outdoor Unit:

The outdoor unit shall be a factory-assembled unit housed in a sturdy weatherproof casing constructed from rust proof galvanized powder coated steel panels. The compressors shall be hermetically sealed **100% Inverter driven variable speed type scroll** capable of changing the capacity in accordance to the cooling load requirement.

The unit shall be capable of assessing the requirement of refrigerant volumetric flow of each indoor unit at all times by means of a sophisticated microprocessor controller and generating the required total volume of refrigerant for supply to the indoor units.

The finned coils shall be constructed out of copper tubes mechanically bonded to aluminium fins. The surface of the condenser coil shall be coated with suitable chemical coating to prevent deterioration due to climate.

All necessary safety devices shall be provided to ensure safe operation of the system. The unit shall be located in open on a terrace with adequate clearance from nearby objects to ensure unobstructed air flow and easy approach for maintenance.

The noise level of the unit shall not be more than 65dB (A) measured horizontally 1 m away and 1.5 m above base level.

Unit should be equipped with a highly efficient oil separation system to ensure stable operation with long refrigerant piping.

The VRF outdoor unit shall be located in open on a terrace with adequate clearance from nearby objects to ensure unobstructed air flow and easy approach for maintenance

2.0 Indoor Units

Each unit shall be selected as per the requirement of the cooling/heating load and interior layout in the respective space to be air-conditioned. The unit shall be equipped with an electronic expansion valve, which can communicate with the VRF controller in the condensing unit.

The fan shall of the centrifugal type and statically and dynamically balanced to ensure low noise and vibration free operation.

Each indoor unit shall be equipped with cordless local control unit for setting the operating parameters. The address of the indoor unit shall be set automatically in case of individual and group control. Option of centralized control should also be achievable.

Controls shall be provided to maintain the set room temperature within close tolerance limits.

Ceiling Cassette type Indoor Unit:

The unit shall be suitable for suspension from roof slab, recessed in the space above false ceiling. The bottom of the ceiling shall be flush with the false ceiling.

The unit shall house a circular cooling coil, centrifugal single inlet fan with motor, installed in a galvanized and powder coated sheet metal housing. The fan shall have vertical shaft and suction at the bottom. The fan motor shall be designed for low noise, maximum speed being limited to 900 RPM. Noise level of the unit at highest speed shall not exceed 45dBA.

A pulse type pump with level activated switch shall be provided for lifting of the condensate collected in the drain pan, by at least 600mm.

3.0 Refrigerant Piping:

The refrigerant piping interconnecting to indoor & outdoor units shall be made out of hard copper tubes, in brazed construction. The refrigerant line sizing should be designed to achieve minimum pressure drop and avoid oil return problem. The pipe sizes and connections shall be designed such that the evaporator units do not face back pressure due to the functioning of the evaporator next to it.

The refrigerant piping for the VRF system shall be of minimum 18 gauge HARD copper. The copper pipe shall be internally chemically cleaned, free of dirt, dust, oxidation and any other deposits. All joints shall be made by brazing. Inert gas purging shall be used during the brazing process to prevent oxidation.

Piping shall be insulated with 19mm thick sleeve made out of closed cell elastomeric nitrile rubber foam insulation of fire retardant 'O' class. Wiring interconnecting the indoor and outdoor unit shall be done with PVC insulated copper conductor flexible wires of appropriate rating.

U-bends shall be provided for efficient oil return in suction line, at appropriate locations.

All piping shall be supported on GI perforated cable trays, and covered by GI sheet channels from the top, to prevent accidental damage during work of other agencies. The GI covers and trays shall be fixed to MS angle supports by bolting, to facilitate removal of the trays for verification of pipe leaks.

All pipe supports/clamps shall be painted with red oxide primer followed by 2 coats of synthetic enamel finish paint.

All the wiring interconnecting the indoor and outdoor units shall be PVC insulated copper conductor flexible wires of appropriate rating, and shall be laid through PVC conduits.

The piping and wiring shall be laid such that it does not spoil the aesthetics of the premise.

4.0 Drain Piping for Condensate

The drain piping shall be made out of rigid PVC pipes of 10 Kg/cm² class in screwed construction. The piping shall be supported by clamping on an M.S. angle 25mm x 25mm x 3mm running continuously below the pipe.

The piping shall be insulated with 6 mm thick nitrile rubber sleeve tightly on the outer surface of the pipe. All insulation joints shall be sealed by BOPP adhesive tape. The drain pan shall be connected to rigid PVC pipe by braided PVC flexible pipe with appropriate adapters.

All pipes support/clamps shall be painted with red oxide primer followed by two coats of synthetic enamel finish paint.

9.0 SHEET METAL DUCT WORK

9.1 Material Specifications:

Ducts shall be made out of galvanized steel sheets of ducting quality. The galvanized sheet shall have thickness as specified below and zinc coating of minimum 120 gms/sqm.

9.2 Fabrication of Ducts:

The ducts shall be fabricated as per following specifications:

Max. Side (mm)	Min. Thickness of Sheet(mm)	Weight (Kg/Sqm.)	Type of joints	Bracing
Up to 750	0.63	4.9	25mm x 3mm MS Angle Flange	None
751 to 1000	0.80	6.4	40mm x 3mm MS Angle Flange	25mm x 3mm MS Angle at 1.2m centers.
1001 to 1500	0.80	6.4	40mm x 3mm MS Angle Flange	40mm x 3mm MS Angle at 1.2m centers.
1501 to 2250	1.0	7.8	40mm x 6mm MS Angle Flange	40mm x 6mm MS Angle at 1.2m centers.

9.3 Installation of Ducts:

Ducts shall be supported on hangers as per following specifications:

Duct Size (mm)	Spacing of Supports(m)	Size of M.S. Angle(mm)	Dia. of Hanger Rod (mm)
Up to 750	2.4	40 x 40 x 3	10
751 to 1500	2.4	40 x 40 x 6	10
1501 to 2250	2.4	50 x 50 x 6	15

Duct hangers shall be fixed to R.C.C. slab of the roof by means of anchor fasteners and M.S. angle cleats. Hangers for ducts running below pitched sheet roof shall be fixed to M.S. angle cleats welded to roof structure. Soft neoprene rubber gasket of uniform thickness and width shall be used as gasket between flange joints. The gasket will be fixed with a suitable adhesive to the flange.

Galvanized hexagonal full threaded nut-bolts of minimum 6mm dia. shall be used for fastening the flanges. Spacing between two nut-bolts shall not exceed 125mm.

All ducts shall be rigid and shall be adequately supported and braced where required with cross bracing of M.S. angle bracings of ample size to keep the ducts true to shape and to prevent buckling, vibration or breathing.

Ducting over false ceiling shall be supported independently from the roof structure above. In no case a duct shall be supported from the false ceiling hangers or be permitted to rest on a hung ceiling.

Bottom level of all ducts should be maintained as shown in the drawing. Leveling of ducts should be checked with a PVC tube water level from a reference point.

Fans shall be connected to duct work by a double canvass sleeve. Each sleeve shall be minimum 150mm long, securely bolted to duct and units. Each sleeve shall be made smooth and the connecting duct work rigidly held in line with unit inlet or outlet.

Ducts shall be supported on hangers using 2 nos. galvanized hangar rods and two half-round straps per support, as per following specifications:

Duct Size (mm)	Maximum Spacing of Supports(m)	Size of G.I. Strap (mm)	Dia. of G.I. Hanger Rod mm)
Up to 600	3	40 x 3	10
601 to 900	3	50 x 3	10
901 to 1250	3	50 x 6	12
1251 to 1500	3	65 x 6	12

Duct hangers shall be fixed to Steel structure of the roof by means of M.S. angles and hooks. Soft rubber gasket of uniform thickness and width shall be used as gasket between flange joints. The gasket will be fixed with a suitable adhesive to the flange. Suitable sealant shall be applied on the coupler surface of slip joint coupling, before assembly and self tapping screws shall be used to secure the coupler in position.

Flanges shall be fastened with galvanized hexagonal full threaded nut-bolts of minimum 6mm dia. Spacing between two nut-bolts shall not exceed 125mm.

Level of all ducts shall be maintained as shown in the drawing. Levelling of ducts should be checked with a PVC tube filled with water, from a reference point.

ROUND BENDS: Bends shall be in segmental in construction. Segments shall be joined by gas welding. Welded joints shall be zinc sprayed and lacquered.

After completion of work all joints shall be visually inspected for proper gasketing and nut-bolt tightness.

BALANCING: The entire air distribution system shall be balanced to supply the air quantities as required in various zones to maintain the specified room conditions. The final balancing of air quantity through each grille or diffuser shall be recorded and submitted to the CONSULTANT for approval.

DAMPERS: Dampers of round ducts shall be butterfly type, tight fitting, made from 16g G.I. sheet.

9.4 Dampers:

Dampers shall be opposed blade type louvered dampers of robust construction and tight fitting made from 16g G.I. sheet. The design, method of handling and control, shall be suitable for the location and service required.

Dampers shall be provided with suitable links, levers and quadrants as required for their proper operation, control or setting in any desired position. Dampers and their operating devices shall be made robust, easily operatable and accessible through suitable access doors. Every damper shall have indication device clearly showing the damper position, and a locking device to lock the damper in any position.

9.5 Grilles & Diffusers:

All diffusers shall be constructed out of extruded aluminum sections. All grills shall be in extruded aluminum adjustable vane type with double deflection construction duly powder coated.

Supply air grilles/diffusers shall be provided with volume control damper made out of extruded aluminum section and painted black. Return air grilles/diffusers shall be without volume control damper.

9.6 Inspection & Balancing:

After completion of work all joints shall be visually inspected for proper gasketing & nut-bolt tightness.

The entire air distribution system shall be balanced to supply the air quantities as required in various zones and rooms to maintain the specified room conditions. The final balancing of air quantity through each grille or diffuser shall be recorded and submitted to the CONSULTANT for approval.

10.0 INSULATION WORK

10.1 Thermal Insulation of Ducting (With closed cell nitrile rubber foam)

a) Material Specifications:

Insulation Material : Closed Cell elastomeric Nitrile Rubber foam, Fire retardant
Class 'O'

Make : Armacell/Aeroflex

Adhesive : As recommended by manufacturer.

Application Procedure:

Clean the surface of the duct to be insulated free from dust grease and other matter.

Prepare the pieces of sheet as per the dimensions of the duct and apply the adhesive on the duct surface, the sheet surface as well as the edges of the sheets & leave it for 2-3 minutes for drying.

Once the adhesive is half dry and tacky, bring both the ends of insulation where the adhesive is applied in contact and stick them well. Ensure that both the surfaces are matched properly.

Apply self adhesive black cotton tape on all the joints. Before fixing the tapes it must be ensured that all the joints are sealed properly.

11.0 M.S. WELDED PIPING FOR WATER DUTY

11.1 PIPES

Pipes shall be mild steel ERW (electric resistance welded) type in class-C (heavy class) construction as per IS 1239/IS 3589. For sizes of 150NB and lower, they will be in class-C (heavy class) construction as per IS 1239. For higher sizes, they will be conforming to IS 3589, and shall have wall thickness as below:

For size 200NB to 300 NB : 5.56mm

For sizes 350NB to 500NB : 6.35mm

Tolerance on thickness shall be +/- 10%. Tolerance on diameter will be +/- 0.75% max.

11.2 FITTINGS AND FLANGES:

All bends will have radius of 1.5D, unless stated otherwise. Bends shall be forged type, made out of pipe having the same specifications as the pipe being used for straight piping. Ends shall be beveled suitable for butt- welding.

All tees and reducers shall be factory fabricated with ends suitable for butt- welding. For branching from pipes, only factory-fabricated tees shall be used. Puncturing of pipes and welding branch pipes shall not be permitted. Where the branch pipe size is substantially smaller than that of the main pipe, weld-o-lets shall be used for making the branch.

For pipe sizes of 40NB and below, socket-weld type forged tees, elbows and reducers shall be used.

All flanges will be made out of M.S. plates and shall conform to British standard Table-F

11.3 Valves:

Valves shall be of wafer type butterfly valves for 50 mm and higher sizes, and of ball type for lower sizes. Non-return valves shall be of wafer type for 50 mm and higher sizes, while for lower sizes gun-metal lift type check valves shall be used.

Material specifications of butterfly and wafer type non-return valves shall as follows:

Body and Disc: High grade cast iron as per IS:210, grade FG200/GG25,

coated with epoxy or nylon.

Shaft : Stainless steel

Seat/seal Rings: EPDM

The butterfly valves shall be provided with suitable notch plate and lock for locking the valve in required position.

The wafer type non-return valves shall be preferably with a back-up spring to avoid the disc getting stuck in open position.

Ball valves shall be of 3-piece design and have the following material specifications.

Body : Cast steel ASTM A216 Gr. WCB

Ball & Stem : Stainless steel AISI 304/316

Seat & Seal : PTFE

Ball valves shall have screwed ends when used in GI screwed piping, while they will have socket weld ends when used in MS welded piping.

11.4 Strainers:

Strainers shall be of pot type for pipeline size of 150 NB and above, while the lower size lines shall have Y type strainers. Strainer body shall be of heavy duty cast iron as per IS 210 Gr. 20 close grained. The strainer element shall be made of brass or stainless steel. The end connections shall be flanged. The cover shall also be easily openable flanged cover. Flush out cocks shall be provided on strainers of sizes 150 NB and above.

11.5. Hardware:

All nut-bolts shall be of reputed make, correct diameter and length as per the flange tables and requirements of the equipment. Nut-bolts shall be hot-dip galvanized to prevent corrosion

Gaskets shall be of fabric-reinforced non hardening rubber, 3mm thick.

11.6 Fabrication of Piping:

Piping scheme shall be as per the CONSULTANT's schematic drawing and duly approved VENDOR's drawing.

Pipe ends shall be cut by hacksaw only, and shall be beveled by grinding before making a butt-weld joint. After preparing the ends, the joint shall be tack-welded leaving a uniform gap between the ends for weld penetration. Grinding before starting the filler run shall clean the root run of the weld joint.

All welding work shall be carried out by generator type welding machines, using SUPERBOND-S or equivalent welding electrodes. All welders shall be pre-qualified by preparing sample joints.

Before starting full welding on the joints, the complete section of piping shall be fitted up in position for inspection and approval of the Engineer-in-charge. Finish welding shall be carried out only after getting approval of the fit-up.

All slip-on flanges shall be welded from outside as well as inside to the pipe. All welded joints shall be cleaned of flux and surplus metal deposition.

11.7 Installation:

Piping shall be supported on supports fabricated out of MS rolled section like channels and angles. Galvanized "U" clamps shall be provided at each support. Insulated piping shall be supported on two high density molded polyurethane half round sections as saddles and clamped. Wooden saddles shall be coated with termite proof paint.

All horizontal lines shall be in perfect level checked by a level gauge. All vertical lines shall be in perfect plumb. Lines shall run parallel or at exact right angles to the nearby lines and structures.

Spacing of supports shall not exceed the figures below:

Line size (MM NB)	:	25	50	75	100	125	150	200
Max. Spacing (Mtr.)	:	2	3	3.5	4	4.5	5	6

Purging/drain cocks shall be fixed at all highest/lowest points of the line wherever there are upward/downward loops in the line respectively, which can cause accumulation of air/dirt in the line.

11.8 Testing:

After completion of installation, the pipelines shall be hydraulically tested for leaks by a test-pump. The entire line shall be visually inspected for leaks while it is under pressure. Minimum test pressure shall be 7 Kg/cm².

All valves shall be fully open during the test. Delicate instruments and equipments shall be isolated during the test. All temporary supports shall be removed before leak testing.

11.9 Flushing:

After completion of testing, the entire piping shall be flushed with water 3 times to clear it of any dirt inside, by filling the lines from highest point and draining them from the lowest point. Circulation pumps shall not be operated for flushing the lines.

11.10 Insulation of Piping

Pipes shall be insulated with closed cell nitrile rubber foam. For pipe sizes 50NB and lower, sleeves shall be used. For higher sizes, sheets shall be used. Thickness of the insulation for chilled water piping shall be 38 mm, applied in two layers - 25mm+13mm.

The insulation shall be applied as follows:

- Clean the surface of the pipe to be insulated free from dust grease and other matter.
- In case of insulation with sleeves, select the correct ID of the insulation tube suitable for the pipe to be insulated and slit the pipe along its length using a sharp knife. Ensure that the cut is straight. Apply a thin coat of adhesive on both the cut surfaces of the insulation tubing and leave it for 2-3 minutes for drying.
- In case of insulation with sheets, prepare the pieces of sheet as per the circumference of the pipe and apply the adhesive on the pipe surface, the sheet surface as well as the edges of the sheets.
- Once the adhesive is half dry and tacky, bring both the ends of insulation tubing or sheets where the adhesive is applied in contact and stick them well. Ensure that both the surfaces are matched properly.
- Apply self adhesive black cotton tape on both the longitudinal and the circumferential joints. Before fixing the tapes it must be ensured that all the joints are sealed properly.
- In case of pipes exposed to the atmosphere, one layer of reinforced Aluminium foil (HARVEY or equivalent) has to be fixed over the insulation. For sealing the joints Aluminium foil self adhesive tape 1" width is to be used. For indoor pipes no finish is required.

11.11 Painting:

After completion of the testing and flushing, the entire pipeline and the supporting structures shall be painted with two coats of red-oxide primer, followed by two coats of synthetic enamel paint of approved shade.

Piping which is to be insulated is to be painted with red-oxide primer only.

12.0 DRAIN PIPING

The drain piping shall be made out of rigid PVC pipes of 10 Kg/cm² class. The piping shall be supported by clamping on MS angle 25mm x 3mm running continuously below the pipe. The piping shall be insulated with 9 mm thick nitrile rubber sleeve tightly fixed on the surface of the pipe. All the insulation joints shall be sealed by BOPP adhesive tape.

The drain pan shall be connected to rigid PVC pipe by braided PVC flexible pipe with appropriate adapters.

All pipes support/clamps shall be painted with red oxide primer followed by two coats of synthetic enamel finish paint.

13.0 MANUAL BALANCING VALVES

Valve should be a double regulated Globe type balancing valve. Should be min PN16 rated. Valve insert with hand-wheel and pre setting display. Valve should have threaded ends up to sizes 50 mm and flanged for above 50 mm.

Valve shall be equipped with two pressure test cocks for differential measurements.

Material specifications of balancing valves shall as follows:

Body: High grade cast iron as per IS:210,
grade FG200/GG25, coated with epoxy or nylon.

Bonnet: Cast Iron.

Insert: Carbon Steel, chromium plated with PTFE seat ring

Gasket: Graphite

Stem: Stainless Steel.

Handwheel: Ductile Iron

Balancing of the valves done by the hand held computer with digital display, integrated valve database and which is capable of calculating the actual flow rates in the valves. It should have Rechargeable batteries, It should have the possibility to connect up to two temperature sensors.

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Chapter-3

LIST OF APPROVED MAKES

Sr.No.	Equipment/Material	Makes
1.	VRF System	: Daikin/ Hitachi / Mitsubishi Electric(Imported machines and non-China)
2.	Aluminium Grilles/Diffusers	: Caryaire / Cosmos /Air-pro
3.	Insulation: Nitrile Rubber Foam	: Armacell/Aeroflex
4.	G.I. Sheets	: SAIL/ Jindal/ Tata/ Essar
5.	MS/GI Pipe	: Tata/Zenith/Jindal.
6.	P.V.C. pipe and fittings	: Supreme/Prince.
7.	Welding Rods	: Advani Oerlikon
8.	Anchor Fasteners	: Hilti/Fisher
9.	Electric Cables	: CCI/Gloster/Universal/ICC
10.	Copper Piping	: Rajco/Mandev
11.	Underdeck Insulation	: Beardsell/U.P. Twiga

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