UTTAR PRADESH POLLUTION CONTROL BOARD

TC-12 V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

INTERNATIONAL COMPETITIVE BIDDING

FOR

SUPPLY, INSTALLATION, COMMISSIONING AND OPERATION & MAINTENANCE SERVICES OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS)

E-BIDDING DOCUMENT

VOLUME - I

BIDDING DOCUMENTS

INTERNATIONAL COMPETITIVE BIDDING FOR

SUPPLY, INSTALLATION, COMMISSIONING
AND
OPERATION & MAINTENANCE SERVICES
FOR
CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS)

VOLUME - I

CONTENTS

INVITATION FOR BIDS (IFB)
INTERNATIONAL COMPETITIVE BIDDING

NO. UPPCB/293/CAAQMS/ 2019-20 Date ----------

PROJECT: **SUPPLY, INSTALLATION, COMMISSIONING AND OPERATION & MAINTENANCE SERVICES OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS)**

GLOBAL TENDER NOTICE

I. Uttar Pradesh Pollution Control Board (UPPCB), invites single stage two bid system (technical & financial) through e-submission of competitive bids for 'Supply, Installation, Commissioning and Operation & Maintenance Services of Continuous Ambient Air Quality Monitoring Stations (CAAQMS)' as specified in this document. Manual Bids shall not be accepted

Name of Work	:	Supply, Installation, Commissioning and Operation & Maintenance Services of Continuous Ambient Air Quality Monitoring Stations (CAAQMS)
Bid Price / Tender Fee	:	**Rs. 25,000/-** (Rs. Twenty five Thousand only) in the form of A/c Payee Demand Draft in favour of 'Member-Secretary' UPPCB payable at lucknow
EMD Price	:	**Rs. 2.20 Lacs** (Rs. Two Lacs and Twenty Thousand only) for each station in the form of A/c Payee Demand Draft in favour of 'Member-Secretary' UPPCB payable at lucknow or Bank Guarantee in favour of UPPCB.

CRITICAL DATE SHEET

Date of Publishing of Tender	06.02.2020
Bid Document Download/Sale Start Date	06.02.2020
Pre Bid Meeting	17.02.2020
Minutes of Pre-Bid Meeting to be uploaded	19.02.2020
Bid Submission START Date	20.02.2020
Bid Submission END Date	16.03.2020
Technical Bid Opening Date	17.03.2020

2. This invitation for the Bid is open to all the eligible data suppliers, subject to the submission certified and satisfying documentation at **https://etender.up.nic.in** (Portal). The bidder shall furnish satisfactory evidences to establish that bidder meets the requisite qualifying requirements.

3. Bidders may visit Websites: **https://etender.up.nic.in** directly for details terms and conditions of e-tender. Bidders willing to take part in the process of e-tendering are required to obtain Digital Signature Certificate (DSC) from any authorized Certifying Authority (CA) under CCA, Government of India viz. NIC, DSC is given as a USB e-token. After obtaining the DSC from the approved CA they required to register the fact of possessing the DSC through the registration system available in the website.

4. Bidders may download a complete set of bidding documents from the website: **https://etender.up.nic.in** with the help of e-token. This is the only mode of collection of tender document. Tenders are to be submitted online. Details of submission procedure are given below under 'Instructions to Bidders".

5. Bidders are requested to submit a **non-refundable** Bid Document fee (Tender fees) in the form of Demand Draft / Pay order/Banker's Cheque in favour of **"Member-Secretary, UPPCB",** payable at Lucknow**,** Uttar Pradesh and scanned copy of the bid document fee should be uploaded in the specific folder marked for 'Bid Document Fee' along with the bid.

   However, Bid Document Fee, Earnest Money in original, original copy of affidavits and credit facility certificate must be submitted physically within the due date & time and to be dropped in the Box to be kept in the ground floor, at 'UPPCB Head Office, TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010' marked as 'Supply, Installation, Commissioning and Operation & Maintenance Services of Continuous Ambient Air Quality Monitoring Stations (CAAQMS)' before bid closing date. **Tenderer shall likely to be liable for legal action for non-submission of original payment instrument like DD, etc., against the submitted bid. The Demand Draft attached/submitted for tender fee shall be non refundable.**

6. This bidding takes simultaneous bidding procedure in two part (Folder) bidding systems as Part-1: Technical Requirements for participation and Part-2: Financial Bid. All the eligible and interested bidders are required to submit the Technical offer for building the station at selected / specified cities towards data supply to U.P. Pollution Control Board and CPCB, Delhi along with on line data transfer by means of leased line having independent IP address in parallel; and financial bid for data supply (Daily, Weekly, monthly, quarterly and annually) simultaneously through online e-tender system. Technical offer will be opened and analyzed first. Only the bidders, whose Technical offer found responsive will be notified by the Board and uploaded on e-tender system. Financial Bids (to be submitted in the Template provided with the Tender document) will be opened only technically qualified firms and the date and place will be intimated

to participate in the public opening of the financial bid.

For amendment in bidding, in documents or extension of bid submission date, if any, bidders are requested to visit websites ***https://uppcb.com*** **and** **https://etender.up.nic.in. Board will not publish further any notice in newspapers for such amendment/extension.**

7. Bidders must submit their bids online for "Supply, Installation, Commissioning and Operation & Maintenance Services of Continuous Ambient Air Quality Monitoring Stations (CAAQMS)" for stations to be established as per Technical specifications, attached to this bid document.

8. **All the bids must be accompanied by bid security (EMD) in accordance with the Instructions to Bidders in the bidding documents for the amount.**

9. The scanned copy of the Bid Security (EMD) should be uploaded online in Cover I (Folder -1) in the specific file marked for 'Bid Security' along with technical offer.

   However, Bid Security DD in favour of "Member-Secretary, UPPCB **"** payable at Lucknow**,** U.P, OR Bank Guarantee in favour of **'Member-Secretary, Uttar Pradesh Pollution Control Board",** of Nationalized Bank, should be submitted physically within the due date & time and to be dropped in the Box to be kept in the UPPCB Head office, ground floor,TC-12 V, Vibhuti Khand, Gomti Nagar, Lucknow-226010 marked for 'Supply, Installation, Commissioning and Operation & Maintenance Services of Continuous Ambient Air Quality Monitoring Stations (CAAQMS).

10. The bid must accompany Bid Document Fee (Tender fees of Rs.25,000/- (Rs. Twenty five Thousand only) in the form of Demand Draft from Nationalized Bank (non refundable) and Bid Security Money (EMD) as indicated above, failing which it will not be considered.

11. The UPPCB will not be responsible for any cost(s) or expense(s) incurred by bidders in connection with the preparation or delivery of bids.

12. The UPPCB reserves the right to reject any or all the tenders without assigning any reason whatsoever.

13. In the event of date being declared as a closed holiday for UPPCB's Office, the date for submissions of bids and opening of bids will be the following working day at the appointed time.

14. The bidder or his official representative is invited to attend the **pre-bid meeting**, which will take place as mentioned above, at the Board's office. In the pre-bid meeting the clarification sought by the bidder will be clarified.

15. The bidder should have at least five years experience in satisfactory operation of real time system for Ambient Air Quality Monitoring.
16. For all the items not manufactured by the Bidder i.e. Analyzers, Monitors, Calibrators and Sensors, the bidders should be authorized by the manufacturers for these items as per the format "Form of letter of authorities" provided as Attachment 3 of Section 3, except where make is prescribed.
17. Bidder or their authorized representative should have adequate financial and technical capability to execute the contract.
18. The bidder should furnish the information on all past supplies and satisfactory performance, in "Performance Statement" as per Attachment No. 8 C of Section 3 and minimum two (2) no. documentary evidences (client certificates in favour of bidder or manufacturers of equipment) in support of the satisfactory operation of similar air monitoring stations.
19. The bidder or its associates as an O &M partner in India, (any authorized agency in India) should have well trained O & M personnel on its regular rolls as per following details and on award of LOI bidder shall submit the name of Project Engineer (Grad. Engineer), Technicians (Diploma holder in electronics/ instrumentation) and Data Processor for central data management (each at State Board's Head Office and UPPCB-Delhi) for management of all the CAAQM stations in respective Zone(s). Their resume, PF slip as a proof of their regular employment with the bidder. All personnel should be on pay roll of the O & M partner.
20. The O&M partner shall furnish an undertaking regarding carrying out satisfactory O&M of CAAQMS covered in this document as per terms & conditions of the document on behalf of the bidder. This information is to be provided as per Attachment 5 & 9 of Section III.

21. For any Tender related assistance/tender questionnaire please contact: Chief Environmental officer, Central Laboratory, UPPCB, email: ceolab@uppcb.com

22. For any technical related queries please contact at:
    Mobile :07839891457
    E-Mail :ceolab@uppcb.com

Member Secretary
Uttar Pradesh Pollution Control Board
Lucknow-226010

ANNEXURE – I (Items Description for one CAAQM Station)

Sl. No.	Item / Analyzer Name	Total Quantity
1.	Monitoring Station foundations.	Actual
2.	Air Conditioner, Split Type, Wall mounted along with voltage stabilizer (2 X 2 ton, 1 X 1 Ton). at the CAAQM Station	Three
3.	On line UPS (1X10KVA, 1 hr. back up and 1X5 KVA, 2 hr. back up) at the CAAQM Station	Two
4.	Sampling System having 10 port manifold	One
5.	19" Rack cabinet to accommodate all analyzers & systems	Three
6.	Continuous Ambient Oxides of Nitrogen (NO/NO_2 / NO_x) Analyzer	One
7.	Continuous Ambient Ammonia (NH_3) Analyzer	One
8.	Continuous Ambient Sulphur Dioxide (SO_2) Analyzer	One
9.	Continuous Ambient Ozone (O_3) Analyzer	One
10.	Continuous Ambient Carbon Monoxide (CO) Analyzer	One
11.	Continuous BTEX Monitor / Analyzer	One
12.	Multi calibration System for Gas calibration and Meteorological, Flow and Electronic Calibration	One set
13.	Automatic $PM_{2.5}$ Particulate Matter Monitor	One
14.	Automatic PM_{10} Particulate Matter Monitor	One
15.	Meteorological Sensors for Wind Direction, Wind Speed, Ambient Temperature, Rainfall, Relative Humidity, Solar Radiation and Telescoping Crank – up Meteorological Tower	One set
16.	**IT PERIPHERLS:**	
	(a) Data Acquisition System (DAS): One for each CAAQM Station	One
	(b)Computer System for DAS: One for each CAAQM Station (c) Computer System for AQI: One for each CAAQM Station	One One
	(d) Laser Printer Colour MFP : One for each CAAQM Station (e) Server Rack: One for each UPPCB (f) Rack Server: One for each UPPCB (g) Access Point: One for each UPPCB	One One One One
	(h) UTM: One for each UPPCB	One
	(i) 24Ports CISCO Switch: One for each UPPCB	One
	(j) Central Management Software with License w.r.t. Data Acquisition: One for each UPPCB	One
	(k) Remote Calibration & Validation Software: One for each UPPCB	One
	(l) Remote Connectivity Tool/Software: One for each UPPCB	One
17.	Data display Board Transmission Device	One
18.	Day & Night Visible Data Display Board (Near to the station)	One
19.	Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares in a Housing Container OR Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares without a Housing Container	One set OR One set w/o container
20.	Lease Line for Internet AND Broadband (for Station) AND Data Card as mode Communication system (for display Board)	One set
21.	RCC foundation, pillars misc works including Caging, civil & electrical work (for CAAQM stations as well as Data Display Boards)	Actual

List of CAAQM Stations

S. No.	City	No. of CAAQMS		Name of Regional office and Address
		Under MoEF&CC Funds	Under NCAP	
01.	Agra	03	02	Agra : 14, Sector-3 B, Avas Vikas, Sikandra Yojna, Agra
02.	Mathura	01	-	Mathura : 65, Baldevpuri, Maholi Road, Post-Krishna Nagar, Mathura
03.	Firozabad	01	-	Firojabad : H.No. 77 Gali No. 2 Mahaveer Nagar, Firojabad
04	Lucknow	-	02	IVth floor, PICUP Bhawan, Vibhuti Khand, Gomti Nagar, Lucknow-226010
05	Kanpur	-	02	243, Avas Vikas, Phase-III, Sadbhavna Nagar, Kalyanpur, Kanpur-17
06	Prayagraj	-	03	Sector-10, Yojna No.-3 Avas Vikas Parishad Colony, Jhusi, Prayagraj
07	Varanasi	-	03	Avas Vikas Office cum-commercial Complex Jawahar Nagar, Bhelupur, Varanasi
08	Gorakhpur	01 - By own resources		Jharkhandi Mahadev, Avas Vikas Colony, Kuda Ghat, Dooria Road, Gorakhpur

VOLUME 1

SECTION I (ITB)

INSTRUCTIONS TO BIDDERS

C O N T E N T S

Important: Bidders are expected to examine the Bidding Documents carefully and are deemed to have download from the portal and read all documents and technical specifications. It shall be the responsibility of the Bidder to request any clarification on any document. Failures to do so will be at the Bidder's risk.

INSTRUCTION TO BIDDERS

1.0 DEFINITIONS

The terms used in this bidding document shall have the meaning defined hereunder:

1.1 "The Project" or "The Works" means supply, installation & Commissioning of equipments for Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and Operation & Maintenance of this CAAQMS at the pre defined city/ location

1.2 "The Board" means the **Uttar Pradesh Pollution Control Board (UPPCB)**, having its office at TC-12V, Vibhuti Khand, Gomti nagar, Lucknow-226010 and shall include any person or persons authorized by the Board. The Board is also executing agency of the Project. "The **Owner" means the Board.** The UPPCB or State Board means Uttar Pradesh Pollution Control Board.

1.3 "The Bid" means the offer or proposal of the Bidder to be submitted for the works in accordance with the stipulations set forth in this Bidding Documents.

1.4 "The Techno-commercial Bid" means the Technical part of the Bid.

1.5 "The Financial Bid" means the financial part of the Bid.

1.6 "The Bidder" means either the manufacturer of the Equipment or his authorized Representative, who submits the Bid for the Works.

1.7 "The Authorized representative" means the bidder who has enclosed the manufacturer's authorization as per the format "Form of letter of authorities" provided as Attachment 3 of Section III.

1.8 "The Contractor" or "The Contractor" means the Bidder, whose Bid for the Works has been accepted by the Board and includes his personal representatives, successors and authorized assignees.

1.9 "The Manufacturers" means the firms, which produces the equipment to be furnished by the Contractor under the Contract with the Board.

1.10 "The Bidding Documents" mean all the documents in Volume I and II in the bidding documents annexed thereto. 'UPPCB' Uttar Pradesh Pollution Control Board, located in Uttar Pradesh.

1.11 "The Contract" means the written agreement to be concluded between the Board and the Contractor and includes terms and conditions stipulated on the Bidding Documents and any other descriptions annexed thereto which form an integral part of the agreement to be provided by the Board.

1.12 "The Equipment" means all kind of materials, machinery, components, apparatus, articles and instruments for the Project to be provided by the Contractor to the Board under the Contract.

1.13 "The Specifications" means the specifications of the Works to be performed by the Contractor in conformity with those specified in the Technical Specifications of Volume II and all other related documents in the Bidding Documents, and modifications thereof or additions thereto as may from time to time be made and approved in writing by the Board through the Consultant in case prior to the Contract and agreed upon by both the Board and the Contractor after the Contract.

1.14 "S/W" means the Scope of Works in Section II of this Volume. O&M means Operation and Maintenance.

1.15 "The Sites" means CAAQMS (Continuous Ambient Air Quality Monitoring Station) at the defined city/ location.

1.16 "The Contract Price" means the price payable to the contractor under the contract for the full and proper performance of its contractual obligations.

2.0 INTRODUCTION

2.1 The **Uttar Pradesh Pollution Control Board** intends to invite bids from eligible bidders for supply, installation & commissioning of equipments for Continuous Ambient Air Quality Monitoring Station (CAAQMS) and operation & Maintenance of this CAAQMS at specified city / locations wise in India.

2.2 **Scope of Works**

The description of Scope of Works is set forth in Section II of this Volume 1.

2.3 Size of Bid

The whole bid is for single composite package as detailed at Section - II i.e. scope of work.

2.4 Eligible Equipment and conformity to the bidding documents

(1) Being global tender, all the countries are the eligible source countries for goods and services to be supplied under this contract.

(2) For the purpose of this clause "origin" means the place where the equipment or component parts thereof are grown, or produced. Equipment are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

(3) The Bidder shall furnish the Certificate of Country of Origin (duly authenticated by competent authority of that country) of each Equipment (as per Attachment 4 to Section III) in these instructions, as the documentary evidence of the eligibility of the Equipment.

(4) The origin of equipment may be distinct from the nationality of the bidders.

(5) Conformity of the Bidding documents may be in the form of literature, drawings, and data, and the Bidder shall also furnish:

a) A detailed description of equipment, essential technical and performance characteristics.
b) A list giving full particulars, including available sources of all spares (whether mandatory or recommended) and their prices, special tools etc., necessary for the proper and continued functioning / maintenance of the equipment on long term basis.
c) An inventory of the spare parts for each equipment available with the O&M partner in India mentioning the ones not available in India and have to be imported in case necessary after the expiry of O&M period.
d) **A clause-by-clause commentary of the Board's Technical Specifications** demonstrating the equipment's substantial responsiveness of these specifications or a statement of deviations of exceptions to the provisions of Technical Specifications.

The above stated requirements are a minimum and the Board reserves the right to request any additional information concerning the Bid Proposal in response to this Invitation of Bids.

2.5 **Qualifying Requirements of Bidders**

This invitation for the Bid is open to any bidder who is a reputed manufacturer or authorized representative of the manufacturer, who on its own or along with his associate as O&M partner meets the Qualifying Requirements stipulated hereunder for participation in the tender. The bidder shall furnish satisfactory evidence to establish that bidder meets the following qualifying requirements.

2.5.1 The bidder should be a manufacture or authorized representative as listed in the scope of work who must have manufactured, supplied, tested and commissioned minimum six (6) nos. similar air monitoring stations in India either container based or otherwise in any one year of the last three years which should be in satisfactory operation. The Principal firm (manufacturer firm) should have minimum five years experience of supply of CAAQMS and his representative firm (O&M partner) should have minimum three years experience of operation, maintenance, report preparation etc. of CAAQMS station.

2.5.2 For all the items not manufactured by the Bidder i.e. Analyzers, Monitors, Calibrators and Sensors, the bidders should be authorized by the manufacturers for these items as per the format "Form of letter of authorities" provided as Attachment 3 of Section 3.

2.5.3 Bidder or their associate as O&M partner should have adequate Financial & Technical capability to execute the contract. The bidder should have cumulative financial term over of minimum Rs.60.0 crores (Rs. Sixty Crores) or above in last three financial years ending with FY 2018-19 in supply of CAAQMS. The bidder should submit audited balance sheet/ CA Certificate. (Attachment 8A)

2.5.4 Bids of bidders quoting as authorized representative of a **manufacturer, who meets the above requirements** in full, can also be considered, provided:

(i) the manufacturer furnishes a legally enforceable authorization certificate in the prescribed form at Attachment-3 Section-III, assuming full guarantee and O&M obligations as per GCC and SCC, for the goods offered; and

(ii) The bidder, as authorized representative, supplied, tested and commissioned minimum six (6) nos. similar air monitoring stations in India or overseas either container based or otherwise in any one year of the last three years which should be in satisfactory operation with no adverse report for last two (2) year as on date of bid opening.

(iii) The bidder, as Indian agent, who desires to quote directly on behalf of their foreign principal to get themselves enlisted with the Central Purchase Organization (e.g. DGS&D). This is as per the

compulsory enlistment scheme of Department of Expenditure, Ministry of Finance (GoI).

(iv) **In this tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.**

(v) If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.

2.5.5 The bidder should furnish the information on all past supplied and satisfactory performance for both 2.5.1 and 2.5.4 (ii) above, in "Performance Statement" as per Attachment No. 8B & 8C respectively of Section 3 and minimum two (2) nos. documentary evidences (client certificates in favor of bidder or manufacturers of equipment) in support of the satisfactory operation of similar air monitoring stations, which is in use for last two (2) years in case bidder is manufacturer or for last one (1) year in case bidder is authorized representative.

2.5.6 The bidder or their associates with an O&M partner in India, (any authorized agency in India) should have well trained O&M personnel on its regular rolls as per following details to establish this bidder should enclose the curriculum vitae of following persons with required experience.

Sl. No.	Responsibility	Minimum Persons	Minimum Qualification	Experience
1.	Project Manager	1	Graduate Engg./ M.Sc.	10 years
2.	Technician	1 at each station	Diploma in Electronics/C&I/ Electrical	3 years
3	Data Processor	1	Science Graduate	2 Years

2.5.7 The O&M partner shall furnish an undertaking regarding carrying out satisfactory O&M of CAAQMS covered in this document as per terms & conditions of the document on behalf of the bidder. This information is to be provided as per Attachment 5 & 9 of Section III.

2.5.8 The Bidder firm (representative firm) and their Principal firm (Manufacturer firm) have to give undertaking that they will continue the formal collaboration till the entire duration of O&M contract. The spares/consumables will be supplied by the Principal firm to Representative firm till entire duration of O&M contract of CAAQMS.

2.6 Bidding Procedure

(1) The Bidding will be in two parts, **Part-1:** Technical offer and **Part-2**: Financial Bid **through e-tender system**.

(2) Both part of the Bid shall be submitted online simultaneously **through e-tender system** by the designated date specified in Tender Notice above. Technical offer to Supply, Installation, Commissioning and O&M of CAAQM Stations, as mentioned above, will be opened and evaluated first. Those who technically qualified alone will be considered for opening of financial Bid and status notification will be uploaded through e-tender system. The comprehensive Financial Bids of tender documents based on the status will be opened. The date to participate in opening of the financial bid will also be informed through e-tender system.

S.N.	**Documents to be uploaded by the Bidder**
1.	Scanned copy of Bid Document Fees
2.	Scanned copy of Bid Security
3.	The Power of Attorney authorizing the signatory of the Bid.
4.	Financial Capability of Bidder (for a period of last three years).
5.	Performance Statement for Manufacturer (for a period of last five years).
6.	Performance Statement for Authorized Representative of the Manufacturer (for a period of last five years).
7.	Certificate of letter of Authority from Manufacturers for all the Equipment.
8.	Certificate of supply of Spares and Consumables by Manufacturers upto 10 years
9.	Certificate from Manufacturer stating the country of origin of each Equipment.
10.	List of Equipment Offered
11.	List of Manufacturers of the Equipment offered
12.	Financial Bid i.e. CAAQM Station cost and O&M Cost in the prescribed template.
13.	Deviation Schedule
14.	Technical Data Sheets of the all the Equipment in the Package

(3) Financial Bid should contain schedule of price bid in the form of BOQ, the template of the same must be downloaded from work item document and the same file should be uploaded after quoting the prices.

(4) The bidder must quote for complete scope of work in the package. In case the bidder does not quote for complete scope of work, the bid shall be rejected.

(5) The bidder shall bear all costs associated with the preparation and delivery of its bid, and this office will in no case be responsible or liable for those costs.

3.0 BIDDING DOCUMENTS

The tender shall be submitted online in Two Part, viz. Technical Bid and Price Bid. The Bidding Documents will be available only at Websites: **https://etender.up.nic.in and can be downloaded a complete set of bidding documents, attachments & financial template file.**

3.1 **Check of the Bidding Documents**

The Bidder shall check the number of pages and drawings and notify the Board of any missing or duplicate pages and drawings or of any figures or words, which may be indistinct or ambiguous. No claim will be admitted as result of the Bidder's failure to comply with the foregoing.

3.2 **Contents of Bidding Documents**

(1) The Bidding Documents include:

Volume I

Invitation for Bids

SECTION I	INSTRUCTION TO BIDDERS
SECTION II	SCOPE OF WORKS
SECTION III	FORM OF TECHNO-COMMERCIAL BID
SECTION IV	FORM OF FINANCIAL BID
SECTION V	GENERAL CONDITIONS OF CONTRACT
SECTION VI	SPECIAL CONDITIONS OF CONTRACT

Volume II

Technical Specifications

(2) Bidders must acquaint themselves with all the Bidding Documents embodied in Volume I and Volume II. In order to familiarize with the Works, the Bidders should ascertain all particulars regarding the location and site conditions at their own expenses. No plea attributed to lack of information or insufficient information will be entertained at any time.

The Board shall reserve the right and privilege to settle the affairs in case any doubt may occur concerning the Bidding Documents.

3.3 Clarification of Bidding Documents

If a prospective Bidder has any doubt as to the meaning of any part of the Bidding Documents he may notify the Board for supplementary information and explanation in writing/email or facsimile in compliance with Form of Questionnaire of Attachment 1 in Section III at the following address as per time schedule.

Member Secretary
Uttar Pradesh Pollution Control Board,
TC-12 V, vibhuti khand, Gomti Nagar, Lucknow-226010

3.4 Amendment of Bidding Documents

(1) At any time prior to the deadline for submission of the Bid, the Board, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the Bidding Documents by amendment.

For amendment in bidding documents or extension of bid submission date, if any, bidders are requested to visit website ***https://uppcb.com and*** https://etender.up.nic.in before bid submission closing date.
Board will not publish further any notice in newspapers for such amendment / extension.

(2) The Board will not responsible or take any liability arising out of non-receipt of the same in time or otherwise.

(3) In order to allow prospective Bidders reasonable time in which to take amendment into account in preparing their Bids, the Board at its discretion may extend the deadline for submission of the Bid.

4.0 PREPARATION AND SUBMISSION OF BID

Bid submission to be done through e-tendering procedure(s)

4.1 Language

The Bid to be prepared by the Bidders, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the Board or the Consultant shall be written in English. Failure to comply with this may disqualify a bid.

4.2 One Bid per Bidder

Each Bidder shall submit one Bid only.

4.3 Local Representation

a) Foreign Bidders, if they have in India a local representative in Indian / Indian agent shall indicate in their bid (Bid Proposal Sheets), the name of such person of firm and also shall furnish the following information in their bid:

1) The precise relationship between the Bidder and his Indian Agent.

2) The mutual interest which the Bidder and the Indian Agent have in business of each other.

3) Any payment which the Indian Agent receives in India or abroad from the Bidder whether as a commission for the Contract or as a general retainer fee.

4) Indian Agent's Income Tax Permanent Account Number.

5) Bidder's Income Tax Permanent Account Number.

6) All services to be rendered by the Indian Agent whether of general nature or in relation to the particular contract.

7) All above statements have to be substantiated by authenticated documents from competent authority.

b) Agent's commission, if any, (to be included in the Bid Price) shall be indicated separately but as a part of Bid Price and the same will be payable only in equivalent Indian Rupees. Indian agent's commission will not be subject to any escalation whatsoever and will be payable at the time of final payment after commissioning & training. To effect such payments, the Indian Agent's commission will be calculated on the basis of exchange rates (State Bank of India T T Exchange buying rate) as on the date of notice of the award to the successful Bidder.

A. The bidder /Contractor shall not pay Indian Agent's Commission, unless declared in the bid.

4.4 **Bid Security / Earnest Money**

(1) Pursuant to Clause 5.1 in this instruction, the Bidder shall furnish, as part of its Bid, his Bid Security in the amount **of Indian Rupees, Two Lacs and Twenty Thousand only** (Rs. 2.20 Lacs) value for each CAAQM Station quoted in the form of Bank draft in favour of 'Member-Secretary, UPPCB' payable at lucknow or in form of Bank Guarantee in favour of 'Uttar Pradesh Pollution Control Board' from any nationalized Bank of India valid for one year.

(2) The Bid securities in the form of Bank Draft in favour of 'Member-Secretary, UPPCB' payable at lucknow shall be valid for Ninety days (90). This Bid Security shall provide security for the due performance by the Bidder of the obligations and undertakings in the Bid on his part contained.

(3) The Bid Security shall be submitted through Crossed bank draft in favour of "Member-Secretary, UPPCB' payable at lucknow OR through Bank Guarantee in favour of '**Uttar Pradesh Pollution Control Board'**, from a reputed Indian Nationalized Bank (being beneficiary).

(4) Any Bid not secured by the Bid Security will be rejected by the Board as non-responsive pursuant to Sub-clause 8.4. Unsuccessful Bidder's Bid Security will be discharged or returned as promptly as possible, but not later than thirty (30) days from the expiration of the period of the Bid validity specified in Sub-clause 4.6 hereunder. The successful Bidder's Bid Security will be discharged upon the Bidder signing the Contract pursuant to Sub-clause 13.3 in this

instruction and furnishing the Performance Security pursuant to Clause 14 in this instruction.

(5) The Bid Security may be forfeited:

a. If a Bidder withdraws its Bid during the period of Bid validity
b. specified in Sub-clause 4.5 hereunder;
   I. If a bidder refuses to accept the arithmetical corrections

made according to ITB (Instructions to the Bidder) Clause No. 11;

c. In case of a successful Bidder, if the Bidder fails to sign the Contract in accordance with Sub-clause 13.3 in this Instructions and furnish Performance Security in accordance with Clause 14 in this Instructions;

d. In case bidder refuses to withdraw, without any cost to the Owner, those deviations, which the bidder did not state in the Deviation Schedules.

(6) **No interest will be payable by the Board on the above Bid Security.**

4.5 **Validity of Bid**

The bid shall remain valid and binding on the Bidder for one hundred Eighty days (180) from the final time and date for submission of the Bid. Bid validity for a shorter period shall be rejected by the Board as non-responsive.

In exceptional circumstances, the Board may in writing or by facsimile, solicit the Bidder's consent to an extension of the period of the Bid validity. If the Bidder agrees to the request for extension, the Bid Security shall also be extended for an equivalent period of time.

Any Bidder may refuse to extend the validity of his Bid without forfeiting his Bid Security, but the Bid will not be considered.

Bidders granting the requests for extension of the Bid validity will not be required or permitted to modify their Bids.

4.6 **Modification and Withdrawal of Bid**

a) For amendment/withdrawl of bid or extension of bid submission date, if any, bidders are requested to visit website ***https://uppcb.com*** ***and*** ***https://etender.up.nic.in*** before bid submission closing date. **Board will not publish further any notice in newspapers for such amendment / extension.**

c) No Bid shall be allowed to be modified subsequent to the deadline for submission of Bids.

d) No bid shall be allowed to be withdrawn in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified in the clause 4.5 above. Withdrawal during this period may result in the forfeiture of the bid security pursuant to clause 4.4 (5).

4.7 **Rejection of Bid**

Failure by the Bidder to comply with the provisions of these Instructions to Bidders or any part of the Bidding Documents may result in rejection of the Bid and forfeiture of the Bid Security.

The Board reserves the right to accept or reject any or all Bids or to amend the Bidding process at any time prior to award of the Contract without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Board's action.

The Board also reserves to itself the right of accepting the whole or any part of the Bid and the Bidder shall be bound to perform the same at the rate quoted.

4.8 **Contacting the Board**

Except for responses to request for clarification of the Bid by the Board, the Bidder shall not contact the Board for any matter related to this Bid from the time of submission of the Bid until the Contract is awarded.

Any efforts by the Bidder to influence the Board in his decision in respect of evaluation of the Bid or award of the Contract shall result in the rejection of the Bid and forfeiture of the Bid security.

5.0 PREPARATION OF TECHNO-COMMERCIAL BID (Technical Part)

5.1 Bid Security

The Bidder shall enclose his Bid Security in the sealed envelope marked "A – BID SECURITY" and "ORIGINAL". The Bidder shall drop this envelope at the Board's Office in Tender Box by the closing date of bid.

5.2 Qualification Documents

Following documents shall be submitted through e-portal :

1. Authorization letter authorizing the signatory of the Bid to commit the Bidder.
2. Attachments in support of meeting qualifying requirements as per Clause No. 2.5 for the quoted packages (Attachments 8A, 8B & 9 of Section-III).
3. Copy of certificate of local branch, sales, residential and representative office(s) of the Bidder in India as per certificate from pursuant to Attachment 2 of Section III.
4. Certificate of letter of authority from manufacturers for all the Equipment (Attachment 3 of Section III).
5. Certificate from manufacturer stating the country of origin of each Equipment duly authenticated by competent authority of that country (Attachment 4 of Section III).
6. Certificate of carrying out O&M by O&M Partner (Attachment 5 of Section III).
7. List of Equipment offered (Attachment 6 of Section III).
8. List of Manufacturers of the equipment offered (Attachment 7 of Section III).
9. Pre-requisite for installation of equipment offered (Attachment 11 of Section III).
10. The Authorized Indian Agent/Representative Indian supplier should have minimum 02 years continuous agency partnership/joint venture/preparation or collaboration with their Principal foreign supplier. The documentary proof of such agency ship / authorization / MOU should be submitted along with the technical part. The bid of the firm does not contain the proof of such nomination / authorization as Indian agent will be rejected.

5.3 **Techno-commercial bid including Technical Specifications and Catalogs**

The following documents shall be uploaded by the Bidder and mark the file clearly about the content.

1. Attachments 1 & 2 of Financial Bid, Section IV.
2. Deviation Schedule (Attachment 12 of Technical Bid, Section-III).
3. Technical Date sheets of the Equipment in the package (Annexure-I, Vol. II) offered:
   a) In case that there is no deviation from the Board's requirement, the Bidder must write down "complied" in the column for "Bidder's Response" and it is not necessary to rewrite the same words of the requirements.
   b) In case of any deviation from the requirement the Bidder must write down the "not complied" & the deviation in blanks under "Bidder's Response".
   c) The Bidder shall clearly indicate contents and quantities of standard accessories for the proposed Equipment in the blanks.
   d) The Bidder shall understand that decision of the Board will be binding in regards of anything not specifically mentioned in the technical specification.
   e) The Bidders shall offer only one manufacturer, one brand and one model.
   f) Complete set of original catalogues and/or photographs and/or pamphlets illustrating principal feature.

6.0 PREPARATION OF FINANCIAL BID

6.1 **Preparation of Financial Bid**

The Bid Price to be quoted by the Bidder in the specified format shall be prepared according to the Attachment in Section IV without any alteration or change.

The Bid Price shall be quoted for performing the Contract strictly in accordance with the Technical Specifications.

The Bid Price quoted by the Bidder shall be firm during the Bidder's performance of the Contract and not subject to variation on any account.

A Bid Price submitted with an adjustable price will be treated as non-responsive and will be rejected.

6.2 **Summary of Bid Price**

Summary of Bid Price shall be prepared and submitted in accordance with the Attachment 2 in Section IV.

The Bidder shall indicate prices for the package in the following manner:

I. For the Goods Supplied from Foreign Origin

1. CIF Price at Port of de-embarkment.

a) FOB Price of the Package (for the equipment to be supplied from Foreign Origin)

b) Freight for complete Package

c) Insurance covering all risks up to Port of de-embarkment

2. Local Costs

a) Port handling and clearance charges.

b) Transportation cost from the port to Port of de-embarkment to destination Sites.

c) Insurance covering all risks from Port of de-embarkment up to handing over.

d) Installation and commissioning.

II. For the Goods Supplied from India

a) The price of the Equipment quoted ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf including all customs duties and sales and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of the Equipment quoted ex-works or ex-factory.

b) Price for handing and inland transportation, insurance up to handing over the equipment at Site and other local costs up to delivery of the Equipment to each Site.

c) Installation and commissioning

d) Price of other incidental cost, if any. Then the Bidder shall specify the same.

(iii) Price of other incidental cost such as Indian Agent's Commission, if any. The Bidder shall specify the same.

(iv) Cost of O&M of CAAQMS for Five (5) years including insurance (see *note below).

(v) Training

The Bidder shall quote the price for the training as indicated in clause 10 of S/W.

Cost of Travel, Boarding & Lodging and local transport cost of participants shall be borne by the bidder.

***Note :**

(1) **Quoted cost O&M of a CAAQMS should be in range between 12% to 18% (ceiling price) against total capital cost of Initial supply installation & commissioning of each station and it should be in ascending order during the entire period of contract i.e. 05 year with the objective to maintain the quality of operation.**

(2) The above ceiling O&M cost also include incidental charges (Security, Electricity, Data Connectivity, Stations Supervisor, Insurance) and services

(3) Health of the Stations should be sound for the entire period (05 years) so that the contract can be further renewed on mutual agreement.

(4) All the statutory taxes & duties as applicable in the State of India i.e. Duties and Taxes, as applicable will be paid as actual by the Vendor for simplification. However, these taxes will be reimbursed by the Board on production/submission of original bills.

6.3 **Bid Price Breakup**

The Bidder shall prepare and submit the Bid Price Breakdown (CIF Price or Ex-works price as applicable) for each item of the quoted package(s) in accordance with Attachment 3 in Section IV.

The Bidder shall prepare and submit break up of Operation & Maintenance of CAAQMS as per Attachment 3A in Section-IV.

6.4 **Currencies of Bid:**

The unit rates and the prices shall be quoted by the bidder separately in any one of international trading currencies for the equipment, which the bidder proposes to supply.

7.0 COMPLETION AND SUBMISSION OF BID

7.1 **Completion of Bids**

7.1.1 **Techno-commercial Bid**

(1) The Techno-commercial Bid shall not contain any information regarding Bid Prices and other financial matters except the Bid Security pursuant Clause 4.4 in this instruction.

7.1.2 **Financial Bid**

The Bidder shall submit the price bid in the prescribed Price Bid Template along with the Tender Document on the portal and upload after quoting the price with the bid.

The Bid shall be signed by the Bidder himself or for and on behalf of the Bidder by an officer or officers with authorization letter as the case may be. A notarized copy of such Power of Attorney shall be submitted with the Bid pursuant to Clause 5 in this instruction.

7.2 **Submission of Bid**

All the documents for the Techno-commercial Bid (technical) and Financial Bid (financial) shall be uploaded on the Government Tender Website **https://etender.up.nic.in Within the specified time and date.**

Bids in the form of Telex, facsimile, telegraph or email, will not be accepted. Only the complete documents specified above, uploaded on the specified tender site and time will be considered.

8.0 OPENING AND EVALUATION OF TECHNO-COMMERCIAL BID

8.1 **Opening of Technical Bid**

Only the Technical Bid will be opened in public on the dated mentioned in the Tender Notice above at the Board's place. Bidders or their representatives may attend the opening.

All the Bidders or their representatives present shall sign a format evidencing their attendance.

8.2 **Confidentiality of the Process**

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of the contract shall not be disclosed to bidders or any other person not officially concerned with such process. Any effort by a bidder to influence the Board's processing of Bids are award decisions may result in the rejection of the Bidder's Bid. The request for clarification and response shall be writing or by fax, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Board in the evaluation of the bids in accordance with the clause 11.2 of these instructions.

8.3 **Clarification of Techno-commercial Bids**

To assist the Techno-commercial examination and evaluation of bids, the Board may, at its discretion ask the bidder for a clarification of its Techno-commercial bid. All responses to request for clarification shall be

in writing before the pre-bid meeting date & time, and **no change in the price bid shall be sought, offered or permitted after the tender closing date.**

8.4 **Preliminary Examination**

The Board will examine the Techno-commercial Bids to determine whether they are complete, whether the documents have been properly signed and whether the Techno-commercial Bids are generally in order. Any Techno-commercial Bid found to be non-responsive for any reason i.e. non-conformity of bid security, or not meeting the eligibility criteria and/ or qualifying requirements pursuance to clause 2.4 & 2.5 of ITB etc. will be rejected by the Board. No further Techno-commercial evaluation shall be carried out for such bidders**.**

Prior to detailed evaluation of Techno-commercial bids, pursuant to clause 8.5, the Board will determine the substantial responsiveness of each Bid to the Bidding Documents including acceptable quality of goods offered. A substantially responsive Bid is one, which conforms to all terms and conditions of the Bidding Documents without material deviations, objections, conditionality or reservations. A material deviation, objection, conditionality or reservation is one (i) that affects in any substantial way the scope, quality or performance of the contract;
(ii) that limits in any substantial way, inconsistent with bidding documents, the Owner's right or the successful Bidder's obligations under the Contract; or (iii) whose rectification would unfairly affect the competitive position of other Bidder's who are presenting substantially responsive bids.

No deviation, whatsoever, is permitted by the Owner to the provisions relating to the following clauses (important Conditions):

(a) Bid security (ITB Clause 4.4)
(b) Resolution of Disputes (G.C.C clause 36),
(c) Applicable law (G.C.C clause 41),
(d) Taxes & duties (G.C.C Clause 37),
(e) Performance security (ITB Clause 14 & GCC Cl.27),
(f) Force Majeure (G.C.C Clause 34).

A bid with deviation to any of the above clauses (important Conditions) will be liable to be rejected.

The Owner's determination of bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence. If a bid is

not substantially responsive, it will be rejected by the Owner, and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

8.5 **Evaluation of Techno-commercial Bid**

(1) The Board will determine the responsive Techno-commercial Bids for the invitation of opening of Financial Bid if the Techno-commercial Bid meets satisfactorily technical specification and any other information, which they consider relevant to his offer.

(2) If a Bidder is found not substantially responsive to the technical requirement, the Techno-commercial Bid will be rejected and the subsequent information as to opening of the Financial Bid will not be notified.

(3) If the Techno-commercial clarifications are required by the Board to any part of the Techno-commercial Bids, the Bidders will be requested to clarify the same in writing by Board.

8.6 **Evaluation Criteria of Techno-commercial Bid**

The Bidder who fulfills the requirements specified under Qualification Requirement (**Clause 2.5**) will be short listed. Under the Qualification Requirement a minimum threshold limit has been set for each parameter like technical experience and financial strength. Bidders not meeting the minimum threshold limit in any of these parameters will not be short-listed.

The detailed techno-commercial evaluation to be carried out shall be restricted to these short listed Bidders only.

9.0 NOTIFICATION OF SUCCESSFUL TECHNO-COMMERCIAL BID

After completing the techno-commercial evaluation of the Techno-commercial Bid first, the Board will notify in the e-tender portal about the **pre-qualified and successful techno-commercially qualified responsive Bidders.**

10. OPENING OF FINANCIAL BID

The Bidders to whom the opening time, date and venue for the Financial Bid are notified by the Board in the e-tender portal.

The successful Bidder's (L1) name, quoted price of package and other details as the Board, as its discretion may consider appropriate will be announced and recorded.

11. EXAMINATION OF FINANCIAL BID

11.1 After opening of the Financial Bid, the Board will examine them to determine whether they are complete, generally in order and substantially responsive to the Bidding Documents or not.

A Financial Bid determined as being not substantially responsive will be rejected.

The Board may waive any minor informality or non-conformity or irregularity in a Financial Bid which does not constitute a major deviation or reservation provided such waiver does not prejudice or affect the relative ranking of any Bidder.

If there is any discrepancy between words and figures, the amount in words will prevail.

The Financial Bid which is incomplete or conditional will be rejected.

The Financial Bid shall not be returned to the Bidder regardless of the result of the Bid.

11.2 During examination of Financial Bid any **arithmetical errors** will be corrected as follows:

a) If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected accordingly.

b) The amount stated in the Form of Bid shall be adjusted by the Board in accordance with the above procedure for the correction of errors and, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount of bid, its bid will be rejected, and the bid security will be forfeited in accordance with clause 4.5 (5)

12. EVALUATION AND COMPARISON OF FINANCIAL BID

12.1 **Evaluation Procedure**

The Board will evaluate the Bid previously determined to be Techno-commercially responsive pursuant to clause 8.6. The Board reserves the right to reject any bid or bids received at its discretion without assigning any reason whatsoever.

12.2 The purchaser's evaluation of a bid will take into account following factors:

I. Total cost of supply, installation & commissioning at the identified city / location of the equipment as below:

1) The CIF port of entry price of the equipment to be offered from abroad including price of consumables & spare parts.

2) The ex-factory / ex-warehouse / off-the shelf price of the equipment to be offered from within India (such price include all costs as well as duties and taxes paid or payable on components and raw material incorporated or to be incorporated in the equipment)

3) Local costs i.e.

   a. Cost of port handling and custom clearance,

   b. Transportation cost from Port of de-embarkment to destination Sites,

   c. Insurance from Port of de-embarkment up to handing over and
   d. Installation and commissioning charges at site.

4) Other incidental costs, if any (such as Indian agent's commission)

II. O&M cost (including insurance) for 05 years as Net Present Value discounted

NOTE:

Taxes and duties shall not be considered for the purpose of evaluation.

12.3 **The Board will evaluate and compare Bid for all the stations as a complete package which covers all items as specified under clause: Schedule of Requirement in Scope of Work**

12.4 **The rate of exchange for evaluation**

To facilitate evaluation and comparison, the Owner will convert all Tender prices to Indian Rupees at the BC selling exchange rate as determined by the State Bank of India, on the date of opening of Techno-commercial Bids.

12.5 **Clarification on Financial Bid**

For the purpose of examination, evaluation and comparison of the Financial Bid, the Board may at his discretion request the Bidder in writing to clarify his Financial Bid, but no change in the Bid Price or substance of the Bid will be sought, offered or permitted.

12.6 **Cost Compensation for deviations**

Deviations specifically declared by the bidders in respective Deviation Schedule (Attachment 12 of Technical Bid, Section – III) only will be taken into account for the purpose of evaluation.

In case of any of these deviations are not acceptable to the Owner, the Bid shall be rejected.

In case any of the deviations are acceptable to the Owner, the Owner will make its own assessment of the cost of these deviations and consider it for evaluation for the purpose of ensuring fair comparison of bids.

Bidders may note that all deviations / variations and additional conditions etc. found elsewhere in the bid other than those stated in the Deviation Schedules, save those pertaining to any rebates, shall not be

given effect to in evaluation and it will be assumed that the bidder complies to all the conditions of Bidding Documents. In case bidder refuses to withdraw, without any cost of the Owner, those deviations, which the bidder did not state in the Deviation Schedules, the bid shall be rejected and the bid security of the bidder may be forfeited.

13. AWARD OF CONTRACT

13.1 **Award of Contract to Successful Bidder**

The Board will award the Contract to successful Bidder:

1. Whose Bid will be determined to be substantially responsive to this Bidding document and who will be determined by the Board, to be qualified technically, financially and otherwise in respect of such other capabilities, as the Board may be deem necessary and appropriate to satisfactory performance of the Contract and
2. Whose Bid will be determined to be lowest evaluated, responsive Bid and is determined to be qualified to satisfactorily perform the contract.
3. The Board reserves the right to reject any bid or bids received at its discretion without assigning any reason whatsoever.

13.2 **Notification to Award**

Prior to the expiration of the Bid validity pursuant to sub-clause 4.6 in this Instructions, the Board will notify the successful Bidder in writing by registered letter or by facsimile to confirm that its Bid has been accepted in that particular Zone.

The notification of award will constitute the formation of the Contract.

Upon the successful Bidder's furnishing of the Performance Security pursuant to Clause 14 the Board will promptly notify each unsuccessful Bidder and will discharge their Bid Security pursuant to Sub-Clause 4.5.

13.3 **Signing of Contract**

Within Thirty (30) days of the receipt of notification of award for all the stations from the Board, the successful Bidder shall sign and date of Contract.

The Contract shall take the form of General and Special Condition attached to Section V, VI and such modifications as may be necessary.

The Bidder shall prepare at his own cost one (1) original and three (3) bound copies of the Contract including the Contract Form attached to the Special Conditions of Contract (Attachment 3 of Section VI) for distribution to the parties concerned.

14. PERFORMANCE SECURITY

Within thirty (30) days of notification of award from the Board, the successful Bidder shall furnish the Performance Security in the form of Account Payee Bank Draft or Fixed Deposit Receipt (FDR) or Bank Guarantee issued by a Nationalized/Commercial Bank of India or Online payment in an acceptable form, for each CAAQM Stations (as per enclosed list of Attachment – 15) having license to do business in India in accordance with Attachment 2 "Performance Security Form" provided in Special Conditions Contract for an amount equivalent to 10% (ten percent) of the Contract Price, for one year after successful commissioning of system. It should remain valid for 60 days beyond the date of completion of all contractual obligations of the supplier including warranty/ operations.

Failure of the successful Bidder to comply with the requirement of Sub-clause 13.3 or Clause 14 in these instructions shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security in which event the Board may make the award to the second high ranked Bidder or call for new Bids.

15. EXPENSE OF BID

Under no circumstances will the Board be liable to the Bidder for any expenses, losses or damages whatever incurred in the Bid including but not limited to expenses, losses or damages associated with preparation of the Bid, visits to the Sites and all matters in connection with the Contract negotiations and signing regardless of the conduct or outcome of the bidding process.

16. RESPONSIBILITY FOR INFORMATION SUPPLIED

Prior to the final time and date for submission of the Bids, no representation, communication, explanation or statement, verbal or written, made to the Bidder or anyone else by the Bidder or any of their employees or authorized representatives other than as may be set out in amendment issued in accordance with Sub-clause 3.6 in this Instructions shall bind the Bidder in the exercise of their powers and duties under the Contract.

The information given in the Bidding Documents is the best in the possession of the Board, but the Board does not hold himself responsible for its accuracy.

VOLUME - I

SECTION II

SCOPE OF WORKS

1.0 DETAILS OF PROJECT STRUCTURE

(a) Successful Bidder would be awarded the project/work (Zone wise for all the stations as per clause 6.0 in Scope of Work) under a Supply and Service Agreement, which would entail:

1. Supply, installation and Commissioning of One Set of CAAQMS Equipment at the defined cities/ locations
2. Operation and Maintenance of the CAAQMS for a period of 05 (five) years from the date of it's commissioning.
3. Daily reporting of data pertaining to Ambient Air Quality to Uttar Pradesh Pollution Control Board (UPPCB). Uttar Pradesh Pollution Control Board (UPPCB) would make payment for CAAQMS as per schedule of requirement, for Supply, Installation and Commissioning of the system. UPPCB would procure all the CAAQMS equipment on its name and will make regular payments for the O&M and supply of Data at the end of each Quarter. The bidders therefore need to quote two prices for;

   (a) Supply Installation and Commissioning of the System and;

   (b) Reporting of data to UPPCB/CPCB and UPPCB with real time data display. The price for the data supply would include the Operation and Maintenance, including incidental charges, electricity, insurance, manpower, security, etc.

UPPCB would provide land for installation of CAAQMS free of cost, in the identified city/location to the Successful Bidder. Along with the land, UPPCB would provide letter/ documents for telephone and electricity connections at the proposed location. Bidder would bear the initial installation cost for these facilities and the monthly recurring cost pertaining to their usage (monthly telephone and electricity bill) would also be borne by the Successful Bidder.

One no. of Day light & Night visible data display system is to be supplied along with Data Transmission Device, installed and maintained throughout the service period i.e. 05 years. UPPCB would identify location for installation of Day light & Night visible data display system near to the station. The successful bidder shall also setup Central Server Stations at the Uttar Pradesh Pollution Control Board Head Office for Data Connectivity and management from all the CAAQM Stations installed.

Successful firm shall also arrange Lease Line (main medium of data connectivity) and also Broadband/telephone/Data Card (as a Backup connection) with electricity connections at the identified locations. Cost of the Transformer/additional cable etc will be bear by the bidder, if required. All the documents required for the connection shall be provided by the Uttar Pradesh Pollution Control Board. The Successful Bidder would bear the initial installation cost for these facilities and the monthly/recurring cost pertaining to their usage (monthly Broadband/telephone, lease line and electricity bill) would also be borne by the Bidder. All other foundation, installation, connectivity requirement for Data Display Board System is to be arranged by the successful bidder and cost for same should be included in bid price.**All the expenses of Operation and Maintenance of CAAQMS shall be born by Bidder except rent of Location of Monitoring Station (if required).**

Kindly refer Annexure-II for O&M Scope of CAAQM Station

(b) **SCHEDULE OF REQUIREMENTS**

The CAAQMS shall have the following schedule of requirement. The system should be completely functional. Any balance of material not specified but required for the purpose must be supplied by the bidder.

Sl. No.	Item / Analyzer Name	Total Quantity
1.	Monitoring Station foundations.	Actual
2.	Air Conditioner, Split Type, Wall mounted along with voltage stabilizer (2 X 2 ton, 1 X 1 Ton). at the CAAQM Station	Three
3.	On line UPS (1X10KVA, 1 hr. back up and 1X5 KVA, 2 hr. back up) at the CAAQM Station	Two
4.	Sampling System having 10 port manifold	One
5.	19" Rack cabinet to accommodate all analyzers & systems	Three
6.	Continuous Ambient Oxides of Nitrogen (NO/NO_2 / NO_x) Analyzer	One
7.	Continuous Ambient Ammonia (NH_3) Analyzer	One
8.	Continuous Ambient Sulphur Dioxide (SO_2) Analyzer	One
9.	Continuous Ambient Ozone (O_3) Analyzer	One
10.	Continuous Ambient Carbon Monoxide (CO) Analyzer	One
11.	Continuous BTEX Monitor / Analyzer	One
12.	Multi calibration System for Gas calibration and Meteorological, Flow and Electronic Calibration	One set
13.	Automatic $PM_{2.5}$ Particulate Matter Monitor	One
14.	Automatic PM_{10} Particulate Matter Monitor	One
15.	Meteorological Sensors for Wind Direction, Wind Speed, Ambient Temperature, Rainfall, Relative Humidity, Solar Radiation and Telescoping Crank – up Meteorological Tower	One set
16.	**IT PERIPHERLS:**	
	(a) Data Acquisition System (DAS): One for each CAAQM Station	One
	(b)Computer System for DAS: One for each CAAQM Station (c) Computer System for AQI: One for each CAAQM Station	One One
	(d) Laser Printer Colour MFP : One for each CAAQM Station (e) Server Rack: One for each UPPCB (f) Rack Server: One for each UPPCB (g) Access Point: One for each UPPCB	One One One One
	(h) UTM: One for each UPPCB	One
	(i) 24Ports CISCO Switch: One for each UPPCB	One

	(j) Central Management Software with License w.r.t. Data Acquisition: One for each UPPCB	One
	(k) Remote Calibration & Validation Software: One for each UPPCB	One
	(l) Remote Connectivity Tool/Software: One for each UPPCB	One
17.	Data display Board Transmission Device	One
18.	Day & Night Visible Data Display Board (Near to the station)	One
19.	Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares in a Housing Container OR Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares without a Housing Container	One set OR One set w/o container
20.	Lease Line for Internet AND Broadband (for Station) AND Data Card as mode Communication system (for display Board)	One set
21.	RCC foundation, pillars misc works including Caging, civil & electrical work (for CAAQM stations as well as Data Display Boards)	Actual

In addition to above item One 5 KVA UPS and One set of Computer system & laser printer shall also be required at each Central Server location at UPPCB-Head Office.

2.0 SCOPE OF SERVICES

The Scope of Works under the package shall include:

A) The supply including packing, transportation, insurance, custom clearance, port clearance and handling, inland transportation, inland transit insurance and delivery to site, installation, testing and commissioning of equipment and provision of training of UPPCB officials station wise. (Note: Custom duty exemption certificate will be issued by UPPCB)

B) Operation & Maintenance of Air Monitoring Stations for a period of Five (05)years from the date of commissioning of the station on the O&M rates quoted by the successful bidder (year wise)

C) Data & Report of data pertaining to each CAAQMS to UPPCB/CPCB.

D) On line transfer of data to UPPCB & CPCB.

Other services involved with performance of the Works are specified in General and Special Conditions of Contract of bid document.

3.0 MINIMUM TECHNICAL SPECIFICATIONS

The minimum technical specification requirements for the CAAQMS to be installed are given in Volume – II (Technical Specifications) of bid document. However, the actual technical proposal can have higher or better technical performance parameters and the minimum specifications proposed should not be taken as a constraint on the upper side. The technical specifications given in Volume – II (Technical Specifications) of bid documents are descriptive and Selection Committee can consider technical proposals having similar specifications.

4.0 DESIRED OUTPUT FOR CAAQMS EQUIPMENT

The desired output requirements from the CAAQMS equipment to be installed at are given in Attachment 2 to 6 of Scope of work of bid document.

5.0 DATA MANAGEMENT AND QUALITY CHECKS

Data shall be collected and validated according to US EPA standards/National Ambient Air Quality Standards using the methodologies included in 40 Code of Federal Regulations. All analyzers shall have current US EPA reference or equivalent method designation (except BTEX and NH3) and shall be of the latest model and design, and a certificate/declaration in this regard also need to be submitted.
Successful bidder shall submit a Standard Operating Procedure for the air quality monitoring station to the Board before award of contract. This Standard Operating Procedure shall be approved by the Board prior to award. The Standard Operating Procedure shall contain the following:

Operating procedures for all analyzers and meteorological sensors
Calibration procedures
Calibration schedule
Maintenance procedures
Maintenance schedule
Data validation procedures
Data reporting as per attachment X_1 to X_5

Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Board along with the Air Quality Data.

Inventory of spares and consumables to be maintained and recorded from time to time and a buffer stock for any eventuality to be maintained.

Upon 3 days notice from the Board once per year, Successful Bidder shall agree to submit to an audit of calibrations, conducted, using pre-approved US EPA methodologies, by a third party. Third party audit will be arranged by the Owner (UPPCB/CPCB) by the agency decided by them, at their cost and bidder shall provide all necessary facilities to carryout required audit. The results of these audits shall be made immediately available to both the Seller and Buyer.

Operator shall participate in Proficiency Testing Exercise organized by reputed organization.

GENERAL GUIDELINES

Working Hours: The site for CAAQMS operation should be manned by the employees of the Successful Bidder for 24 hours a day. In addition the Successful Bidder would arrange for a security of the site and equipments through appointment for security agency (providing at least one security guards) throughout the day.

Insurance: Successful Bidder would bear the cost of insuring the equipment (Comprehensive) and facilities against any theft, fire and other applicable provisions during tenure of contract period including O&M with a copy to UPPCB of an appropriate amount.

Station plate form, pillars Electricity & telephone / modem arrangement:

The successful bidder shall construct station platform pillars etc. as required and shall also arrange electric and telephone connection modems etc. required for the smooth Operation of the station. The necessary documentation shall be provided by the concerned UPPCB / local authority of the board.

6.0 LOCATION

The Regional office wise setting of Continuous Ambient Air Quality Monitoring Station, the exact location of the Air Monitoring Station shall be decided by the Board and city wise are as under:

S. No.	City	No. of CAAQMS		Name of Regional office and Address
		Under MoEF&CC Funds	Under NCAP	
01.	Agra	03	02	Agra : 14, Sector-3 B, Avas Vikas, Sikandra Yojna, Agra
02.	Mathura	01	-	Mathura : 65, Baldevpuri, Maholi Road, Post-Krishna Nagar, Mathura
03.	Firozabad	01	-	Firojabad : H.No. 77 Gali No. 2 Mahaveer Nagar, Firojabad
04	Lucknow	-	02	IVth floor, PICUP Bhawan, Vibhuti Khand, Gomti Nagar, Lucknow-226010
05	Kanpur	-	02	243, Avas Vikas, Phase-III, Sadbhavna Nagar, Kalyanpur, Kanpur-17
06	Prayagraj	-	03	Sector-10, Yojna No.-3 Avas Vikas Parishad Colony, Jhusi, Prayagraj
07	Varanasi	-	03	Avas Vikas Office cum-commercial Complex Jawahar Nagar, Bhelupur, Varanasi
08	Gorakhpur	01 - By own resources		Jharkhandi Mahadev, Avas Vikas Colony, Kuda Ghat, Dooria Road, Gorakhpur

The no. of CAAQMS/ Nos. and name of cities may be varied as per the requirement.

7.0 SUPPLY OF EQUIPMENT

Attachment – 1, specifies the list of equipment in the package, quantity of equipment to be supplied, delivered and installed.

8.0 INSTALLATION OF EQUIPMENT

All the necessary arrangements and adjustments for suitable installation and operation of the equipment shall be made by the Bidder including power supply and telephone / mobile/ internet connection, however all the required document shall be arranged by the board.

9.0 INSPECTION AND TEST

9.1 Unpacking Inspection

The Contractor in the presence of UPPCB nominee (representative) shall inspect at Site whether all the Equipment are packed in conformity with the Equipment list and packing list without any damage immediately after arrival of the Equipment at each Location.

9.2 Performance Test

The Contractor shall carry out the performance test for all the Equipment supplied under the scope of work of this document.

In case the Equipment for performance test requires the supplemental and/ or supporting Equipment, the Contractor shall carry out the performance test including such Equipment.

10.0 PROVISION OF TRAINING

The supplier shall provide training to the UPPCB staff for minimum two (2) weeks **to three (3) persons** (maximum) after the performance test and commissioning. Training should include but not limit to the following:

1) Inspection of the Equipment.
2) Precautions in use of the Equipment.
3) Basic measurement principle.
4) Principles of operation of the Equipment.
5) Start-up and shutdown procedure.
6) Operation of the Equipment.
7) Calibration method.
8) QA/QC.
9) Data Validation & management and software application.
10) Safety precautions.
11) Basic maintenance procedure.
12) "Do's" and "Don'ts" in operation of the Equipment.
13) Handling of hazardous chemicals and gas.
14) Others, which are deemed to be necessary by the Supplier.

In case the Equipment for training requires the supplemental and/or supporting Equipment, the Supplier shall carry out the training including such Equipment.

The Supplier shall discuss and finalize the detailed contents and schedule of the training program in consultation with the Board during installation of the Equipment.

The Supplier shall furnish the training manual and/or CD as required for training for all the Equipment supplied under the scope of work of this document.

Contents of training manual and/or CD/Pen Drive for the Equipment are as follows:

1. Principle of the Equipment.
1. Operation and calibration of the Equipment.
2. Maintenance and basic repair of the Equipment.
3. Safety instruction of the Equipment.
4. Others, which are deemed to be necessary by the Supplier.
5. QA/QC, Data Validation & management and software Application

11.0 Operation & maintenance of Air Monitoring Stations

11.1 The Contractor's responsibilities shall include without limitations the following works to be carried out on the Air Monitoring Stations installed under this Contract during the Operation & Maintenance of the stations:

a) Operation and Maintenance of all the commissioned equipments and amenities as supplied by the Manufacturer under the Contract including services during forced and planned outages and overhauls.

b) The Contractor shall take over the entire Air Monitoring Station (including all equipment) for O&M after execution of Indemnity Bond as per format placed at Attachment - 13, Section III of bid document.

c) The Contractor shall provide to the owner a monthly summary of all operation and maintenance activities performed by the contractor during each month.

d) Operation and Maintenance Obligations:

In implementing its obligations to operate and maintain the facility under this Contract, the Contractor shall:

i) Undertake comprehensive maintenance including i.e. schedule and breakdown maintenance & repair at site and keep Board Informed regarding status of equipments and forward daily data as per Attachment 3 and 5 of Section – II.

ii) Obtain permission from the owner and inform the O&M for any assistance for which equipment is required to be sent to the works. Contractor shall arrange substitute equipment to keep CAAQM station operational.

iii) Take reasonable action to assure that the Personnel deployed at Air Monitoring Stations and any subcontractors and agents are provided with a work place in compliance with applicable Law.

iv) Keep the Air Monitoring Stations clean, well maintained and in good working condition.

v) Security: It is the duty of the Contractor to secure the movable, immovable and other properties of the Owner at the Air Monitoring Station. The Contractor shall indemnify the loss caused to the Owner on account of any damage, loss or theft caused to the property of the Owner.

vi) Scheduled Maintenance: Unless Owner and Contractor mutually agree otherwise, perform all required Scheduled maintenance for all equipment, auxiliaries etc., in accordance with the O&M specifications.

vii) Unscheduled Maintenance : Perform all Unscheduled Maintenance and repairs for all equipment, auxiliaries etc. within (24) hours of the occurrence of the event requiring Unscheduled Maintenance, the operator shall provide the Owner with detailed written information on nature of the repair or replacement to be carried out, estimated down time and other necessary details as required.

viii) The Contractor shall source all the spares required for maintenance & repairs of the installed equipment from O&M only.

e) The Operator shall not:

i) Make any modifications as to the Air Monitoring Stations, other than in an Emergency, without the prior written approval of the Owner, or

ii) Dispose off any assets, settle law-suits or engage in transactions relating thereto on the Owner's behalf without the prior written approval of the Owner.

f) The Contractor shall purchase spare parts, materials, supplies and other consumable items, and maintain an inventory thereof, for the Air Monitoring Stations. All such material supplied and other items shall be the property of the Contractor However all the spares shall be sourced from OEM's only.

g) The Contractor shall review all applicable Laws and initiate and maintain such prosecution, procedures and operating plans relating to operation of the Air Monitoring Stations as are necessary to comply therewith or assist the owner in complying therewith as the case may be.

h) The Contractor shall operate the equipment as per the laid out standards in the operating manual of the equipment and providing data for ambient air to UPPCB on daily basis in the suggested format. The daily monthly and yearly Reporting Formats are attached **Annexure X_1 to X_5**

i) The CAAQMS has to be in operation for a minimum of 80% of the days in a year, 24 hours a day, and should not be inoperable for more than 7 days at a stretch.

j) Provide data collected through operation of the equipments on daily basis in suggested output formats given in the bid document.

i) Establish and maintain a daily and monthly and yearly reporting system to provide storage and ready retrieval of operation and maintenance data including such information necessary to verify calculations. The monthly reporting shall contain variances from targets.

ii) Provide access to the owner to the Air Monitoring Stations and its data at all reasonable times and as and when required.

iii) Provide the operational date required to all competent authorities including, UPPCB / Government of India or CPCB.

iv) On line transfer of data to UPPCB /CPCB web site.

k) The Contractor shall ensure accuracy of the data provided as per standards.

l) The contractor shall ensure periodic re-calibration of all the equipment as per manufacturer's instructions and maintain "Protocol Calibration" as per Attachment 2 of Section II.

11.2 Owner shall arrange for the following and Contractor shall guide and assist the Owner:

a) The Owner shall pay O&M charges to the Contractor at the end of each quarter after submission of validated data & air quality report by the Contractor, in accordance with the payment terms detailed in Special Conditions of Contract.

b) Owner shall pay all fees including applicable Taxes, etc., imposed upon Owner by the Applicable Law.

c) The Owner shall identify and hand over the site for erection & commissioning of Air Monitoring Stations free from all encumbrances.

d) The Owner shall provide only the documents for electricity, lease-line, Broadband/telephone connection at the site. All other facilities, monthly charges for both electricity, Lease Line & Broadband/telephone bills shall be borne by the Contractor.

e) The full payment shall only be made if validated data is 90% or above and all the quarterly reports, calibration protocol maintenance scheduled and spare parts/ consumable replacement document are maintained and verified by the owner/ board. The contractor has to maintain records / Receipts/ bills paid available as and when required. The data capture rate should be as follows:

Data Display & supply frequencies and requirements

Description of Data Submission				
Data Display	Daily	Display on real time basis (15 min for all pollutants &meteorological data and hourly for PM)	90% or above daily data and AQI(between6am to 6PM or as agreed upon time duration)	
Data Supply	Daily	Data hourly average values of 15 min for all pollutants & meteorological data and hourly Data for PM	90% or above daily data (between 6am to 6PM or as agreed upon time duration)	Submission of daily data after logical checks (through software) in the form of soft and hard copy
	Weekly	Report for all pollutants & meteorological data	90% or above weekly data	Submission of data on weekly basis (soft & hard copy)
	Monthly	Report for all pollutants & meteorological data	85% or above monthly data	Submission of data on monthly basis (soft & hard copy)
	Quarterly	Report for all pollutants & meteorological data	80% or above Quarterly data	Submission of data on Quarterly basis (soft & hard copy)
	Annually	Report for all pollutants & meteorological data	75% or above annual data	Submission of data on annual basis (soft & hard copy)

90% of data will be treated for 100% payment and less than that will be on pro-rata basis. No data will be accepted less than 75% and will be treated at nil data and the appropriate penalties shall be applied (refer Penalties clause)

Bidder Responsibility:

1. Setting up of Central Data Server Center at UPPCB Head Office & Lease Line connectivity for data transmission.
2. Trained Manpower deployment at respective Data Centers.
3. Bidder will participate in the coordination meetings, training, etc.
4. Bidder will ensure quality data generation, regular calibration of Analyzers, online data validation, timely submission of software validated data.

11.3 **Handing Over of Station:** On expiry/closure/termination of the Contract Agreement, stations shall be handed over to Board in working condition to the satisfaction of Board. Few or all the spares procured by the Contractor and unused as on date of handing over may be purchased by the Owner at his discretion provided. Contractor is able to provide reasonability of the costs of such spares. In addition the Contractor shall provide consumables equivalent to three months consumption on expiry/closure/termination of the Contract Agreement without any extra financial implication.

11.4 **Relocation of Station:**

During contract period, if Board intends to shift CAAQM station from one location of the city to another location, due to some reason – functional or otherwise, Bidder shall shift the CAAQM station for which cost of shifting including dismantling, loading & transportation, reinstallation at new location and construction of foundation will be made by the Board at a mutual agreed cost.

11.5 **Penalties:**

During O&M period, in case of any Analyses/ system failure, penalty will be charged by UPPCB @ Rs.1,000/- (one thousand) per day per Analyzer after a grace period of Five (5) continuous non-working days. The grace period of Five (5) continuous non-working days shall be given only once per quarter (3 months).

For a failure of Data display:

Board/panel, a penalty will be charged by UPPCB @ Rs. 1,000/-(one thousand) per day after a grace period of five (5) continuous non-working days. The grace period of Five (5) continuous non-working days shall be given only once per quarter (3 months).

Failure due to power outage and other Force Major conditions shall not be considered for levy of penalty.

Total penalty per year during O&M period on account of above conditions shall be **limited to 30% of total O&M charges** for one year. Failing which defective/ malfunctioning analyser / system has to be replaced.

In case penalty in the year exceeds 30% of total yearly O&M charges, the Contractor shall be required to replace the defective analyzer (s) or systems with new ones at his own cost, failing which the UPPCB shall have the right to terminate the O&M contract.

12.0 SCHEDULE

12.1 **Contractor shall complete all activities covered in the scope of work up to installation & commissioning of Air Monitoring Stations within 180 days from date of opening of Letter of Credit.**

12.2 The Contractor shall carry out Operation & Maintenance of Air Monitoring Stations for a period of Five (05)years from the date of commissioning of the station, which can be further extended at the mutually agreed rates and terms and conditions.

12.3 The operation and maintenance contract shall be executed by the Member Secretary of Uttar Pradesh Pollution Control Board (UPPCB) having jurisdiction or the area under his control. The term and condition shall be governed as per the tender document. The Member Secretary of UPPCB or any person authorized by him shall be the **ultimate consignee.**

Annexure – II

O&M Scope of CAAQM Station

The following scope/work/requirement given as under in addition to the work/scope/requirement defined in the Tender Document:

1. A separate Notification of Award shall be placed for O&M assignment by UPPCB, before installation & commissioning of the equipment.
2. Reporting of data to the respective State Pollution Control Board / Pollution Control Committee and Uttar Pradesh Pollution Control Board.
3. Successful bidder has to develop a **Mobile App** for showing the Air Quality Data and trend from all the CAAQM Stations in their scope.
4. Any balance of material not specified but required for the purpose must be supplied by the bidder.
5. Deployment of trained manpower on its regular rolls (employee PF/ESIC/Mediclaim can be checked during the contract period) for O&M of CAAQM stations as under:-

Sl. No.	Responsibility	No. of Persons	Minimum Qualification	Experience	Area of Activity
1.	Project Manager	One	Graduate Engg./M.Sc.	10 years	
2.	Technician	One at each station	Diploma in Electronics/ I& C/Electrical	3 years	City wise
3	Data Processor	One	Science graduate	2 Years	

Attachment 1 Equipment List

Sl. No.	Item / Analyzer Name	Total Quantity
1.	Monitoring Station foundations.	Actual
2.	Air Conditioner, Split Type, Wall mounted along with voltage stabilizer (2 X 2 ton, 1 X 1 Ton). at the CAAQM Station	Three
3.	On line UPS (1X10KVA, 1 hr. back up and 1X5 KVA, 2 hr. back up) at the CAAQM Station	Two
4.	Sampling System having 10 port manifold	One
5.	19" Rack cabinet to accommodate all analyzers & systems	Three
6.	Continuous Ambient Oxides of Nitrogen (NO/NO_2 / NO_x) Analyzer	One
7.	Continuous Ambient Ammonia (NH_3) Analyzer	One
8.	Continuous Ambient Sulphur Dioxide (SO_2) Analyzer	One
9.	Continuous Ambient Ozone (O_3) Analyzer	One
10.	Continuous Ambient Carbon Monoxide (CO) Analyzer	One
11.	Continuous BTEX Monitor / Analyzer	One
12.	Multi calibration System for Gas calibration and Meteorological, Flow and Electronic Calibration	One set
13.	Automatic $PM_{2.5}$ Particulate Matter Monitor	One
14.	Automatic PM_{10} Particulate Matter Monitor	One
15.	Meteorological Sensors for Wind Direction, Wind Speed, Ambient Temperature, Rainfall, Relative Humidity, Solar Radiation and Telescoping Crank – up Meteorological Tower	One set
16.	**IT PERIPHERLS:**	
	(a) Data Acquisition System (DAS): One for each CAAQM Station	One
	(b)Computer System for DAS: One for each CAAQM Station (c) Computer System for AQI: One for each CAAQM Station	One One
	(d) Laser Printer Colour MFP : One for each CAAQM Station (e) Server Rack: One for each UPPCB (f) Rack Server: One for each UPPCB (g) Access Point: One for each UPPCB	One One One One
	(h) UTM: One for each UPPCB	One
	(i) 24Ports CISCO Switch: One for each UPPCB	One
	(j) Central Management Software with License w.r.t. Data Acquisition: One for each UPPCB	One
	(k) Remote Calibration & Validation Software: One for each UPPCB	One
	(l) Remote Connectivity Tool/Software: One for each UPPCB	One
17.	Data display Board Transmission Device	One
18.	Day & Night Visible Data Display Board (Near to the station)	One
19.	Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares in a Housing Container OR Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares without a Housing Container	One set OR One set w/o container
20.	Lease Line for Internet AND Broadband (for Station) AND Data Card as mode Communication system (for display Board)	One set
21.	RCC foundation, pillars misc works including Caging, civil & electrical work (for CAAQM stations as well as Data Display Boards)	Actual

In addition to above item One set of 'One 5 KVA UPS, One Computer system & laser printer' shall also be required at each Central Server location at UPPCBs-Head Office and UPPCB-Regional Office.

Attachment 2

STATION PROTOCOL
FOR
CAAQM STATION UNDER O&M CONTRACT

NAME OF CAAQM STATION **DATE:**

S. No.	Parameter	Status	Zero Value		Zero Offset		Span Calibration			K Factor (Span)		Rem.
			Pre	*Post*	*Pre*	*Post*	Source	Span	*Pre*	*Post*		
1.	**CO** Analyzer											
2.	**SO_2** Analyzer											
3.	**NO_x** Analyzer											
	NO											
	NO_2											
	NOx											
	NH_3											
4.	**O_3** Analyzer											
5.	**BTX** Analyzer											
	Benzene											
	Toluene E-											
	benzene											
	M+P Xylene											
	O-Xylene											
6.	**Dust** Analyzer											
	$PM_{2.5}$											
	PM_{10}											
7.	**Meteorological Parameter**											
	Temperature											
	Humidity Wind											
	Speed Wind											
	Direction Solar											
	Radiation Rain											
	Fall											

8.	**Computers**	Make/Model:	Status :
9.	**UPS / ACs / Others**	Make/Model:	Status :
10.	**Data Display Board**	Make/Model:	Status :
	Maintenance Details/ Requirement	1. 2.	
	Specific Observation(s)		

Station Maintained By…… **Station supervised by ……**

Attachment 3

DAILY REPORTING FORMAT FOR METEOROLOGICAL PARAMETERS

(To be submitted daily at 6 AM from the previous day 6 AM)

Location: **Date:**

Hrs.	WIND SPEED	WIND DIRECTION	HUMIDITY	TEMPERATURE	SOLAR RADIATION	RAINFALL	REMARKS
06-07							
07-08							
08-09							
09-10							
10-11							
11-12							
12-13							
13-14							
14-15							
15-16							
16-17							
17-18							
18-19							
19-20							
20-21							
21-22							
22-23							
23-24							
00-01							
01-02							
02-03							
03-04							
04-05							
05-06							
Min.							
Max.							
Average							

Attachment 4

MONTHLY REPORTING FORMAT FOR METEOROLOGICAL PARAMETERS

(To be submitted monthly next day ending month)

Location: **Month:**

DATE	WIND SPEED	WIND DIRECTION	HUMIDITY	TEMPERATURE	SOLAR RADIATION	RAINFALL	REMARKS
Min.							
Max.							
Average							

Attachment 5

DAILY REPORTING FORMAT FOR MAIN POLLUTANTS

(To be submitted daily at 6 AM from previous day 6 AM)

DAILY AMBIENT AIR QUALITY DATA

Location: **Date:**

Hrs.	SO_2	NO	NO_2	NO_X	NH_3	CO	O_3	PM 2.5	PM 10	Benzene	Toluene	Xylene	Remarks
06-07													
07-08													
08-09													
09-10													
10-11													
11-12													
12-13													
13-14													
14-15													
15-16													
16-17													
17-18													
18-19													
19-20													
20-21													
21-22													
22-23													
23-24													
00-01													
01-02													
02-03													
03-04													
04-05													
05-06													
Standards													
Min.													
Max.													
Average													

Attachment 6

MONTHLY REPORTING FORMAT FOR MAIN POLLUTANTS

(To be submitted monthly at 12 Noon next day ending month)

MONTHLY AMBIENT AIR QUALITY DATA

Location: **Month:**

Date	SO_2	NO	NO_2	NO_X	NH_3	CO	O_3	$PM_{2.5}$	PM_{10}	Benzene	Toluene	Xylene	Remarks
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
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22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
Min.													
Max.													
Average													

VOLUME 1

SECTION III

FORM OF TECHNO-COMMERCIAL BID

SECTION III

FORM OF TECHNO-COMMERCIAL BID

CONTENTS

Attachment 1

<Letterhead of the Bidder>

FORM OF QUESTIONNAIRE

(To be submitted before Pre-Bid Meeting)

BIDDING DOCUMENTS

FOR SUPPLY, INSTALLATION & COMMISSIONING

OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS)

AND OPERATION & MAINTENANCE SERVICES FOR THIS CAAQMS

Date :

To,

The Member Secretary,
U.P.Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar
Lucknow-226010

From: Name of Bidder
Address
Name of Representative
Position
Fax No.
Email id.
Signature

Questionnaire Format			
Tender Page No.	**Clause No.**	**Tender Clause**	**Question**

Attachment 2

<Letterhead of the Bidder>

CERTIFICATE OF O&M PARTNER OF THE BIDDER IN INDIA

To,

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Subject :- Certificate of Existence of Local Branch, Sales Residential and Representative Office(s) in India

1. Name of Office (s) :
2. Address:
   Tel. No. :
   Fax No. :
   Telex No. :
   Email id :

3. Status of Office(s) :……
4. Date of Establishment of Office (s):……
5. Name & Address of Residential Representative:……..
6. Total No. of years of association with OEM (Name of the manufacturer):…….
7. Total Manpower :…….
8. Total No. of trained Service Engineer :……
9. Present No. of offices in India (Name the locations & address):…….
10. Total Turnover in last 3 years:
11. Major job in Hand:……..
12. Experience in O&M contract:……

Sl. No.	Name of Client and Address, Phone No.etc.	Description of Contract (Brief scope of contract)	Year of Placement of Order	Present Status

Signature
Name:
Designation:
Seal:

Attachment 3

FORM OF LETTER OF AUTHORITY

To,

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Name of Manufacturer

Subject:- Letter of Authority from Manufacturer
Reference: UPPCB Tender No……

Dear Sirs,

We, (Name of Manufacturer), a manufacturer duly organized and existing under the law of (Country Name) with its principal office of business as (Address) hereby make, constitute and appoint (name of Bidder), a company duly organized and existing under the laws of (Country Name) with its principal office of business at (Address) to be our true and lawful attorney in fact to do the following sets and deeds:

To present and bind us in the for Supply and O&M of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for 'Uttar Pradesh Pollution Control Board', Delhi (India), regarding the supply and installation of the following equipment proposed in the bid which we manufacture or produce.

Item No.	Name of Equipment

We, as a manufacturer bind ourselves as co-worker of the bid and are jointly and severally responsible for the compliance of the said bid and once

(Name of Bidder) has been selected as a successful bidder, we shall manufacture, delivery and install the equipment in accordance with the terms and conditions of contract with (Name of Bidder) and the State Pollution Control Board.

We hereby give and grant to the said (Name of Bidder) full power and authority to do and perform all and every act and thing whatsoever, requisite necessary and proper to be done in the premises, as fully, to all intents and purposes as we might or could do with full power of submission and renovation hereby ratifying and conforming all that (Name of Bidder) or its duly authorized representative shall lawfully do or cause to do done by virtue hereof.

IN WITNESS WHEREOF, we have hereto signed this document on ----------

2020.

ACCEPTED ON ----------, 2020

NAME OF BIDDER	NAME OF ISSUING MANUFACTURER
---	---
(Name of duly authorized representative to sign and signature)	(Name of duly authorized representative to sign and signature)
---	---
(Rank of position and department)	(Rank of position and department)

Attachment 3A

<Letterhead of the Manufacturer> **FORM OF CERTIFICATE OF SUPPLY OF SPARES AND CONSUMABLES BY MANUFACTURER**

Date:

To,

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Sub:- Certificate of Supply of Consumables and Spare Parts by Manufacturer

This is to certify that we (Name of Manufacturer) shall supply the consumables and spare parts of the equipment mentioned below during O&M period under the contract (contract detail) to the contractor (Name of the contractor)/ Owner.

It is hereby guaranteed that we shall maintain stocks of consumables and spare parts for the following equipment for a period of Five (05)years after the commissioning of the equipment in India.

Item No.	Name of Equipment	Name of Manufacturer

Signature:
Name of Person:
Position:
Name of Manufacturer:
Office Seal of Manufacturer:
Legal Address of Manufacturer:

Attachment 4

<Letterhead of the Manufacturer>

FORM OF CERTIFICATE OF COUNTRY OF ORIGIN

To,

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Name of Manufacturer

Subject:- Certificate of Country of Origin

We, (Name of Manufacturer), hereby certify that our equipment for procurement and installation of equipment for (Name of the Board) in the State of, India is to be manufactured in the country mentioned below:

Item No.	Name of Equipment	Country of Origin

Signature
Name of Person:
Title:
Name of Manufacturer:
Legal Address:

Attachment 5

<Letterhead of the O&M Partner>

FORM OF CERTIFICATE OF CARRYING OUT O&M OF CAAQMS's BY THE O&M PARTNER IN INDIA

Date:

To:

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Sub:- Certificate of carrying out O&M of CAAQMS's by the O&M partner in India.

This is to certify that we <Name of O&M Partner> hereby agree to carry out day to day Operation and maintenance of the one (1) CAAQMS installed and commissioned by <Name of the main bidder> for minimum of Five years from the date of installation & commissioning of the CAAQMS at the rates quoted by <Name of the main bidder> against this tender, strictly in accordance with terms & conditions contained in this bid document.

Signature:
Name of Person:
Position:
Name of O&M Partner:
Name Seal of O&M Partner:
Legal Address of O&M Partner in India:

Counter-signed by main bidder
Name of Person:
Position:
Name of the Bidder:
Office Seal of Bidder:
Legal Address of Bidder:

Attachment 6

<Letterhead of the O&M Partner>

LIST of Equipment Imported and indigenous

	Name of equipment Name of manufacturer Quantity & Country of origin
1. **2.** **3.** **…**	

Signature

Seal

Dated:

Attachment 7

<Letterhead of the O&M Partner>

LIST of Manufacturer Imported and indigenous

S. No.	Name of equipment	Name of manufacture

Attachment 8 A

PROFORMA FOR FINANCIAL CAPABILITY OF BIDDER
(for a period of last three years)

Bid No. ---------- Package Code ----------
Date of Opening ----------
Time ----------

Name of the Bidder

……..

Year	Currency	Turnover
2016-2017 financial year		
2017-2018 financial year		
2018-2019 financial year		
Average		

Note:

1. The annual turn over amount is to be supported by annual report.

Signature of the Authorized Representative
Name of the Person
Position

Attachment 8 B

PROFORMA FOR PERFORMANCE STATEMENT FOR MANUFACTURER
(for a period of last five years)

Bid No. _____ Name of Equipment _____ Date of Opening _____ Time _____
Name of the Manufacturer_____

Order placed by (full address of Purchaser)	Order No. & Date	Description of ordered equipment (Model no.)	Quantity supplied	Value of order	Date of commissioning and handing over	Has the equipment been satisfactory functioning? **(Attach certificates from the Purchaser/ Consignee for each equipment)**
1	2	3	4	5	6	7

NOTE : Bidder to furnish above detail for each equipment of the quoted package on separate sheet.

Signature of the Authorized Representative
Name of the Person
Position

Attachment 8 C

PROFORMA FOR PERFORMANCE STATEMENT FOR BIDDER (O&M OPERATOR) AS AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER (for a period of last five years)

Bid No. _____ Name of Equipment _____ Date of Opening _____
Time_____
Name of the Manufacturer_____

Order placed by (full address of Purchaser)	Order No. & Date	Description of ordered equipment (Model no.)	Quantity supplied	Value of order	Date of commissioning and handing over	Has the equipment been satisfactory functioning? **(Attach certificates from the Purchaser/ Consignee for each equipment)**
1	2	3	4	5	6	7

NOTE : Bidder to furnish above detail for each equipment of the quoted package on separate sheet.

Signature of the Authorized Representative
Name of the Person
Position

Attachment 9

CAPABILITY & EXPERIENCE OF O&M PARTNER

Name and address of the O&M Partner in India (if applicable):

Sl. No.	Name of the O&M personnel proposed to be deployed	Educational Qualification	Experience in no. of years in carrying out O&M of CAAQMs.	Detail curriculum Vitae Attached(YES / NO)
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

Signature of Bidder

Seal

Date:

Attachment 10

FORM OF BANK GUARANTEE FOR BID SECURITY

(To be stamped in accordance with Stamp Act, if any, of the Country of the issuing Bank)

Bank Guarantee No.----------

Ref. No.:- Date :----------

To,

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow

Dear Sirs,

WHEREAS----------(hereinafter called "the Bidder") has submitted its bid dated ---------- for Supply and O&M of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for Uttar Pradesh Pollution Control Board at.....-……------ (hereinafter called "The Board")

KNOW ALL MEN by these present that WE---------- of having our registered office at ---------- (hereinafter called "The Bank") are bound unto Uttar Pradesh Pollution Control Board, India (hereinafter called "The Board") in the sum of ---------- (amount as per bid document in Indian Rs. in words and figures), for which payment well and assign, by these presents. Sealed with the common seal of the bank this-------- day ---------- of 2020.

THE CONDITIONS of this obligation are:

1. If a Bidder withdraws / modifies its Bid during the period of Bid validity specified in Sub-clause 4.6 hereunder;

or

2. If the bidder having been notified of the acceptance of its bids by the board during the period of bid validity:
   a. fails or refuses to execute the Contract Form, when requested ; or
   b. fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders.

or

- In case bidder refuses to withdraw, without any cost to the Owner, those deviations, which the bidder did not state in the Deviation Schedules.

We undertake to pay to the Board up to the above amount, according to, and upon receipt of, its first written demand, without the Board having to substantiate its demand, provide that in its demand the Board will note that the amount claimed by it is due to it owing to the occurrence of one or all of the three above stated conditions, specifying the occurred condition or conditions.

[NAME OF BANK]
By----------
(Title)
Authorized Representative

(Signature of Witness)

Name of Witness ----------

Address of Witness----------

Attachment 11

PRE-REQUISITES FOR INSTALLATION OF EQUIPMENT

To :

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Dear Sir,

Following are the pre-requisites for installations of the equipment offered by us, which are required to be provided by you prior installation of the equipment:

Package no. / Item No.	**Name of the Equipment**	**Installation & commissioning pre-requisites**

Signature of the Authorized Representative
Name of the Person
Position

Attachment 12

SUPPLY, INSTALLATION & COMMISSIONING OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS) AND OPERATION & MAINTENANCE SERVICES FOR CAAQM AT ---------- FOR -------- UPPCB
(Deviation Schedule)

Bidders Name & Address

To,

The Member Secretary,
Uttar Pradesh Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Dear Sir,

Subject:- Deviation Schedule.

We declare that the following are the only and exhaustive deviations, variations from, exceptions and exclusions to the Bidding Documents for Services as outlined in your Technical Specifications for the subject package. Except these deviations, subject to the approval and acceptance by you, the entire work shall be performed as per your specifications and documents. Further, we agree the additional conditions, if any found elsewhere in the offer other than those stated below, save that pertaining to any rebates / discount offered, shall not be given effect to:

Equipment Code No.	Vol./ Clause Ref. / Page No.	As Specified in the Bid Documents	Deviation and Variations to the Bid document

Date:

Place

(Signature)

……
(Printed Name)
……
(Designation)
……
(Common Seal)

Attachment 13

INDEMNITY BOND FOR HANDING OVER AIR MONITORING STATIONS INCLUDING ALL EQUIPMENT TO THE O&M CONTRACTOR

This Indemnity Bond is made this ……. Day of 2020……
By……a Company registered under the CompanieAct,1956/Partnership firm / Proprietary concern having its registered office at ……
(hereinafter called as "Contractor" or "obligator" which expression shall include its successors and permitted assigns) in favour of **Uttar Pradesh Pollution Control Board, Lucknow-226010** with Office at TC-12 V, Vibhuti Khand, Gomti Nagar, Lucknow-226010, which term shall include permitted assigns and successors, (hereinafter called "UPPCB" which expression shall include its successors and assigns).

Whereas UPPCB has awarded to the Contractor, a contract for O&M of the one no. of Continuous Ambient Air Monitoring Stations (CAAQMS located at ----------, vide its Letter of Indent / Award Letter / Contract No…….. dated …….. (hereinafter called the "Contract"), in the terms of which Contractor shall be responsible for the Equipments to be handed over to it by UPPCB for the purpose of performance of the Contract (hereinafter called the "Equipments").

Now, therefore this Indemnity Bond witnessed as follows:

- That in consideration of various Equipments as mentioned in the Contract, valued at Rs.---------- (Rupees……..) to be handed over to the Contractor for the purpose of performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep UPPCB indemnified, for the full value of the Equipment. The Contractor hereby acknowledges receipt of the Equipments as per details in the Schedule appended hereto.

- That the Contractor is obliged and shall remain absolutely responsible for the safe custody of the Equipments at Continuous Ambient Air Monitoring Stations (CAAQMS) belonging to UPPCB against all risks whatsoever till the Equipments are duly used in accordance with all terms of the Contract. The Contractor undertakes to keep UPPCB harmless against any loss or damage that may be caused to the Equipment.

- The Contractor undertakes that the Equipments shall be used exclusively for the performance/ execution of the Contract strictly in accordance with its terms and conditions and no part of the

Equipments shall be utilized for any other work or purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purposes including legal / penal consequences.

4. That UPPCB is and shall remain the exclusive Owner of the Equipment free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by Project-in-Charge UPPCB shall always be free at all time to take possession of the Equipments in whatever form the equipments may be. If in its opinion, the equipments are likely to be endangered, misutilised or converted to uses other than those specified in the Contract, by any act of omission or commission on the part of the Contractor; he finds itself and undertakes to comply with the direction or demand of UPPCB to return the Equipments without any demur or reservation.

5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is misutilised in any manner whatsoever then the Contractor hereby agrees that the decision of the Project-in-Charge of UPPCB as to assessment of loss or damage to the Equipments shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and / or damaged Equipments at its own or remedy that may be available to UPPCB against the Contractor under the Contract and under this Indemnity Bond.

6 Now the condition of this Bond is that if the Contractor shall duly and punctually complies with the terms and conditions of this bond to the satisfaction of UPPCB, then the above bond shall be void, but otherwise, it shall remain in full force and virtue.

In witness whereof, the Contractor has hereunto set its hand through its authorized representative under the common seal of the company, the day month and year first above mentioned.

SCHEDULE NO. 1

Particulars of the Equipments handed over	Quantity	Value of the Equipment	Signature of Authorised Person

For and on behalf of
M/s……

Witness I

1. Signature
2. Name
3. Address

Name
Signature
Designation
Authorized representative

Witness II

1. Signature
2. Name
3. Address

(Common Seal)
(In case of Company)

Attachment 14

LIST OF BANKS ACCEPTABLE FOR SUBMISSION OF BANK GUARANTEE FOR BID SECURITY

SCHEDULED COMMERCIAL & NATIONALISED BANKS

1. State Bank of India

2. Allahabad Bank

3. Andhra Bank

4. Bank of India

5. Bank of Maharashtra

6. Canara Bank

7. Central Bank of India

8. Corporation Bank

9. Dena Bank

10. Indian Bank

11. Indian Overseas Bank

12. Oriental Bank of Commerce

13. Punjab National Bank

14. Punjab & Sind Bank

15. Syndicate Bank

16. Union Bank of India

17. United Bank of India

18. UCO Bank

19. Vijaya Bank

20. Bank of Baroda

(C) PUBLIC SECTOR BANK

1. IDBI Ltd.

Attachment 15

LIST OF BANKS ACCEPTABLE FOR SUBMISSION OF BANK GUARANTEES FOR ADVANCE PAYMENTS, PERFORMANCE SECURITIES AND SECURITIES FOR DEED OF JOINT UNDERTAKING

SCHEDULED COMMERCIAL BANKS

A. SBI

1. State Bank of India

B. Nationalised Banks

1. Allahabad Bank
2. Andhra Bank
3. Bank of India
4. Bank of Maharashtra
5. Canara Bank
6. Central Bank of India
7. Corporation Bank
8. Dena Bank
9. Indian Bank
10. Indian Overseas Bank
11. Oriental Bank of Commerce
12. Punjab National Bank
13. Punjab & Sind Bank
14. Syndicate Bank
15. Union Bank of India
16. United Bank of India
17. UCO Bank
18. Vijaya Bank
19. Bank of Baroda

C. Foreign Banks

1. Bank of America NA
2. The Bank of Tokyo-Mitsubishi UFJ Limited.
3. BNP Paribas
4. Calyon Bank
5. Citi Bank N.A.
6. Deutsche Bank A. G.
7. The Hong Kong and Shanghai Banking Corporation Ltd.
8. Standard Chartered Bank
9. Societe Generale
10. Barclays Bank
11. ABN Amro Bank N. V.
12. Bank of Nova Scotia
13. Development Bank of Singapore i.e. DBS, Singapore

D. SCHEDULED PRIVATE BANKS

1. ING Vysya Bank Ltd.
2. ICICI Bank Ltd.
3. HDFC Bank Ltd.
4. Axis Bank Ltd.

E. Public Sector Banks

1. IDBI Ltd.

Attachment 16

INTEGRITY PACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on …….day of the month of ……2020, between, **Uttar Pradesh Pollution Control Board, Lucknow-226010,** acting through **Shri Ashish Tiwari , Member Secretary, Uttar Pradesh Pollution Control Board, Lucknow-226010** hereinafter called the "BUYER", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns of the First Part and M/s…… represented by Shri……., Chief Executive Officer (hereinafter called the "BIDDER / SELLER" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to procure (Name of the Stores/Equipment/Item) and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company/public company/Government undertaking/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the BUYER UPPCB work under the ageis of Environment & Forests, performing its functions as per the provisions of Water Act 1974, Air Act ,1981 and EPA Act, 1986.

NOW, THEREFORE,
To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERs to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.
The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the BUYER

1.1 The BUYER undertakes that no official of the BUYER, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

1.2 The BUYER will, during the pre-contract stage, treat all BIDDERs alike, and will provide to all BIDDERs the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERs.

1.3 All the officials of the BUYER will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

2. In case any such preceding misconduct on the park of such official(s) is reported by the BIDDER to the BUYER with full and verifiable facts and the same is prima facie found to be correct by the BUYER, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the BUYER and such a person shall be debarred from further dealings related to the contract process. In such a case while an inquiry is being conducted by the BUYER the proceedings under the contract would not be stalled.

Commitments of BIDDERs

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:-

3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected

directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the Government.

3.3* BIDDERs shall disclose the name and address of agents and representatives and Indian BIDDERs shall disclose their foreign principals or associates.

3.4* BIDDERs shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/contract.

3.5* The BIDDER further confirms and declares to the BUYER that the BIDDER is the original manufacture/integrator/authorized government sponsored export entity of the defence stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the BUYER or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.

3.6 **The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.**

3.7 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the

bidding process, bid evaluation, contracting and implementation of the contract.

3.8 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.

3.9 The BIDDER shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the BUYER as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.

3.10 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.

3.11 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

3.12 If the BIDDER or any employee of the BIDDER or any person action on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the BUYER, or alternatively, if any relative of an officer of the BUYER has financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filling of tender.

3.13 The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the BUYER.

4. Previous Transgression

4.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDER's exclusion from the tender process.

4.2 The BIDDER agrees that if it makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Sanctions for Violations

5.1 Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the BUYER to take all or any one of the following actions, wherever required:-

(i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER (s) would continue.

(ii) The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.

(iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.

(iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

(v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.

(vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation/rescission and the BUYER shall be entitled to deduct the amount so payable from the money (s) due to the BIDDER.

(vii) To debar the BIDDER from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the BUYER.

(viii) To recover all sums paid in violation of this Pact by BIDDER (s) to any middleman or agent or broker with a view to securing the contract.

(ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.

(x) Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

5.2 The BUYER will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

5.3 The decision of the BUYER to the effect that a breach of the provisions of this Pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the Independent Monitor (s) appointed for the purposes of this Pact.

6. <u>Fall Clause</u>

6.1 The BIDDER undertakes that it has not supplied/is not supplying similar product/systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or PSU and if it is found at any stage that similar product/systems or sub systems was supplied by the BIDDER to any other Ministry/Department of the Government of India, State Pollution Control Boards or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the BIDDER to the BUYER, if the contract has already been concluded.

7. Independent Monitors

7.1 The BUYER has appointed Independent Monitors (hereinafter referred to as Monitors) for this Pact.
Chief Environmental Officer, Central Laboratory
U.P.Pollution Control Board
TC-12V, Vibhuti Khand, Gomti Nagar, Lucknow-226010
ceolab@uppcb.com

7.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.

7.3 The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

7.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.

7.5 As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the BUYER.

7.6 The BIDDER(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.

7.7 The BUYER will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.

7.8 The Monitor will submit a written report to the designated Authority of BUYER/Secretary in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the BUYER / BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

8. Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of Commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

9. Law and Place of Jurisdiction

This Pact is subject to substantive Law of India. The place of performance and jurisdiction is Lucknow only.

10. Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

11. Validity

11.1 The validity of this Integrity Pact shall be from date of its signing and extend up-to 07 years or the complete execution of the contract to the satisfaction of both the BUYER and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

11.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

12. The parties hereby sign the Integrity Pact at ……on……..

BUYER

Member Secretary
Uttar Pradesh Pollution Control Board,
TC-12 V, Vibhuti Khand, Gomti Nagar
Lucknow-226010

Witness…1……..2…….

BIDDER

CHIEF EXECUTIVE OFFICER

Witness.1……2……...

VOLUME I

SECTION IV

FORM OF FINANCIAL BID

SECTION IV

FORM OF FINANCIAL BID

CONTENTS

Attachment 1
<Letterhead of the Bidder>

Date:

Grant no.:----------

Bid No. ----------

BID FORM

TO: **U.P.Pollution Control Board**
TC-12V, Vibhuti Khand, Gomti Nagar
Lucknow-226010

Gentlemen:

1. Having examined the Bidding documents for procurement, installation & commissioning and Operation & Maintenance of CAAQMS's at -------- (number(s)) locations, UPPCB (herein after referred to as "the Works"), including, but not limited to, the Instructions to Bidders, Scope of Works, General and Special Conditions of Contract, Technical Specifications, Schedules, Attachments, Amendment Nos. …… we, the undersigned, offer to execute and complete the whole of the works and remedy any defects therein, in conformity with the said Bidding Documents for the sum Rs, …….. (INR in figures……..) for the equipment including all other charges as mentioned in the document, supplied from Foreign Origin and Indian Rupees…… (INR…….) for the incidental costs incurred in India (if any) as may be ascertained in accordance with the Summary of Bid Price and Bid Price breakup attached herewith and made part of this bid.
2. We undertake, if out Bid is accepted, to complete and deliver the whole of the Works comprised in the Contract within the time specified in the contract, subject to the said conditions.
3. If our Bid is accepted, we will obtain the guarantee of a bank in a sum equivalent to ---------- percent of the Contract Price for the due performance of the Contract, in the form prescribed by the Board.

4. We agree to abide by this Bid for a period of One hundred twenty (120) days from the final date of the submission of Bid fixed in sub-clause 7.2 of the Instruction of Bidders, and shall remain biding upon us and may be accepted at any time before the expiration of that period.
5. Unless and until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us.
6. We understand that you are not bound to accept the lowest of any bid you may receive, and that you will not defray any expense incurred by us in bidding.

Date this----------day of ---------- 2020.

Signature ---------- in the capacity of ----------

Duly authorized to sign Bid for and on behalf of ----------

(IN BLOCK CAPITAL) ----------
Address ----------
- Facsimile number ----------
- Telephone Number ----------
- Email id. ----------
- WITNESS ----------
- Address ----------
Occupation ----------

Attachment 2

SUMMARY OF BID PRICE
(rates to be quoted only in Additional format of financial bid)

Total Nos. of CAAQM Stations

DESCRIPTION	**TOTAL VALUE**
I. SUPPLY OF EQUIPMENTS	
1) For goods supplied from abroad (Currency as applicable) a. FOB price for Package b. Freight c. Insurance up to port of de-embarkment	
CIF Price at port of de-embarkment (currency as applicable) (1a + 1b + 1c)	
2) Local Costs for goods supplied from abroad a. Port handling and clearance charges. b. Transportation cost from Port of de-embarkment to Sites c. Insurance from Port of de-embarkment up to handing over d. Installation and commissioning	
Sub total (2a + 2b + 2c + 2d)	
3) For the Goods Supplied from India a. The price of the Equipment quoted ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf including all customs duties and sales and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of the Equipment quoted ex-works or ex-factory. b. Price for handling and inland transportation, insurance up to handing over the equipment at Site and other local costs upto delivery of the Equipment to each Site. c. Installation and commissioning d. Price of other incidental cost, if any. Then the Bidder shall specify the same.	
Sub total (3a + 3b + 3c + 3d)	
4) Other incidental costs, if any (such as Indian agents Commission) in INR	
TOTAL FOR SUPPLY (1 + 2 + 3 + 4)	
II Total O&M cost for Five (05)years for all the **CAAQM**'s indicated in Attachment 3A	
III. COST OF TRAINING (INR)	
GRAND TOTAL CONTRACT PRICE (INR) **(I + II + III)**	
:	

IMPORTANT NOTE:

1. All the Government Taxes are payable at actual (extra) by the board (owner).
2. Selection of instrument/equipment and its peripherals have to be done using specifications as provided by UPPCB along with the Bid Document.
3. The instrument /equipment and peripherals should be of latest model with evidential support.
4. The cost of O&M of CAAQM Stations also includes manpower for data centre at UPPCB Head Office & concerned Regional offices for the total contract period of 05 years).
5. Payment will be made only as “O&M of CAAQM Station” for 05 years on quarterly (3 months) basis.
6. Lowest bidder (L1) to be decided on the average cost quoted for Supply, Installation, Commission plus cost of O&M for 05 years in each districts.
7. Number of stations proposed in any districts can be increased or decreased as per the decision of the Chairman, Uttar Pradesh Pollution Control Board during the Bidding process..
8. Final Supply Order of the selected bidder and O&M may also be used for placing repeat order by any UPPCB office at the same rates and terms.
9. Indian Agent‘s Commission shall be paid in Indian Rupees only. Market exchange rate ruling on the date of award in accordance with clause 4.3 (b) of Instructions To Bidder (Section-I) will be applicable for this purpose.

Attachment 3

BID PRICE BREAKUP FOR EQUIPMENT

QUANTITY AS PER SCHEDULE OF REQUIREMENT IN SCOPE OF WORK

(To be made available in each station with Data Connectivity with UPPCB-Head Office and CPCB, Delhi)

(CIF) PRICE (rates to be quoted only in Additional format of financial bid)

Name of regional Office:…….

S. No.	Item / Analyzer Name	Manufacturer	Country of Origin	Model	Quantity in Nos. / Sets	Unit Price (BID CURRENCY)	TOTAL Price (BID CURRENCY)
1.	Automatic Ambient CO Analyzer						
2.	Automatic Ambient SO_2 Analyzer						
3.	Automatic Ambient NO-NO_2-NOx Analyzer						
4.	Automatic Ambient NH_3 Analyzer (Independent analyzer)						
5.	Automatic Ambient O_3 Analyzer						
6.	Automatic PM_{10} Monitor						
7.	Automatic $PM_{2.5}$ Monitor						
8.	BTX Analyzer						
9.	Multi-calibration systems for gaseous monitors comprising of gas supply / generation and automated calibration						
10.	Meteorological Instrumentation comprising Wind direction, Wind speed, Ambient temperature, Relative humidity, Solar Radiation and Rainfall mounted on telescoping crank up meteorological Tower.						
11.	Two nos. of Computer system consisting along with One Laser Printer and a DAS Software at the monitoring station for data acquisition / Data display Board / transfer and system integration, telephone, Modem.						
12.	A Set of 'Central Rack Server (with rack) system alongwith UTM Device, CISCO Switch, Access Point and DAS' for Data Management Center at **each of and one set at UPPCB**						
13.	**Housing/ Container for** Continuous Automatic Monitoring Stations with Sampling System, Sampling lines, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares						

S. No.	Item / Analyzer Name	Manufacturer	Country of Origin	Model	Quantity in Nos. / Sets	Unit Price (BID CURRENCY)	TOTAL Price (BID CURRENCY)
14.	Continuous Automatic Monitoring Stations with Sampling System, Sampling lines, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares **without container**						
15.	2ToncapacitysplitAir conditioner along with voltage stabilizer (2no. x 2 ton)						
16.	1ToncapacitysplitAir conditioner along with voltage stabilizer (1 no. X 1 ton)						
17.	Three Phase 10 kVA UPS, 1 Hour backup on full load						
18.	Single Phase 5 kVA UPS, 2 Hrs. Backup on full load						
19.	Display Board Data Transmission Device - One for Display Board near to CAAQM stations						
20.	Day & Night Visible Data Display Board. One near to CAAQM stations						
21.	RCC Foundation, pillars and miscellaneous works including caging, civil and electrical work (for CAAQM stations as well as Data Display Boards)						

Note:

1. **Quantity of item should be in accordance with the numbers of Stations.**
2. **Item no. 19 AND 20 above for Data Display Device and Data Display Board quantities should be according to the number of stations.**
3. **Item 13 or 14 will be selected according to the location requirement. However, pricing of both the items must be quoted.**

Attachment 3A

BID PRICE BREAKUP FOR O&M OF CAAQMS FOR 05 YEARS (FOR ALL STATION)

(rates to be quoted only in Additional format of financial bid)

(A) **Quoted cost O&M of a CAAQMS should be in range between 12% to 18% (ceiling price) against total capital cost of Initial supply installation** & **commissioning of each station and it should be in ascending order during the entire period of contract i.e. 05 year with the objective to maintain the quality of operation.**

Name of Zone:……. Total No. of CAAQM Stations…….

Sl. No.	Year of O&M	Service charges (70%) for O&M in Rs.	Cost of (Incidental charges(30%) including spares & consumables for Operation & maintenance and other in Rs.			Total o&m Charges for the year in Rs.	
1.	1st year						
2.	2nd year						
3.	3rd year						
4.	4th year						
5.	5th year						
TOTAL							

(B) Government taxes shall be payable (only on the service portion of O&M cost only) (excluding supply of spares for maintenance & overhauling).

(C) Cost of material including spares & consumables for operation & maintenance shall be inclusive of all taxes & duties.

Note:

1. The above ceiling O&M cost also include incidental charges (Security, Electricity, Data Connectivity, Stations Supervisor, Insurance) and services along with manpower at Central Server Stations of respective UPPCB-Head Office as well as CPCB-Delhi.
2. Health of the Stations should be sound for the entire period (07 years) so that the contract can be further renewed on mutual agreement.

(D) All the statutory taxes & duties as applicable in the State of India i.e. Duties and Taxes, as applicable will be paid as actual by the Vendor for simplification. However, these taxes will be reimbursed by the Board on production/submission of original bills.

VOLUME I

SECTION V

GENERAL CONDITIONS OF CONTRACT

SECTION V
GENERAL CONDITION OF CONTRACT CONTENTS

GENERAL CONDITIONS OF CONTRACT

These conditions encompass all the Works to be executed and completed by the Contractor for the Project and as further defined herein.

1.0 DEFINITION

Unless the context of the General and-Special Conditions of Contract otherwise requires, the following terms wherever in the General and Special Conditions of Contract shall have the meaning defined hereunder.

Words imparting the singular shall also include the plural and vice versa where the context requires. Whether the words and phrases defined in this Clause are capitalized or not in the Contract shall not affect their meaning.

1.1 **"**The **Project"** or "The Works" means supply, installation & commissioning of equipments for Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and their Operation & Maintenance at defined locations under the supervision and control of **Uttar Pradesh Pollution Control Board**.

1.2 **"**The **Contract"** means the written agreement to be concluded between the Board and the Contractor and includes terms and conditions stipulated on the Bidding Documents and any other descriptions annexed thereto which form an integral part of the agreement to be provided by the Board.

1.3 **"**The **Contract Price"** means the price payable to the Contractor under the Contract for the full and proper performance of its contractual obligations for the Works.

1.4 **"**The **Equipment"** means all kind of materials, Machinery, Components, apparatus, articles and instruments for the Project to be provided by the Contractor to the, Board under the Contract.

1.5 **"GCC"** means the General Conditions of Contract contained in this Section.

1.6 **"SCC"** means the Special Conditions of Contract in Section VI of this Volume.

1.7 **"S/W"** means the Scope of Works in Section II of this Volume.

1.8 **"**The **Contractor"** means the firm supplying the Equipment and performing the Works in connection with the Project under the Contract and includes his personal representatives, successors and authorized assignees.

1.9 "The **Manufacturers"** means the firms, which produce the Equipment to be furnished by the Contractor under the Contract with the Board.

1.10 **"**The **Specifications"** means the specifications of the Works to be performed by the Contractor in conformity with those specified in both the Technical Specifications of Volume II and all other related documents in the Bidding Documents, and modifications thereof or additions thereto as may from time to time be made, and approved in writing by the Board through the Consultant in case of prior to the Contract and agreed upon by both the Board and the Contractor after the Contract.

1.11 "The **Sites**" means CAAQMS's as specified in Clause 1 of Scope of Works (Section – II).

2.0 INTENT OF CONTRACT

2.1 The intent and spirit of the Contract is to provide all the details for the Works herein specified to be fully completed within the duration of the Contract.

2.2 It is hereby understood that the Contractor, in accepting the Contract, agrees to furnish any and everything necessary for such intent notwithstanding any omission in the Contract.

All matters omitted from the Contract which may reasonably be inferred to be obviously necessary for the efficient and stable completion of the Works shall be deemed to be included in the Contract and the Contractor shall be held responsible for any errors or losses which the Contractor may make due to such omissions as above.

3.0 PERFORMANCE OF WORKS

Unless otherwise provided for, the Works shall be performed by the Contractor in compliance with S/W, GCC, SCC and the Specifications in this Bidding Documents issued by the Board and Contract to be concluded between the Board and the Contractor.

Unless otherwise agreed or stated, the Contractor shall bear all the cost and take all the responsibilities for the performance of all the Works.

4.0 USE OF CONTRACT DOCUMENTS AND INFORMATION

4.1 The Contractor shall not, without the Board's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Board, Consultant and their authorized personnel and body in connection therewith, to any person other than a person employed by the Contractor in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

4.2 The Contractor shall not, without the Board's prior written consent, make use of any documents or information enumerated here above except for purposes of performing the Contract.

4.3 Any documents other than the Contract itself, enumerated in here above shall remain the property of the Board and shall be returned to the Board on completion of the Contractor's performance under the Contract if so required by the Board.

5.0 LOCATION

As defined by the board as per list attached

6.0 LANGUAGE AND CALENDAR

6.1 **Language**

All documents and correspondence related to the Contract shall be made in English.

6.2 **Calendar**

All dates, months, years and terms referred in the Contract shall relate with the Gregorian Calendar, unless otherwise mentioned specifically.

7.0 SITE CONDITION

7.1 **Site Condition**

The Contractor shall study the existing Site Conditions, referring to the Bidding Documents carefully in order to familiarize themselves with the Works. The Contractor should ascertain all particulars of the location and Site conditions at their own expenses.

7.2 **Access to Site**

The Board will give the Contractor access the Sites in order to perform the Works during the period of validity of the Contract unless otherwise provided.

8.0 COUNTRY OF ORIGIN

8.1 All the Equipment supplied under the Contract shall have their origin in the eligible countries.

8.2 For the purposes of this Clause, "Origin" means the place where the Equipment were produced or manufactured. The Equipment is produced or manufactured when, though manufacturing, processing, or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics in purpose or utility from its components.

8.3 The origin of Equipment is distinct from the nationality of the Contractor.

9.0 SPECIFICATION OF EQUIPMENT

9.1 **Equipment**

The Contractor shall supply all the Equipment specified in the package quoted as per the package wise Equipment List of Attachment 1 of S/W.

All the Equipment to be supplied under the Contract shall be new and unused.

9.2 **Specification of Equipment**

The performance, materials, duty, workmanship, operating conditions and design conditions for the Equipment shall meet and comply with the Specifications.

The Specifications indicate the principal and minimum technical requirements for each equipment. The details of the Equipment shall be fully examined and suitably selected through the detailed engineering and design without sacrifice in quality of serviceability of the Equipment.

The figures of dimension and weight shown in the Specifications are indicatively presented as approximate figures. These figures may not necessarily and exactly be applied for the selection of the Equipment,

but the Contractors shall meet the principal and minimum requirements shown in the Specifications. Any Bidder offering better specification than the minimum prescribed shall be considered as technically qualified.

10. CODE AND STANDARD

10.1 **Code and Standard**

All the Equipment and the Works shall conform to the approved and authorized codes and standards of the origin country, the following standards wherever applicable and Indian Standard (NAAQS) which are in force at the moment of the installation.

- Japanese Industrial Standard (JIS)
- Environmental Protection Agency of United States (U.S EPA) Standard
- International Organization for Standard (ISO)
- British Standard (BS)
- TUV Germany
- MCERTS- SIRA certification U.K Environment Agency

Other internationally prevailing standards are accepted for the Equipment, unless otherwise indicated.

Even if some codes and standards are designated in the Specifications, the other codes and standards not shown therein are also applicable instead of the designated ones as far as they are equivalent to such designated codes and standards and meet the requirement thereof.

10.2 **Metric System**

All dimensions and performance of the Equipment shall be stated in metric system, unless otherwise specified in the Specifications.

11.0 ELECTRICAL RATINGS

11.1 **Electrical Rating**

The Equipment shall conform to the following ratings and standards wherever applicable.

1) All the electrically operated equipment specified herein shall be single phase, 230 Volts ±10 volts AC and 50 Hz ±3% unless otherwise specified in the Specifications.

2) Electrical plugs for the Equipment shall conform to local regulations and standards.

11.2 **Precaution against Voltage Fluctuation**

Adequate automatic voltage regulator for the Equipment shall be arranged by the Contractor wherever indicated in the Specifications. The Contractor shall pay due attention to that electrical voltage fluctuation exerts a serious influence and damage upon functioning of the equipment.

12.0 NAME PLATE

Nameplate shall be affixed on a suitable place of the Equipment in accordance with the provision of SCC.

13.0 PACKING AND MARKING

13.1 **Packing**

1) Transportation by air cargo

The Contractor shall pack and transport the Equipment in the double carton, approved by airline and deliver separately to the designated Site in complete condition.

2) Transportation by vessel

The Equipment shall be packed and transported for seaworthy shipment in such a manner that they are carried to the Sites in complete condition. The packages shall be made shockproof, waterproof, moisture proof and any other protection against rough handling, exposure to extreme temperature, salt, precipitation, open storage and other severe tropical conditions during transit to each final Site. These Equipment shall be transported by container vessel and packed separately for the designated Site.

13.2 **Marking**

The outside of the package shall be marked in accordance with SCC in such a manner that they are clearly visible, protected against loss and resistance to external influences.

13.3 **Packing List**

Contents of each package and/or the Equipment shall be itemized on a detailed list showing the exact weight, and extreme outside dimensions of length, width and height of each package and/or the Equipment. One copy of the detailed packing list indicating name of components, assembly number and quantity which corresponds to those of the Equipment in each package shall be enclosed in each package.

Enclosed in one package, there shall also be a master packing list summarizing and identifying each individual package. Packing list shall be placed in a waterproof cover and secured against any external influence of the package.

14.0 SHIPMENT

14.1 **Shipment**

Shipment of the equipment from foreign origin shall be made as specified in SCC.

14.2 **Shipping Documents**

Promptly after shipment of equipment of foreign origin, the Contractor shall airmail the shipping documents to the Board in accordance with SCC.

14.3 **Unloading and Custom Clearance**

The Contractor shall arrange the clearing agent for unloading, customs clearance and storage of the equipment from the Foreign Origin, documentation and all the other procedures.

The Board will agree to assist the Contractor where required in obtaining clearance of the Equipment through the customs and provide exemption certificate, if required.

14.4 **Inland Transportation**

The Contractor shall be fully responsible for the delivery of all the Equipment to the Sites.

The Contractor shall arrange at his option and cost for the transportation from the port of entry to each Site for the equipment of foreign origin.

Transportation of Radioactive material if any shall be carried out by the contractor and contractor will obtain statutory clearances for the same.

14.5 **Handling and Storage**

The Contractor shall protect the Equipment from any damage and avoid overloading. Particular attention shall be given to the perishable Equipment and those which must be kept dry, cool or from exposure to direct sunshine and moisture.

In case a part of the Board's facilities is necessary to be occupied by the Contractor for temporary storage or installation use, the Contractor shall obtain the written approval from the Board for temporary occupation and protect facilities against any damages. Charges payable for this facility to the Board for this shall be fixed by the Board.

15.0 PROJECTION AND SAFETY

The Contractor shall be totally responsible for all the reasonable precautions against fire in respect of the Works, temporary works, offices, storage yards and other places and things connected therewith.

The Contractor shall comply with all rules, regulations and orders which have been made by the Government of India, the Board or any other competent authority and the contractor shall provide sufficient fire-fighting protection in respect of the safety of the property and personnel of the Board.

16.0 WORKS SCHEDULE

The time schedule for the Works to be carried out by the Contractor is specified in SCC.

The Contractor shall complete the Works in accordance with the Works schedule specified here above.

17.0 PROJECT FORMATION

17.1 **Board**

The authorized personnel of the Board for the Project who is responsible for any coordination with the Contractor is:

Member Secretary or Authorized Representative,
TC-12 V, Vibhuti Khand, Gomti Nagar, Lucknow-226010

Any correspondence to or authorization from the Board shall be made with the Member Secretary here above.

18.0 WARRANTY / O & M CONTRACT

18.1 All the CAAQMS's shall be under O&M Contract from the date of commissioning of the CAAQMS's. The details terms and conditions and scope of work during O&M Contract period shall be as specified in the Scope of Work, Section – II of this document.

18.2 However the Contractor shall warrant to the Board that the Equipment to be supplied under the Contract is new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. This warranty includes all spare parts and services to keep the instruments and equipment in operating condition. **In case O & M is not awarded / terminated the equipment shall remain warranted for 3 years from the date of commissioning**.

The Contractor shall further warrant to the Board that the Equipment complies strictly with the Specifications and has no defect, arising from design, materials, or workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied Equipment in the conditions prevailing to the final Sites.

18.3 **Period of O&M Contract**

This O&M Contract shall remain operative for the period specified in SCC after the successful installation & commissioning of the stations by the Contractor.

18.4 **In Case of Faulty Equipment**

If any part of the Equipment breakdowns or fails due to faulty of improper design, materials, workmanship, manufacture, fabrications or instructions, or fails to meet the requirements of the Specifications, then the Contractor or his O&M partner shall promptly notify the manufacturer in writing of any claims arising under this clause.

Contractor or his O&M partner shall ensure that within the period specified in Scope of Work for O&M Contract in Section – II of the document and with all reasonable speed, the repair of replacement of the defective Equipment or improper parts thereof is carried out at the Contractor's expenses.

In the event that any part of the Equipment becomes defective due to no fault of the Contractor, such as voltage fluctuations, misuse and negligence, the Contractor will be indemnified by the Board in respect of repair thereof.

18.5 **Manufacturer's Warranty**

The contractor must take into account any manufacture's standard Warranty on the equipment supplied **before quoting for O&M cost for the years** for which such Warranty is applicable.

19.0 INSURANCE

The Equipment supplied under the Contract shall be fully insured (Comprehensive) in currency acceptable as per the existing Law of India against loss or damage incidental of manufacture or acquisition, transportation, storage, shipment, delivery, installation and training involved with the Works naming the Board as the beneficiary, in the manner specified in the SCC, until issuance of taking over certificate.

20.0 INSTALLATION

20.1 All the Equipment shall be installed and brought into suitable conditions for operation by the Contractor at the Sites designated by the Board. The Contractor shall make all the necessary and proper adjustments and arrangements, including, but not restricted to, the utility supplies and connections, foundation and erection works specified in Clause 3 of S/W in order to install the Equipment in adequate conditions for operation.

All matters omitted from this Clause which may reasonably be incurred to be obviously necessary for the proper installation and operation of the Equipment shall be deemed to be included in this installation works, and the Contractor shall be held responsible for any errors or defects which the Contractor may make due to such omissions thereof.

20.2 Only the best installation practices are to be applied, and all the installation works must be done to the satisfaction of the Board and the Contractor shall carry out his works in a neat and proper workmanlike manner. The installation shall be planned and carried out in no way to damage installation materials and the Equipment.

20.3 All the installing Equipment, tools, materials, labour, logistics and all the other requirements for installation shall be provided by the Contractor.

20.4 Prior to the establishment of Equipment layout and installation plan, the Contractor shall verify, check and inspect the designs and specific site conditions of monitoring stations and laboratories where the Equipment are to be installed so as to make good arrangement for installation and utility assembly in consultation with the Board.

21.0 INSPECTION AND TEST

21.1 The Board shall have the right to inspect and the test the Equipment to confirm their conformity to the Specifications without any extra charge to the Board by the Contractor. The Contractor shall notify the Board and the Consultant in writing, in a timely manner (at least 21days in advance), of the schedule of inspections and test.

21.2 The inspections and test shall be conducted on the premises of the Contractor and/or the Manufacturers and the Sites. If conducted on the premises of the Contractor and/or the Manufacturers, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the Consultant for the inspections and test at no charge to the Board.

21.3 Should any inspected or tested Equipment fail to conform to the Specifications, the Board may reject the Equipment, and the Contractor shall either replace the rejected Equipment or make alternations necessary to meet the Specifications requirements free of cost to the Board.

21.4 No pre dispatch inspection is envisaged for equipment of foreign origin and contractor shall furnish factory test / inspection reports as furnished below of the manufacturer along with the dispatch documents. However, the Board reserves the right to appoint at its cost, any inspection agency (other than suggested by contractors) which will be binding on the contractor.

- → Performance Test Certificate of all analyzer/ UPS/ 1.2 mm pre-coated GI Sheet of container, NIST traceability for gas Aluminum cylinders / Permeation tube
- → Certificate of Traceability
- → Verification of System Completeness
- → Product Certificate

21.5 For the equipment of Indian origin contractor should submit check list for equipment for approval of UPPCB. For container, contractor should take prior approval of the drawing from UPPCB. Contractor should notify date of pre-dispatch inspection to the UPPCB at least 15 (fifteen) days ahead of inspection.

21.5 The Board's right to inspect, test and, where necessary, reject the Equipment after the Equipment's arrival in India shall in no way limited or waived by reason of the Equipment having previously been inspected, tested and passed by the Board prior to the Equipment's shipment from the country of origin.

22.0 TRAINING

22.1 The Contractor shall provide the Board staff with the training as specified in Clause 5 of S/W for the Equipment & Technical Specification.

22.2 The Contractor shall furnish the schedule and program of the training to the Board within 30 days after the notification of award in such a manner that proper training is imparted to Board staff members.

23.0 COMPLETION

The Contractor shall complete all the Works by the date as specified in SCC.

23.1 **Taking Over**

Upon successful completion of delivery, installation, inspection and training of the Equipment to and at the designated Sites and O&M of the CAAQMS for the period specified in S.C.C., the Contractor shall notify the Board in writing that all the Works under the Contract have been completed at least 30 days before expiry of O&M Contract period.

Immediately after completion of O&M Contract period as specified in S.C.C., the Board will take over the stations or make alternate arrangement for their O&M.

24.0 SUBMISSION OF DOCUMENTS

The Contractor shall submit the documents specified in SCC to the Board. The Contractor shall prepare all the documents in English.

Besides the documents thereof, the Contractor shall submit the notices, reports, and other documents when deemed necessary, in accordance with the direction of the Board.

25.0 PAYMENT

25.1 **Payment**

The method, terms and conditions of payment to be made to the Contractor under this Contract shall be specified in SCC.

The Contractor's request(s) for payment for, as appropriate, the Equipment delivered and the Works performed and fulfillment of other obligations stipulated in the Contract shall be made to the Board in writing, accompanied by documents specified in SCC.

25.2 The payment shall be made promptly by the Board but in no case not later than sixty (60) days after submission of invoice or claim by the contractor.

25.3 **Currency of Payment**

The currency (INR only) in which payment is made to the Contractor under this Contract shall also be specified in SCC.

25.4 The foreign bidders should quote the price in foreign currency. In case they have components and services of Indian Agent/origin, the same may be quoted in Indian Rupees.

26.0 PRICES

Prices charged by the Contractor to the Board for the Equipment delivered and the Works performed under the Contract shall not vary from the prices quoted by the Contractor in the Financial Bid.

27.0 PERFORMANCE SECURITY

27.1 **Performance Security**

The Contractor within thirty (30) days from the date of notification of award shall furnish a Bank Guarantee from a reputed Indian or Nationalized Bank having license to do business in India to the Board in line with the enclosed from as per Attachment 1 Section VI towards performance guarantee for an amount equal to ten (10) percent of the total cost Price of the Contract for faithful and due fulfillment by the Contractor of all obligations under the terms and conditions of the Contract.

The Contractor shall ensure that Contract Performance Security remains valid at Five year after commissioning of entire system satisfactorily.

27.2 **Return of Performance Security**

The performance security will be discharged by the Board and returned to the Contractor not later that forty five (45) days after expiry of one year subject to date of completion of the Contractor's performance obligations under the Contract, including obligations, unless specified otherwise in SCC.

28.0 **ASSIGNMENT**

The Contractor shall not assign in whole or in part, its obligations to perform under this Contract, except with the Board's prior written consent.

29.0 SUBCONTRACTORS

29.1 The Contractor shall notify the Board in writing of all the Manufacturers awarded under this Contract and any other subcontractors involved with performance of the Works if not already specified in the Bid. Such notification, in the original Bid or later, shall not relieve the Contractor from any liability or obligation under the Contract.

30.0 DELAYS IN THE CONTRACTOR'S PERFORMANCE

30.1 **Delays in the Contractor's Performance**

Delivery of the Equipment and performance of the Works shall be made by the Contractor in accordance with the time schedule specified in SCC.

30.2 **Notification of Delay**

If at any time during performance of the Contract, the Contractor and/or the Manufacturers should encounter conditions impending timely delivery of the Equipment and performance of the Works, the Contractor shall promptly notify the Board in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Contractor's notice, the Board shall evaluate the situation and may at its discretion extend the Contractor's time for performance, with or without liquidated damages, in which case the extension shall be ratified by the Board by amendment of the Contract.

30.3 **Liability of Liquidated Damages**

Except as provided under Clause 34 of GCC, a delay by the Contractor in the performance of its delivery obligations shall render the Contractor liable to the imposition of liquidated damages pursuant to Clause 31 hereunder, unless an extension of time is agreed upon pursuant to Sub-clause 30.2 here above without the application of liquidated damages.

31.0 LIQUIDATED DAMAGES

if the Contractor fails to perform the Works within the period specified in Clause 11 of SCC, the Board shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in SCC. Once the maximum is reached, the Board may consider termination of the Contract pursuant to Clause 35 of GCC.

32.0 SUSPENSION OF WORK

The Contractor shall not suspend the whole or any part of the Works without notice to the Board in writing. The Contractor thereupon shall

do all possible endeavors to reduce any expenses or costs resulting from the suspension. Such suspension shall not nullify the Contract.

33.0 TERMINATION FOR DEFAULT

33.1 **Termination for Default**

The Board, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Contractor, may terminate this Contract in whole or in part:

1) If the Contractor fails to perform any or all of the Works within the period specified in Clause 11 of SCC, or extension thereof granted by the Board pursuant to Clause 32 of GCC

or

2) If the Contractor fails to perform any other obligations under the Contract.

33.2 **Liability for Excess Cost for Unperformed Work**

In the event the Board terminates the Contract in whole or in part pursuant to Sub-clause 33.1 here above the Board may procure at the risk and cost of the contractor, upon such terms and in such manner as it deems appropriate, the equipment / works similar to those undelivered / unperformed and the **Contractor shall be liable to the Board for any excess costs for such similar equipment / works.** However, the Contractor shall continue performance of the Contract to the extent not terminated.

34.0 FORCE MAJEURE

34.1 Notwithstanding the provisions of Clauses 32, 33 and 35 in GCC, the Contractor shall not liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

34.2 For the purposes of this Clause, "Force Majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the Board in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

34.3 If a Force Majeure situation arises, the Contractor shall promptly notify the Board in writing of such condition and the cause thereof. Unless otherwise directed by the Board in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably

practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

35.0 TERMINATION FOR INSOLVENCY

The Board at any time terminates the Contract by giving written notice to the Contractor if the Contractor becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Contractor, provided that such, termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Board.

36.0 RESOLUTION OF DISPUTES

36.1 **Settlement of Disputes**

Any dispute(s) or difference(s) arising out of or in connection with the Contract and works of any nature assigned under the same (whether during the progress of works or after their completion), determination, abandonment or breach of contract, shall to the extent possible in the first instance be resolved amicably between the Contractor and the Owner.

If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Contractor may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.

Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.

In the case of dispute or difference arising between the Purchaser and a Domestic Contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of (3) three arbitrators one each to be appointed by the Purchaser and the Contractor. The third arbitrator shall be chosen by the 2 (two) Arbitrators so appointed by the parties and shall act as Presiding arbitrator. In case of failure of the two arbitrator appointed by the parties to reach upon a consensus within a

period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the Chairman/Member-secretary , UPPCB.

In case of a dispute with a Foreign Contractor, the dispute shall be settled in accordance with provision of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules. The Arbitral Tribunal shall consist of three Arbitrators one each to be appointed by the Purchaser and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties, and shall act as presiding arbitrator. In case failure of two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the Chairman, /Member-secretary UPPCB.

If one of the parties fails to appoint its arbitrator in pursuance of Sub-Clauses A & B above, within thirty days after receipt of the notice of the appointment of its arbitrator by the other party, then the Presiding Arbitrator shall be nominated by Chairman, /Member-secretary UPPCB, both in case of the foreign contractor as well as Indian Contractor, shall appoint the arbitrator. A certified copy of the order of the Chairman, /Member-secretary UPPCB, making such an appointment shall be furnished to each of the parties.

Arbitration proceedings shall be held at Lucknow, Uttar Pradesh, India, and the language of the arbitration proceedings and that of documents and communications between the parties shall be English/Hindi.

The decision of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation etc. of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself.

Where the value of the contract is Rs. 10 million and above, the disputes or differences arising shall be referred to the Sole Arbitrator. The sole Arbitrator should be appointed by Chairman, /Member-secretary UPPCB, the decision of the sole arbitrator shall be final and binding. It will not be an objection to any such appointment that the arbitrator are the Government servant and had any interest in the Board or the contract entered into directly or indirectly. In all cases, the arbitrator shall state their decision in writing, the arbitrator shall give reasons for award.

37.0 TAXES AND DUTIES

a) Concessional Customs Duty (presently) shall be applicable on the equipment being imported by **Uttar Pradesh Pollution Control Board (UPPCB)**. Necessary exemption certificate shall be issued by UPPCB and applicable Custom Duty shall be paid by the Board.

b) The issue especially on GST and all other prevailing taxes and incidental charges from the port/Airport to destination places where to be delivered are to be borne by the vendor. Regarding custom and excise duty exemption certificate along with road permit certificate (wherever it is required) will be issued by UPPCB according to the prevailing rules & provisions. The incidental expenses towards sending the instruments to the designated location sire mentioned in, such as arranging transport shifting charges freight, insurance premium up to handling over the Equipment at sites, inland transportation & storage labour, including charges to the custom clearing agent and customs duty etc. to be borne by the supplier/ their representative should be responsible for the safety of the instrument during the transit from airports to the designated locations. Further all charges as per status applicable for incidental services like installation, commissioning and training & O&M service etc. shall be payable by Vendor.

38.0 INJURY AND DAMAGE

38.1 **Injury or Death of Persons**

The Contractor shall be liable for and shall indemnify the Board against any liability, loss claim or proceedings whatsoever arising under any statue or law in respect of personal injury or death or any disability caused by the carrying out of the Works unless due to any act or neglect of the Board, or of any person for whom the Board is responsible.

Without prejudice to the Contractor's liability to indemnify the Board, the Contractor shall maintain and cause any manufacturers and subcontractors to maintain such insurance as necessary to cover the liability of the Contractor or, as the case may be, of such Manufacturers and subcontractors, in respect of personal injuries of deaths arising out of or in the course of or caused by the carrying out of the Works.

38.2 **Damage to Property**

The Contractor shall liable for and indemnify the Board against and insure and cause any Manufacturers and subcontractors to insure against any expense, liability, loss claim or proceedings in respect of any damage whatsoever to any real or personal property for any one occurrence in so far as such damage arises out of or in the course of or by reason of the carrying out of the Works and is due to any negligence, omission or default of the Contractor or any person for whom the Contractor is responsible or any Manufacturers and subcontractors or person for whom the Manufacturers and subcontractors are responsible.

39.0 ROYALTY AND PATENTS

39.1 The Contractor shall pay all royalties and licenses fees for the use of any patented item, whether it may be an invention, method, arrangement, article, process or appliance used in connection with the performance of the Contract. The Contractor shall indemnify and save harmless the Board against any and all costs, damages and expenses of any nature or kind whatsoever which may arise out of or result from a claim by any person, firm or corporation that the manufacture, purchase, use of sale of any of the inventions, methods, arrangements, articles processes or appliances used in connection with the performance of this Contract infringes any patent of such other rights. The Contractor shall, at the request of the Board, defend the Board against any suit brought to enforce any such claim at the Contractors expense.

39.2 In case any such patented item used on or in conjunction with the Works is in suit held to constitute and infringement of its use enjoined, the Contractor shall either secure for the Board the right to continue using the said item by suspension of the enjoinment, by procuring for the Board a license or otherwise, or will replace such items with a non-infringing item or modify it so that it becomes non-infringing or with the Board's approval remove the said enjoined item and refund to the Board the sums paid thereof.

40.0 EFFECTIVENESS

This Contract shall come into force and effect on the date of the Letter of Award and shall be in force until the Works have been completed and all the payments have been made to the Contractor, including the payments for O&M contract period.

41.0 LAWS AND REGULATIONS

The formation, validity and performance of this Contract shall be governed as to all matters by and under the laws and regulations of India and courts in Delhi shall have exclusive jurisdiction in all matters arising under this Contract.

The Contractor shall respect and abide by all laws and regulations of India and shall make its best effort to ensure that the personnel of the Contractor and their dependents, while staying in India, shall respect and abide by all laws and regulations of India. The Contractor shall protect, absolve and indemnify the Board and their representatives from any claim, loss or damage arising from any non-compliance alleged or proved, without claiming them for payment.

42.0 NOTICES

Any notice given by one party to the other pursuant to this Contract shall be sent to the other party in writing or by cable, telex, facsimile and confirmed in writing to the other party's address specified in SCC.

A notice shall be effective when delivered or on the notice's effective date, whichever is later.

VOLUME I

SECTION VI

SPECIAL CONDITIONS OF CONTRACT

SECTION VI

SPECIAL CONDITIONS OF CONTRACT

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SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict the provisions herein shall prevail over those in the General Conditions of Contract the corresponding clause number of the GCC is indicated in parentheses, if applicable.

1.0 CLIMATE CONDITION

Precaution and protection against the specific climate conditions in India such as heavy rain, high temperature, high humidity, gales, excessive sunshine, flooding or any other climate conditions which could cause damage upon the Equipment or otherwise interfere with the execution of the works shall be taken. The Equipment to be supplied shall be tropicalized.

2.0 CONSUMABLES AND SPARE PARTS

2.1 Supply of Consumables and Spare Parts

The Contractor shall provide the consumables and spare parts as per requirement of Operation & maintenance of CAAQMS Stations throughout the entire period of contract.

2.2 After Sales Services

The Contractor shall guarantee the availability of all consumables, spare parts, maintenance and repair work for each Equipment at cost basis for at least ten (10) years after the O&M period specified in Clause 7 of SCC, unless otherwise specified in the Specifications.

Bidder should submit certificates from the manufacturers in support of available service centers and availability of spares parts and consumable in India as per Attachment no. 3A of Section III.

3.0 NAME PLATE (GCC CLAUSE 12)

The Contractor shall affix the name plate with the following description in English on all the Equipment:

1) Name of the station
2) Name of the Equipment
3) Manufacturing date
4) Production serial number
5) Equipment model number
6) Name of manufacturer
7) Ratings of the Equipment
8) Logo of UPPCB and UPPCB

4.0 MARKING (GCC SUB-CLAUSE 13.2)

The Contractor shall mark the following information in the sequence described below and in a frame commensurate with the size of packing and/or the Equipment.

1) Consignee: U.P.Pollution Control Board,TC-12 V,Vibhuti Khand, Gomti Nagar, Lucknow , India
2) Name of the Works. Supply and O&M of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for UPPCB at ----------
3) Name of the Project: Supply and O&M of Continuous Ambient Air Quality Monitoring Station (CAAQMS) for UPPCB at----------
-
-.
4) Contract number:
5) Contractors name:
6) Port or airport of discharge:
7) Country of origin:
8) Item, and if applicable, package number in sequence, and quantity per package and/or Equipment:
9) Description of Equipment:

10) Net and gross weight and cubic measurement:

11) Shipper's name and/or marks:

12) Caution marks, if applicable:

13) Other markings required by the Board:

5.0 SHIPMENT (GCC CLAUSE 14)

The Contractor shall be responsible for the delivery of the Equipment to each Site designated by the Board and for the coverage of shipping charges, freight, insurance premiums up to handling over the Equipment at Sites, inland transportation and temporary storage.

5.1 **Notification and Submission of Documents**

Upon shipment, the Contractor shall notify the Board and the Insurance Company by cable of the following details of the shipment.

1) Contract number

2) Description and quantity of the Equipment

3) Name of vessel and air cargo

4) Number and date of bill of lading and airway bill

5) Date of shipment, port of discharge, expected date of departure and expected date of arrival

6) Invoice amount of shipment

7) Name of a claim settling agency in India.

5.2 The Contractor shall mail the following documents to the Board, with a copy to the Insurance Company.

(1) **Equipment of Foreign Origin:**

i) Four (4) Copies of the contractor's invoice showing the Equipment's description, quantity, unit price and total amount

ii) Original and Four (4) co[pies of the negotiable, clean, on-board bill of lading marked freight prepaid and four copies of non-negotiable bill of lading;
iii) Four copies of the packing list identifying contents of each package

iv) Insurance certificate

v) Manufacturer and Suppliers warranty certificate

vi) Factory test and inspection certificate

vii) Certificate of country-of origin

The above documents shall be received by the Board at least one week before arrival of the Equipment at the port or place of arrival and. If not received, the Contractor will be responsible for any consequent expenses.

Partial shipment and transshipment is allowed.

(2) **Equipment to be Supplied from within India:**

Upon delivery of the Equipment to the transporters, the Supplier shall notify the Board and mail the following documents to the Board.

i) Four copies of the Supplier's invoice showing the Equipment's description, quantity, unit price and total amount
ii) Acknowledgement of receipts of goods from the consignee i.e. receipted delivery note, railway receipt (RR), or truck receipt (LR)
iii) Supplier's and/or Manufacturer's warranty certificate
iv) Factory test & inspection certificate and Material Dispatch Clearance Certificate (MDCC) issued by the Board.
v) Insurance certificate
vi) Certificate of country of origin

The above documents shall be received by the Board before arrival of the Equipment and, if not received, the Supplier shall be responsible for any consequent expenses.

6.0 WORKS SCHEDULE (GCC CLAUSE 16)

6.1 Equipment to be supplied from Foreign Country:

Delivery Period for all the packages shall be **120 days from the date of the opening of Letter of Credit (L/C).** It relates to completion of delivery on CIF (designated Sea Port / Air Port) basis for equipment of foreign origin. Further transportation to the site where the CAAQMS's is to be installed and commissioned shall be completed by the contractor **within Sixty (60) days** from the date of arrival of equipment at port of de-embarkment.

6.2 Equipment to be supplier from India:

All the equipment shall be received at Continuous Ambient Air Quality Monitoring Station Site (1 no.), within 120 days from the date of notification of award and are to be installed and commissioned within sixty (60) days from date of receipt at site.

6.3 Commissioning and others incidental services:

All the equipment of the awarded package shall be commissioned within **180** days after the date of opening of Letter of Credit (L/C) including all the incidental services i.e. training, lease-line/broadband connection, electricity connection etc.

6.4 O&M Contract

The contractor shall carry out Operation & Maintenance of Air Monitoring Stations for a period of Five (05)years from the date of commissioning of the station, which can be extended at mutually agreed rates and terms & conditions.

7.0 WARRANTY / O & M CONTRACT (GCC CLAUSE 18)

7.1 Period of O&M Contract

The complete CAAQMS shall be under Operation & Maintenance Contract from the date of commissioning of the station and maintenance of all the equipment including supply of all material shall be the responsibility of the Contractor during the validity of Operation &

Maintenance Contract. The Contractor shall, in addition, comply with the performance guarantees if specified under the Contract. If, for reasons attributable to the Contractor, these guarantees are not attained in whole or in part, the Contractor shall make such changes, modifications, and/or additions to the Equipment or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own costs and expenses and to carry out further performance test.

8.0 INSURANCE (GCC CLAUSE 19)

A) The **insurance (Comprehensive) shall be in an amount of equal to One Hundred Ten (110) percent** of the value of the Equipment up to handing over of the Equipment to the Board on "All Ricks" basis, including war risks and strikes, naming the Board as the beneficiary.

B) The Contractor shall take the comprehensive all risk insurance cover for the complete station during O&M period including statutory insurance of Contractor's personnel. The value shall be 110% of the total value of the stations depreciated annually as per standard norms.

9.0 INSTALLATION (GCC CLAUSE 20)

Bidder shall depute Engineer / supervisor for on-site assembly, installation, commissioning and start up of the supplied equipment. Bidder shall also furnish tools required for assembly, commissioning and maintenance of equipment during O&M period.

10.0 INSPECTION AND TEST (GCC CLAUSE 21)

10.1 **Unpacking Inspection**

Unpacking inspection shall be performed by the Contractor to inspect whether all the items and quantity of the Equipment have been delivered in conformity with the Equipment and packing list without any damage during the shipment.

The Contractor shall submit the unpacking inspection report to the Board.

10.2 **Site Inspection**

The Contractor shall carry out site inspection of the Equipment at each Site at the completion of installation works to confirm that the installation works and the function of the Equipment is satisfactory for the requirements specified in S/W and the Specifications.

The Contractor shall carry out the functional test to ensure that the consumables and spare parts are good for the operation, maintenance and replacement in future.

As a result of site inspection, the Equipment regarded as unsatisfactory or unacceptable by the Board shall be promptly remedied by the contractor. The Contractor shall submit the site inspection report to the Board and the Consultant.

10.3 **Performance Test**

The Contractor shall carry out the performance test to inspect and witness the function of each of the equipment supplied under the awarded package at site.

Performance test shall be carried out in accordance with Sub-clause 4.3 of S/W for all the Equipment supplied.

In case the Equipment for performance test requires the supplemental and/or supporting Equipment, the Contractor shall carry out the performance test including such Equipment.

Performance test will be considered to be complete only after successful completion of performance test of each equipment pertaining to respective packages.

In case of results of such performance test found to be unsatisfactory by the Board same shall be promptly reminded by the Contractor.

The Contractor shall prepare the performance test procedures for approval by the Board at least thirty (30) days prior to the testing schedules.

The Contractor submits the performance test report to the Board.

11.0 COMPLETION (GCC CLAUSE 23)

The Contractor shall complete all the Works up to installation and commissioning of CAAQMS's within 180 days after the date of opening of Letter of Credit **(LC).**

12.0 SUBMISSION OF DOCUMENTS (GCC CLAUSE 24)

12.1 **Work Program**

Within thirty (30) days from the notification of award of the Contract, the Contractor shall submit the detailed Works program and schedule to the Board indicating the following items:

a. Equipment supply program and Equipment layout plan (if applicable)
b. Design drawings and utility list, if required
c. Subcontractor list for installation work of the Equipment if not already specified in the Techno-commercial Bid
d. Program for factory, pre-shipment, unpacking and site inspections and performance test
e. Installation program including personnel organization chart of the Contractor.

The Contractor shall be responsible for any discrepancies, errors or omissions or delay in delivery and submission of the work program, and any expenses resulting there from shall be borne by the Contractor.

12.2 **Other Documents**

The Contractor shall submit the following documents within forty five (45) days after the notification of ward.

Item	Number of Documents to be sent to UPPCB / concerned UPPCB
Catalogues, product data and test reports	4
Installation manuals	4
List of consumables and spare parts	4
Manufacture's specifications	4
Training program	4

Besides the documents here above, the Contractor shall submit the following documents at the designated time for submissions as follows:

Item	Number of Document	Time of Submission
	Board	
Inspection report	2	At the time of completion of factory, pre-shipment unpacking and site inspections (if applicable)
Training manual	10	At the time of commencement of installation of Equipment
Operation and maintenance manual	10	At the time of commencement of installation of Equipment
Training program	1	By the time of completion of installation of Equipment
Report of performance test	1	At the time of completion of performance test
Video CD (Optional)	1	By the time of commencement of training
List of Equipment supplied	2	At the time of completion of the Work

Besides the documents here above, the Contractor shall submit the notices, reports, and other documents when deemed necessary, in accordance with the direction of the Board.

13.0 PAYMENT (GCC CLAUSE 25)

13.1 **Method of Payment**

The payment shall be made in the currency specified in the contract. The supplier shall send claims (with relevant documents, as required) as specified in SCC before claiming any payment. The supplier shall ensure that all contractual obligations for claiming the payments have been fulfilled.

Other payment shall be made through Account Payee Cheque / Digital mode.

13.2 **Terms and Conditions of Payment**

Bids with terms and conditions of payment other than that specified below shall be rejected.

(a) Payment for goods and services (excluding O&M charges) supplied from abroad:

Payment for goods supplied from abroad, letter of credit will be opened for 100 % value with condition to release the payment as follows:

i) **On shipment:** Eighty (80) percent of the contract price of the Goods shipped shall be paid through irrevocable Letter of Credit established/opened in favour of the foreign supplier in a scheduled commercial bank in India or a bank in supplier's country acceptable to the purchaser and upon submission of the documents specified in sub-clause 5.2 (1) of SCC including : (i) Packing list and (ii) Supplier's certificate that the amounts shown in the invoice are correct in terms of the contract and that all the terms and conditions of the contract have been complied with and

ii) **On Final Acceptance:** Balance Twenty (20) percent of contract price of the equipment shall be paid within 30 days of receipt of goods and on submission of claim supported by the acceptance certificate issued by the purchaser and the submission of Performance Bank Guarantee equal to 10% of the contract value is to be submitted.

(b) Payment of goods and services (excluding O&M charges) supplied from India.

On satisfactory installation and commissioning including training (to be certified by the purchaser) and submission of acceptance certificate as per attachment 4 of SCC , full payment will be made. The Performance Bank Guarantee equal to 10 % of the contract value is to be submitted.

(c) Operation of Letter of Credit

i. If requested specifically by the suppler, the Letter of Credit will be confirmed, but the cost/charges shall be borne by the supplier.
ii. If Letter of Credit is required to be extended/ reinstated for reason not attributable to purchaser, the charges thereof shall be charged to the supplier account.
iii. The bank charges in India will be borne by the purchaser and outside India will be borne by the supplier.

(**d**) **Payment of Operation and Maintenance charges:**

O&M cost of each year shall be paid after end of every quarter in equal installments based on submission of required air quality report as per annexure X_1 to X_5 along with data obtained from calibration documentation. Any penalties applicable if any as referred in Scope of Work for O&M Contract and as per notification of award of contract shall be deducted from the quarterly payment.

14.0 PRICES (GCC CLAUSE 26)

The prices quoted **shall be firm** throughout the tenure of the Contract. Any increased cost incidental to the performance of the Works due to any economic dislocation either in the origin country or India or to any other causes such as currency restriction, price hike of the Equipment, wage hike for labour or revaluation of the currency can not be claimed by the Contractor to the Board.

15.0 PERFORMANCE SECURITY (GCC CLAUSE 27)

15.1 **Performance Security**

The amount of performance security as a percentage of the Contract Price shall be ten (10) percent.

16.0 LIQUIDATED DAMAGES (GCC CLAUSE 31)

16.1 **Rate**

The Contractor shall pay to the Board as liquidated damages a sum equivalent to half (0.5) percent of the contract price of each station for per week of delay in commissioning of each station after scheduled date of completion.

16.2 **Maximum Deduction**

The total liquidated damages on account of delay in supplies payable to the Board shall not in any case exceed ten (10) percent of the Contract price of supply portion only (Excluding O&M charges).

16.3 In addition to above Liquidated damages for delay, the Contractor is liable to pay penalty on account of failure of systems during O&M period as elaborated in Section – II (Scope of work) of this document.

17.0 NOTICES (GCC CLAUSE 42)

Any notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the party to whom the communication is addressed or when sent by registered mail telex, telegram, facsimile to such party at the following address:

The Member Secretary,
Uttar Pradesh Pollution Control Board,
TC-12V, Vibhuti Khand, Gomti Nagar
Lucknow (India)-226010

Attachment 1

Form of Bank Guarantee for Performance Security

(to be stamped in accordance with Stamp Act, if any, of the Country of the issuing Bank)

Bank Guarantee No. ---------

Date : ----------

Ref. No.:----------

To,
The Member Secretary,
Uttar Pradesh Pollution Control Board,
TC-12V, Vibhuti Khand, Gomti Nagar
Lucknow (India)-226010

Dear Sirs

THIS AGREEMENT is made on the ----------days of---------- 2020 ------ Between [Name of the Bank] of ---------- [address of the bank] (hereinafter called "the Guarantor") of the one part and State Pollution Control Board (hereinafter called "the Board") of the other part.

WHEREAS

(1) this agreement is supplemental to a contract number ----------(insert Contract Number) (hereinafter called "the Contract") made between …… [name of Contractor] of ---------- [address of Contractor] (hereinafter called "the Contractor) of the one part and the Board of the other part whereby the Contractor agreed and undertook to execute the works of Supply and O&M of Continuous Ambient Air Quality Monitoring Station (CAAQMS) for UPPCB at against the Contract for the sum of ---------- [amount in Contract Currency] being the Contract Price; and

(2) the Guarantor has agreed to guarantee the due performance of the Contract in the manner hereinafter appearing.

NOW, THEREFORE, the Guarantor hereby agrees with the Board as follows;

(a) If the Contractor (unless relieved from the performance by any clause of the Contract or by statute or by the decision of a tribunal of competent jurisdiction) shall in any respect fail to execute the Contract or commit any breach of his obligations there under then the Guarantor will indemnify and pay the Board the aggregate sum of ---------- [amount of Guarantee shall be ten (10)% (Percent) of the said value of the Contract]---------- [in words], such sum being payable in the types and amount of currencies in which the Contract Price is payable, provided that the Board or his Authorized Representative has notified the Guarantor to that effect and has made a claim against the Guarantor before the expiry of O&M period.

(b) The guarantor shall not be discharged or released from his guarantee by an arrangement between the Contractor and the Board, with or without the consent of the Guarantor, or by any alteration in the obligations undertaken by the Contractor, or by any forbearance on the part of the Contractor, whether as to payment, time, performance, or other wise, any notice to the Guarantor of any such arrangement, alteration, or forbearance is hereby expressly waived.

This guarantee shall be valid for one year after successful commissions of entire system from the date of expiry of O&M period as specified in the Contract.

Given under our hand on the date first mentioned above.

SIGNED BY ----------
for and on behalf of the
Guarantor
(Seal of Guarantor)

in the presence of

(Witness)

Attachment 2

FORM FOR CONTRACT AGREEMENT FOR SUPPLY AND OPERATION & MAINTENANCE OF CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS)

This operation and Maintenance Agreement ("Agreement") is made on this ---------- day of by and between:

(Name of the Board), India which term shall include permitted assigns and successors (Hereinafter called as "The Board" or "the Owner").

And

M/s. ---------- a company incorporated ---------- with Regd. Office at ---------- which term shall include permitted assigns and successors (hereinafter called as "Contractor" or "the Contractor")

RECITALS

Whereas the Owner had invited Bids under reference ---------- for supply and Operation & Maintenance continuous ambient Air quality monitoring Station located at:

and M/s ---------- had submitted their bid against the aforesaid invitation to bid and Owner has accepted the bid of M/s ---------- and has decided to entrust the job of supply and Operation & Maintenance (O&M) of the one Air Monitoring Station located at to the Contractor vide Letter of Award ref.---------- dated ---------- at a total Contract Price for complete scope of work of ---------- (Contract Price in Words and Figures) (Hereinafter "the Contract Price").

Whereas the Contractor has accepted the Letter of Award issued by the Owner in writing vide its letter no.---------- dated ---------- and has furnished Contract Performance Security for an amount of Rs. ---------- [Rupees---------- only] and which is initially valid up to -------- and Owner has accepted the said Contract Performance Security.

Whereas, Contractor is having expertise in the business inter alia, of supplying and operation & maintenance of Air Monitoring Stations and the owner has engaged the Contractor to supply and perform operation and maintenance of said Air monitoring stations upon the terms & conditions set forth in this Agreement and the Letter of Award referred above issued by the Owner including all the documents referred in the above Letter of Award.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS;

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:

   i) Scope of Works;

   ii) Financial Bid;

   iii) Technical Specifications;

   iv) General Conditions of Contract;

   v) Special Conditions of Contract; and

   vi) The Board's Notification of Award.

This Contract sets forth the entire contract and agreement between the parties pertaining to the supply of the Goods described herein and Operation & Maintenance of the Air Monitoring Stations and supersedes any and all earlier verbal or written agreements pertaining to the supply of the Goods.

This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.

3. In consideration of the payments to be made by the Board to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Board to perform the Works and to remedy defects therein conformity in all respects with the provisions of the Contract.

4. The Board hereby covenants to pay the Contractor in consideration of the performance of the Works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

5. Any notice under the Contract shall be in the form of letter, telex, cable or facsimile. Notices to either party shall be given at such address or addresses as such party shall specify from time to time by written notice to the other. In the absence of such notice to the contrary, notice to the Board shall be properly addressed to:

The
Member Secretary,
Uttar Pradesh Pollution Control Board,
TC-12V, Vibhuti Khand, Gomti Nagar
Lucknow (India)-226010

And notice to the Contractor shall be properly addressed to:

[Contractor's address and electronic transmission address]

A notice shall be effective when delivered or on the notice's effective date, whichever is later.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signature of Board's Authorized Representative

Signature of Contractor

Signed, Sealed and Delivered by the said

(For the Board) in the presence of

Signed, Sealed and Delivered by the said

(For the Contractor) in the presence of

Attachment 3

PROFORMA OF CERTIFICATE FOR ISSUE BY THE UPPCB AFTER SUCCESSFUL COMMISSIONING OF EQUIPMENT

No.: Date: ……..

M/s

Subject: Certificate of Commissioning of equipment.

1. This is to certify that the equipment as detailed below has / have been received in good condition along with all the standard and special accessories (subject to remarks in Para No.2) and a set of spares in accordance with the Contract / specifications. The same have been installed and commissioned.

   a) Contract No…….. dated …….
   b) Name of CAAQM station/ city …….
   c) Description of the equipment ……
   d) Package No. ……..
   e) Quantity ……...
   f) Bill of Lading …… dated …….. (for import contract)
   g) Name of the vessel/transporter ……
   h) RR No. …….. dated ……..
   i) Name of the consignee …….
   j) Date of commissioning and performance test ……

2. Details of recoveries to be made on that account:

Sl. No.	Description	Amount to the recovered

3. The providing/performance test has been done to the entire satisfaction and personnel have been trained to operate the equipment.

BOARD CONTRACTOR

4. The contractor has fulfilled his contractual obligation satisfactorily. Explanatory notes for filling up the certificates:

a) he has adhered to the time schedule specified in the contract in dispatching the documents drawing pursuant to Technical Specifications.

b) He has supervised the commissioning of the item in time i.e. within the period specified in the contract form the date of intimation by the Purchaser in respect of the installation of the plant.

c) Training of personnel has been done by the contractor specified in the contract.

d) in the event of documents/drawings having not been contractor or installation and commissioning of the plant have been delayed on act of the contractor, the extent of delay should always be mentioned.

OR

The contractor has failed to fulfill his contractual obligations with regard to the following i.e. instruction or training etc.

a)
b)
c)
d)

5. The amount of recovery, on account of non-supply of accessories and spares is given under Para No. 2.
6. The amount of recovery on account of failure of the contractor to meet his contractual obligations is as indicated in endorsement of the letter.

Signature .....

Name .....

Designation with stamp.....

Member Secretary
Uttar Pradesh Pollution Control Board

Attachment 4

PROFORMA FOR BANK GUARANTEE TO BE FURNISHED BY O&M PARTNER (TO BE STAMPED IN ACCORDANCE WITH STAMP ACT, IF ANY, OF THE COUNTRY OF THE ISSUING BANK)

Bank Guarantee No.....

Date .....

In consideration of **Uttar Pradesh Pollution Control Board, Delhi** (hereinafter referred to as ''Employer'' which expression shall unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to ..... with its Head Office at..... (herein-after referred to as..... or ''Contractor'') a Contract for Supply and Operation & Maintenance of Continuous Ambient Air Quality Monitoring Stations (CAAQMS), vide Contract No. ..... dated.....and the same having been unequivocally accepted by the Contractor resulting in a ''Contract'', which award is on the strength of Form of Certificate by the O&M Partner in India for Carrying out O&M of CAAQM's dated ..... (hereinafter referred to as ''Undertaking'') given by M/s..... (O&M Partner) having its registered office at ..... (hereinafter called O&M Partner), and the Contractor having further executed with ..... (O&M Partner) a Sub-Contract dated ..... and the same having been unequivocally accepted by the O&M Partner resulting in a Sub-Contract Agreement for (hereinafter called ''Sub-Contract Agreement'') and..... ... (O&M Partner) having agreed to provide a Performance Guarantee amounting to 2% of the total contract price in addition to the Contract Performance Security to be provided by the Contractor to the Employer on the terms and conditions specified in the ''Undertaking''.

We..... Bank, having its Head Office ..... (herein-after referred to as the ''Bank'', which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay to the Employer on demand any and all monies to the extent of .....(Specify currency and amount in words and figures) only as aforesaid at any time up-to.....@.....without any demur, reservation, context, recourse or protest and/or without any references to ''O&M Partner'' or ''Contractor''. Any such demand made by the Employer on the Bank shall be conclusive and binding, not withstanding any difference between the Employer and Contractor and/or between the Employer and O&M Partner or any dispute pending before any Court, Tribunal, Arbitrator or any other Authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Employer and further agrees that the guarantee herein contained shall be enforceable till ninety (90) days after expiry of its validity.

The Employer shall have the fullest liberty, without affecting in any way the liability of the Bank under this guarantee, from time to time to extend the time for performance of the Contract or the Component Agreement by the O&M Partner. The Employer shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the O&M Partner and to exercise the same at any time, in any manner, and either to enforce or to forbear to

enforce any covenants, contained or implied, in the Contract or Undertaking or any other course or remedy or security available to the Employer. The Bank shall not be released of its obligations under this presents by any exercise of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Employer or any other indulgence shown by the Employer or by any other matter or thing whatsoever which under law would, but for this provision have the effect of relieving the Bank from its obligations.

The Bank also agrees that the Employer at is option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against Contractor or O&M Partner and notwithstanding any security or other guarantee that the Employer may have in relation to Contractor's or O&M Partner 's liabilities.

Notwithstanding anything contained hereinabove our liability under this guarantee is restricted to ..... and, it shall remain in force up-to and including ..... @ ..... and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s ..... (O&M Partner) on whose behalf this guarantee has been given.

Date this ..... day of ..... 2020..... at .....

WITNESS :

(Signature).....

(Name).....

(Official Address).....

(Signature).....

(Name & Designation).....

(Bank's Seal).....

Authorised vide Power of Attorney No.....

Date.....

* Brief Name of the Contractor

@ The date will be ninety (90) days after the end of the defect liability period as specified in Contract.

NOTE :

1. The stamp papers of appropriate value shall be purchased in the name of the Guarantee issuing Bank.

2. (i)The Bank Guarantee from a Bank in the list of Banks at Attachment – 15 to Section – III of bid documents.

Annexure – X_1

MONTHLY FIELD CHECK LIST OF (To be filled by UPPCB officials deputed)
CAAQM STATION UNDER OPERATION CONTRACT ------(name of the city)

S. No.	Description	----------(name of the Station) Station	Remarks
1.	Station Visit Date		
	(i) 1st Week		
	(ii) 2nd Week		
	(iii) 3rd Week		
	(iv) 4th Week		
2.	SOP Available at Station		
3.	Environmental Condition of Station		
4.	Protocol of Station available		
5.	Availability of Calibration Gas		
6.	Availability of Permeation Tube (NIST Traceable)		
7.	Bi Weekly Calibration Done (Precision check, two point calibration check)		
8.	Full Calibration Done (Multipoint Calibration check)		
9.	Insurance Validity		
10.	Electricity Bill Paid, if any		
11.	Telephone Bill Paid, if any		
12.	Security Guard Payment, if any		

13.	Servicing of ACs Installed, if any		
14.	Data Display Board Working		
15.	O&M Rate - Cheque payment, if any		
16.	Name of the Company Engineer Deputed/Present		
17.	Data Analyst at Central Station Deputed/Present		
18.	Log-Book maintained and observation entered.		
19.	Date Received (Daily / Monthly)		
20.	Name of the visiting Official of UPPCB		
21.	Special Remarks, if any		

……
Signature of UPPCB official

Annexure - X_2 TO X_5 Reporting Formats

Uttar Pradseh Pollution Control Board

Continuous Ambient Air Quality Monitoring Report (MAIN POLLUTANTS)

To be submitted daily at 06 morning for that day ending at next 06 morning

Daily Report Station Name:---------- Month:----------

Report No. : Date:---------- .

Monitoring Location :

Data Interval: 1 Hr. Average

Monitoring Conducted By:----------

Hrs.	NO	NO_2	NO_X	NH_3	SO_2	CO	O_3	$PM_{2.5}$	PM_{10}	Benzene	Toluene	Ethyl Ben	MP Xylene	O xylene
	µg/m3	µg/m3	ppb	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
06-07Hr.														
07-08 Hr.														
08-09 Hr.														
09-10 Hr.														
10-11 Hr.														
11-12 Hr.														
12-13 Hr.														
13-14 Hr.														
14-15 Hr.														
15-16 Hr.														
16-17Hr.														
17-18 Hr.														
18-19 Hr.														

Hrs.	NO	NO_2	NO_X	NH_3	SO_2	CO	O_3	$PM_{2.5}$	PM_{10}	Benzene	Toluene	Ethyl Ben	MP Xylene	O xylene
	µg/m3	µg/m3	ppb	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
19-20 Hr.														
20-21 Hr.														
21-22 Hr.														
22-23 Hr.														
23-00 Hr.														
00-01 Hr.														
01-02Hr.														
02-03 Hr.														
03-04Hr.														
04-05 Hr.														
05-06 Hr.														
MINIMUM														
MAXIMUM														
AVERAGE														
Data Captured														
Note :														

Uttar Pradesh Pollution Control Board

Continuous Ambient Air Quality Monitoring Report
(Mean Concentration of Main Pollutants)

Year …….

Monitoring Location: ……..

Months	*NO*	*NO_2*	*NO_X*	*NH_3*	*SO_2*	*CO*	*O_3*	*$PM_{2.5}$*	*PM_{10}*	*Benzene*	*Toluene*	*Ethyl Ben*	*MP Xylene*	*O xylene*
	µg/m3	*µg/m3*	*ppb*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*	*µg/m3*
January														
February														
March														
April														
May														
June														
July														
August														
September														
October														
November														
December														
MINIMUM														
MAXIMUM														
AVERAGE														

Calculation of City-wise Payment for O & M Charges on Quarterly Basis for CAAQM Stations under O & M Contract

Bill raised for O & M Charges by M/s ……		Invoice No. ……		Date ……		`
Bill raised for spares and consumables		Invoice No. ……		Date ……		`
Total Amount						`
Name of the Station →		**STATION I (Location …….)**		**STATION II (Location ……..)**		**STATION III (Location ……)**	
Quarter No.: →							
Duration: →							
Year:→							
Percentage of valid monthly data captured rate →	Month 1						
	Month 2						
	Month 3						
Average Quarterly Data Captured Rate→							
		Price for service portion 70%	Price for material part & other incidental charges 30%	Price for service portion	Price for material part & other incidental charges	Price for service portion	Price for material part & other incidental charges
Base Amount per Quarter (as per NoA)**(A)**							
Proportionate Amount based on Valid Data Captured Rate**(B)** Formula: see at footnote* (Specimen Calculation sheet attached in **Annexure I)**							
Applicable Deduction as per penalty provision for continuous non-functioning**(C)** (Specimen Calculation sheet attached in **Annexure II)**							
Any Other Deduction, specify with justification**(D)**							
Applicable Taxes (GST) **(E)**							
Net Amount Payable (`)**[F = B- (C+D) +E]**							
Total O&M cost Payable(Station Wise)		**(i)**		**(ii)**		**(iii)**	
Total Amount Payable (`) for O& M cost for City for quarter no. 1/2/3/4 of year 2017 (I + ii + iii)							

* **Percentage quarterly data captured rate/ 90% X A (considering 90% validated data eligible for 100% payment)**

Annexure I

(Ref.: Invoice no-------dated---------for the period ----------)

Name of Station*	Name of non – functional system	Total period of continuous non-functioning (days)	Period considered for Penalty calculation (period after grace period**	Penalty amount (period x unit rate)

Total Penalty Amount (`):

* **(To be prepared & submitted separately for each station)**

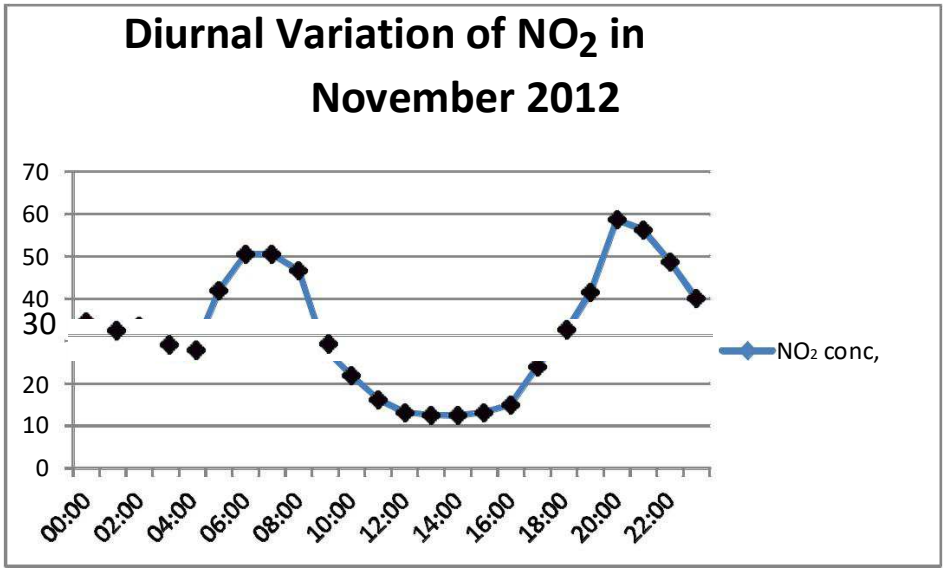
** **Grace period of 7 days is applicable only once per quarter**

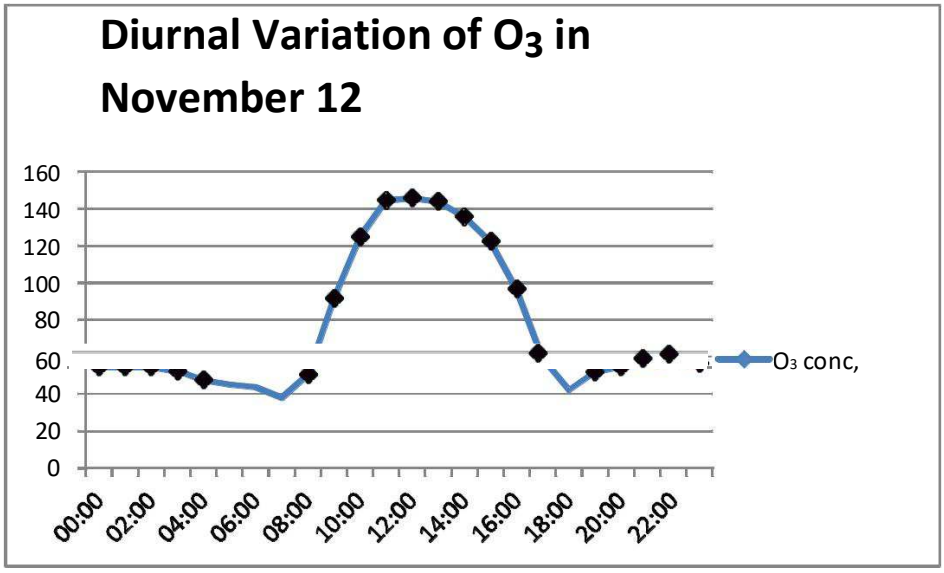
Annexure II

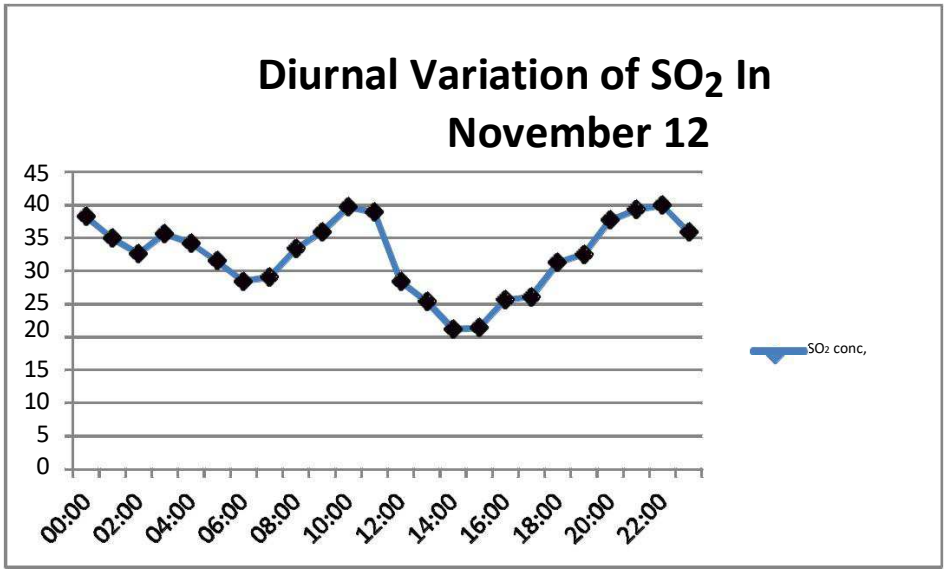
(Ref.: Invoice no------- dated--------- for the period ----------)

Name of Station*	**Observed Monthly Data Captured Rate**														Average Percentage Data Capture Rate
	For gases pollutant						Dust Particles		For Mat. Parameters						
	NO_2	O_3	SO_2	CO	NH_3	BTX	$PM_{2.5}$	PM_{10}	Temp.	RH	WS	WD	SR	RF	

* (**To be prepared & submitted separately for each station**)

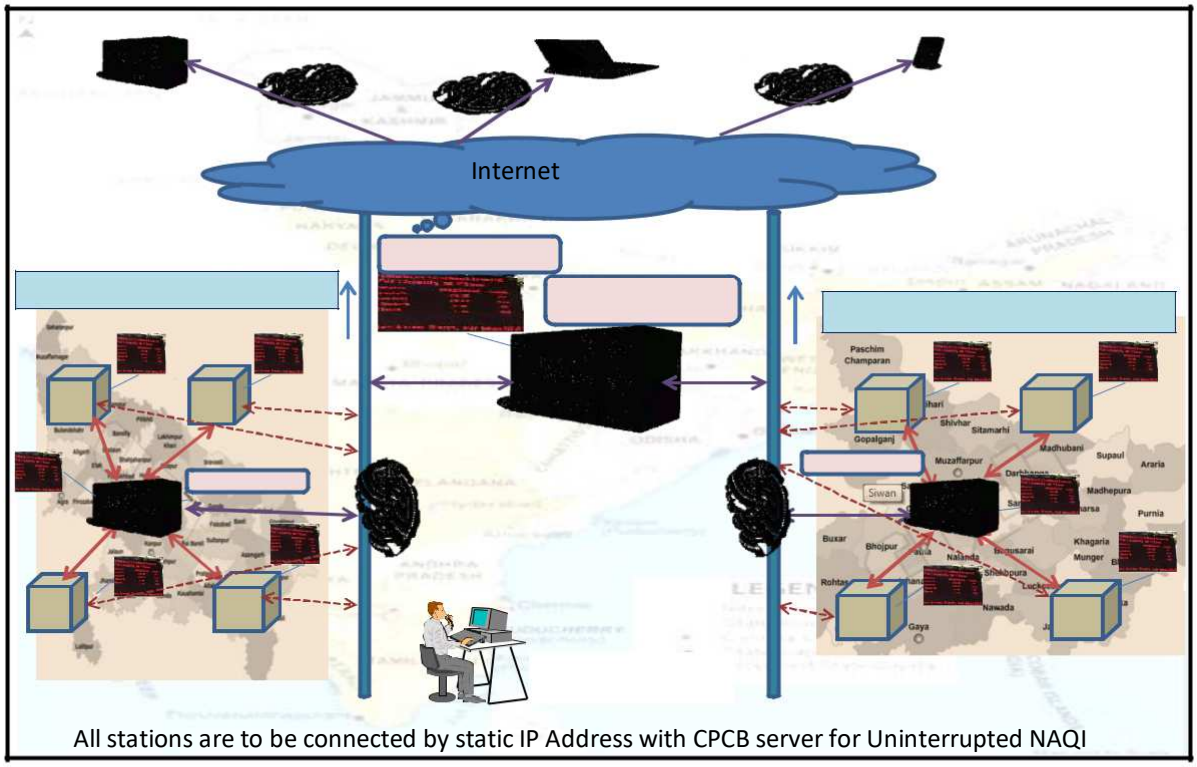

Diurnal Variation of NO2 in November 2012
70
60
50
40
30
20
10
0
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
NO2 conc,


Diurnal Variation of O3 in November 12
160
140
120
100
80
60
40
20
0
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
O3 conc,


Diurnal Variation of SO2 In November 12
45
40
35
30
25
20
15
10
5
0
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
SO2 conc,

Similarly seasonal variations and yearly graphs with Annual Report to be submitted by the successful bidder

TECHNICAL SPECIFICATIONS FOR CONTINUOUS AMBIENT AIR QUALITY MONITORING (CAAQM) STATION (REAL TIME)



All stations are to be connected by static IP Address with CPCB server for Uninterrupted NAQI

Uttar Pradesh Pollution Control Board
TC-12-V, Vibhuti Khand, Gomti Nagar
Lucknow-226010

CONTENTS

MINIMUM REQUIREMENTS FOR A CAAQM STATION

The equipment's are intended for one Continuous Ambient Air Quality Monitoring (CAAQM) Station. The system should be completely functional. Any balance of material not specified but required for the purpose must be supplied by the vendors.

Sl. No.	Item / Analyzer Name	Total Quantity
1.	Monitoring Station foundations.	Actual
2.	Air Conditioner, Split Type, Wall mounted along with voltage stabilizer (2 X 2 ton, 1 X 1 Ton). at the CAAQM Station	Three
3.	On line UPS (1X10KVA, 1 hr. back up and 1X5 KVA, 2 hr. back up) at the CAAQM Station	Two
4.	Sampling System having 10 port manifold	One
5.	19" Rack cabinet to accommodate all analyzers & systems	Three
6.	Continuous Ambient Oxides of Nitrogen (NO/NO_2 / NO_x) Analyzer	One
7.	Continuous Ambient Ammonia (NH_3) Analyzer	One
8.	Continuous Ambient Sulphur Dioxide (SO_2) Analyzer	One
9.	Continuous Ambient Ozone (O_3) Analyzer	One
10.	Continuous Ambient Carbon Monoxide (CO) Analyzer	One
11.	Continuous BTEX Monitor / Analyzer	One
12.	Multi calibration System for Gas calibration and Meteorological, Flow and Electronic Calibration	One set
13.	Automatic $PM_{2.5}$ Particulate Matter Monitor	One
14.	Automatic PM_{10} Particulate Matter Monitor	One
15.	Meteorological Sensors for Wind Direction, Wind Speed, Ambient Temperature, Rainfall, Relative Humidity, Solar Radiation and Telescoping Crank – up Meteorological Tower	One set
16.	**IT PERIPHERLS:**	
	(a) Data Acquisition System (DAS): One for each CAAQM Station	One
	(b)Computer System for DAS: One for each CAAQM Station (c) Computer System for AQI: One for each CAAQM Station	One One
	(d) Laser Printer Colour MFP : One for each CAAQM Station (e) Server Rack: One for each UPPCB (f) Rack Server: One for each UPPCB (g) Access Point: One for each UPPCB	One One One One
	(h) UTM: One for each UPPCB	One
	(i) 24Ports CISCO Switch: One for each UPPCB	One
	(j) Central Management Software with License w.r.t. Data Acquisition: One for each UPPCB	One
	(k) Remote Calibration & Validation Software: One for each UPPCB	One
	(l) Remote Connectivity Tool/Software: One for each UPPCB	One
17.	Data display Board Transmission Device	One
18.	Day & Night Visible Data Display Board (Near to the station)	One

Sl. No.	Item / Analyzer Name	Total Quantity
19.	Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares in a Housing Container OR Continuous Automatic Monitoring Stations with Sampling line, Internal fitting, Instruments racks, Electrical fittings and Gas line fittings, Tools (electrical and mechanical), Data display system, Recommended spares without a Housing Container	One set OR One set w/o container
20.	Lease Line for Internet AND Broadband (for Station) AND Data Card as mode Communication system (for display Board)	One set
21.	RCC foundation, pillars misc works including Caging, civil & electrical work (for CAAQM stations as well as Data Display Boards)	Actual

TECHNICAL SPECIFICATIONS

& CAAQM STATION –HOUSING/ CONTAINER

1.1 Housing/Container: It is designed for housing the ambient air quality monitoring instruments to protect them from dust and heat. Temperature and Humidity sensors shall be installed in the housing for checking the humidity and temperature inside the station. Three Nos. 19" racks shall be installed inside the station so that the analyzers are easily accessible from front & back for calibration and maintenance.

1.1.1 Dimensions: Inside length: 4200 mm
Inside width: 3500 mm
Inside height: 2500 mm
(As per the Drawing given)

1.1.2 Frame: All the material used for the construction of the floor, frame, roof frame etc, the 4 corner posts and 8 integrated, reinforced container corners should be of metal. The exterior panel of the container shall be made of pre-coated MS Sheet of approved colour shade. All other steel parts should be hot dipped galvanized having minimum rate of galvanization of 275 gram per square meter**(IS277)**. All joints of like metal such as steel-to-steel or aluminum-to-aluminum shall be protected against corrosion by liberal application of joining compound. All joints of dissimilar metals such as steel to aluminum shall be protected against corrosion due to galvanic action by liberal application of dielectric compound as well as jointing compound on both mating surfaces. For lifting / fixing the container, International Standard eyebolts should be provided at the corners.

1.1.3 Paneling: The outer paneling will be of 1.2 mm of Pre-coated MS sheet to withstand external impacts and abrasions. Outer side of the MS Sheet i.e. exposed face of the sheet, shall be permanently colour coated with silicon modified polyester coating of dry film thickness (DFT) 20 micron (min.) of approved colour shade over primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum 7 micron off-white colour. The inner paneling will be of PVC coated 2 mm thick aluminum sheet, fixed over an inlay of 4 mm marine plywood. 100 mm thick polyurethane insulation will be used between the outer and inner walls (Pre-coated MS sheet and Marine plywood) as insulating material. Z spacers if required shall be made out of at least 2 mm thick galvanized steel sheet of grade 275 as per IS:277

1.1.4 Floor: The floor will be laid in frame of 600 x 600 mm centre to centre with 50 x50 x 6 mm MS angle. The floor surface will be of 19 mm marine plywood covered with robust quality Vinyl flooring, 2 mm thick of approved colour. The floor should be of acid and alkaline resistant, waterproof, easily cleanable / washable. Bottom plate of thickness 2 mm hot dipped galvanised MS Plate shall be provided.

1.1.5 Outer Door: One door of size 2000 x 900 mm will be provided at the front side (L = 4200 mm) of the station with isolated 3 – point locking & door handle flush fitted.

1.1.6 Electric Power Supply Box: Three - phase (3 Ø) electrical wiring will be laid in ducts. Copper wiring of appropriate gauge will be used. The terminal board should be mounted in a central power distribution box. Over voltage protection for each phase shall be provided along with the lightning arrestor. 2 numbers Emergency cut off switch & Thermostat switch (max 35^0C) for power disconnection, 6 free sockets and 3 fluorescent lamps for lighting will be provided.

The station shall be properly grounded with chemical earthing or as per BIS Standards with proper plate and only copper strip at least on 2 corners (diametrically opposite). One three phase energy meter (Digital Type) shall be installed. Weatherproof cubicles / enclosure for housing of MCB / TP & N Switch of main power termination (outside shelter) and weatherproof telephone junction box for terminations of telephone line are to be provided.Proper earthing for telescopic mast of meteorological system shall be provided. There should be conduction between the telescopic mast of the meteorological system and the station. The guy ropes or wires shall be provided for supporting the mast.

List of Consumables:

All Fuses	:	02 set
Lightning arrestor	:	02 set
Emergency Switch	:	02 pcs
Thermostat	:	01 pc

1.1.7 Partitioning for Calibration Gas Cylinders, Meteorological Mast and UPS:

The housing will be partitioned as per drawing to create space for storing of gas cylinders, Meteorological mast & UPS. The size will be 2000 x 1400 x 2300 mm. A lockable door of size 900 x 2000 mm along-with 3 – Point locking system shall be provided on the outer wall of the housing. A 300 mm, single-phase (230 volts ± 10 volts AC and 50 Hz ± 3%) exhaust fan with safety grills will be provided. Mounting brackets in 2 levels for fixing of at-least 06 (six) gas cylinders should be provided. The internal lights of the housing should be sensor based.

Air conditioners shall be mounted on proper rust proof supporting structures with rubber blocks to avoid vibration of structures. Proper caging / grill should also be provided for the safety of ACs. Sun shades for external AC units shall be provided with fabricated pre-coated MS sheet (same as monitoring station) with supporting arrangements. AC unit's external piping shall be placed in GI trays. Cable trays fixed on exterior wall shall be covered with pre-coated MS sheet, of same colour shade of monitoring station. Roof top sheet to be levelled and sloped properly. Rain water spout shall be fixed at top with rain water down pipe at two corners. The external lights of the station should be Solar operated.

1.1.8 Station Furnishing:

I. 19" racks – 03 Nos.

II. Fire extinguishers – 02 Nos. (Clean Agent – 2 KG each)

III. Furniture:

a. Material - Furniture made of water resistant laminated board
b. Cupboard – As per drawing
c. Working table – Powdered coated MS frame size 1400 x 900 x 750 mm (w x d x h) and top 19 mm thickness Board
d. Revolving tilting chair – 02 Nos.

IV. Miscellaneous

a. The exhaust gases from the analyser should be collected and discharged by a common exhaust pipe and vented.
b. Folding aluminium ladder for roof access (Length.... with 1 feet width steps)
c. Sensor for measuring the inside temperature of the station and Display
d. Hygrometer for measurement of Humidity inside the station and Display
e. Mounting bracket for the ladder
f. No smoking stickers

g. Vacuum cleaner with minimum 100 watt power
h) Tool Kit having following tools:
    i. One screw driver set
    ii. One Digital multi-meter (Philips, Micro or equivalent make)
    iii. One box spanner set
    iv. One D spanner set
    v. One watch maker set
    vi. One Hammer set
    vii. One precision screw driver set
    viii. One pliers set
    ix. One Tong tester
    x. One Soldering Iron with stand
i) One Emergency LED Cluster light
j) Sign boards along-with logo of Central Pollution Control Board, Delhi / State Pollution Control Board, to be embedded with size 1500 x 900 mm on the front of the container and on the two side of the container, The name of the Station i.e. Continuous Ambient Air Quality MONITORING Station, (Location) both in English and Hindi or local language to be inscribed. The Signs boards to be mounted on the station with proper spacers.

1.1.9Container Foundation (RCC)

L X W 6000 x 6000 mm

Height 300 mm from ground

Pillars: Nine concrete pillars of 300 mm above the ground level and below the ground level with 200 x 200 mm beam and between pillar bricks to be used for filling the space**(concrete ratio of 1:2:4)**. Outer wall of the foundation to be plastered with 1:4, Cement: Sand ratio and same has to be painted with weather proof coat.

Top of the platform: RCC 150 mm with concrete ratio of 1:1:2 and to plaster and painted with weather proof paint.

Staircase: RCC Steps to approach the main door of the container and the UPS / Gas room door in the side to be provided and each step should not be more than 150 mm

1.1.10 Security Cabin

A 4 feet x 4 feet wooden / Paneled security cabin with chair and small folding table for security guard with covered overhead selves to be provided separately with the station container.

2. SPLIT AIR CONDITIONER

2.1 SPLITAIR CONDITIONER (2.0 TON CAPACITY)

2.1.1 Type& Capacity: 2 Nos. split type, 2 ton cooling only capacity Inverter AC, roof mounted of 5 star rating with an automatic timer. Separate Automatic Voltage stabilizer will be provided with each unit.

2.1.2 The indoor units should be running alternately at an interval of four hours with timer control and the temperature inside the station should be maintained at 25^0C inside during all the time including peak summer months.

a) Cooling Capacity:7000 W
b) Star Rating: BEE 5 star Inverter with Cooper Coil
c) Indoor Noise Level: 40-50 dbA (cooling)
d) Control Type: Remote
e) Compressor: Inverter
f) Refrigerant: Eco Friendly
g) Feature: filter clean Indicator, defrosting Sensor
h) Power supply: 230 volts ± 10volts AC and 50 Hz ± 3%
i) Standard Warranty
j) Remote: LCD Wireless.

2.2 SPLIT AIR CONDITIONER (1.0 TON CAPACITY)

2.2.1 Type & Capacity: 1 Nos. split type, 1 ton cooling only capacity Inverter AC, roof mounted of 5 star rating with an automatic timer. Separate Automatic Voltage stabilizer will be provided with each unit.

2.2.2 The indoor units should be running alternately at an interval of four hours with timer control and the temperature inside the station should be maintained at 25^0Cinside during peak summer months.

a) Cooling Capacity:3400 W
b) Star Rating: BEE 5 star Inverter with Cooper Coil
c) Indoor Noise Level 40-50 dbA
d) Control Type: Remote
e) Compressor: Inverter
f) Refrigerant: Eco Friendly
g) Feature: filter clean Indicator, Pre-coated Aluminium fins etc.
h) Power supply: 230 volts ± 10volts AC and 50 Hz ± 3%.
i) Standard Warranty
j) Remote: LCD Wireless.

3. ONLINE UNINTERRUPTED POWER SUPPLY (UPS)

3.1 ONLINE UPS 10 kVA, CAPACITY (Three Phase I/P &Single Phase O/P, with 01 hours backup) (for Air Conditioner)

Three phase 10 kVA UPS along with Automatic Delayed Restoration Device (ADRD) with 1 hour backup in full capacity should be provided for the smooth operation of one 2 Ton capacity split AC at the station. Automatic Phase Sequencer Device has to be installed along with the UPS.

a)	Capacity		:	10.0 kVA
b)	Technology		:	PWM using IGBT / MOSFETS
c)	Crest Factor		:	More than 3: 1
d)	Input	Voltage	:	415 V AC
		Voltage Range	:	± 25%
		Frequency	:	50 Hz ± 3%
e)	Output	Voltage	:	230 V AC
		Voltage regulation	:	± 1%
		Frequency	:	50 Hz
		Frequency regulation	:	± 0.01%
		Waveform	:	Pure sine wave
f)	Battery	Battery type	:	Sealed maintenance free
		Back up time	:	1 Hour at full load
		Battery Capacity	:	For required backup time
		Recharge time	:	5 hrs to 90% after complete discharge
g)	Distortion		:	Less than 1% on linear load
h)	Power factor		:	0.9 to 1
i)	Indicator		:	L.E.D. – Battery Charge, Load level, on Line, over load, on battery, replace battery
j)	Alarm		:	Audible alarm for battery backup, battery low, and fault
k)	Protections	Surge	:	Surge suppression meets BIS or International standard
		Overload	:	Fuse & current limited
		Short circuit	:	Fuse & current limited & cut – off
		Battery low cut – off	:	No battery drain after cut - off
l)	Overload Capacity		:	110% for continuous load
m)	Efficiency		:	More than 90%
n)	Environment	Operating Temp.	:	0–50^{0}C
		Operating Hum.	:	10% to 95% (Non condensing)
		Audible Noise	:	Less than 45 db (at 1 meter)

3.2 ONLINE UPS 5 KVA, CAPACITY (Single Phase I/P & Single phase O/P, with 02 hours backup) (01 for Analysers & 01 for Server at Central Station) :-

Single phase 5 kVA UPS along with Automatic Delayed Restoration Device (ADRD) with 2 hours backup in full capacity should be provided for the smooth operation of Analyzers and peripherals at the station:

3.2.1	Capacity		:	5.0 kVA
3.2.2	Technology		:	PWM using IGBT / MOSFETS
3.2.3	Crest Factor		:	More than 3: 1
3.2.4	Input	Voltage	:	230 V AC
		Voltage Range	:	± 25%
		Frequency	:	50 Hz ± 3%
3.2.5	Output	Voltage	:	230 V AC
		Voltage regulation	:	± 1%
		Frequency	:	50 Hz
		Frequency regulation	:	± 0.01%
		Waveform	:	Pure sine wave
3.2.6	Battery	Battery type	:	Sealed maintenance free
		Back up time	:	2 Hours at full load
		Battery Capacity	:	For required backup time
		Recharge time	:	5 hrs to 90% after complete discharge
3.2.7	Distortion		:	Less than 1% on linear load
3.2.8	Power factor		:	0.9 to 1
3.2.9	Indicator		:	L.E.D. – Battery Charge, Load level, on Line, over load, on battery, replace battery
3.2.10	Alarm		:	Audible alarm for battery backup, battery low and fault
3.2.11	Protections	Surge	:	Surge suppression meets BIS or International standard
		Overload	:	Fuse & current limited
		Short circuit	:	Fuse & current limited & cut – off
		Battery low cut – off	:	No battery drain after cut - off
3.2.12	Overload Capacity		:	110% for continuous load
3.2.13	Efficiency		:	More than 90%
3.2.14	Environment	Operating Temp.	:	0–50^{0}C
		Operating Humidity	:	10% to 95% (Non condensing)
		Audible Noise	:	Less than 45 db (at 1 meter)

4. CONTINUOUSAMBIENT AIRQUALITY MONITORING ANALYSERS for SO_2, NO-NO_2-NO_x, NH_3, CO, O_3 and BTEX

4.1 (General Specifications for all Analysers)

4.1.1 The analyzers should be 19" rack mounting model with facilities for fixing the analyzers from front side.

4.1.2 The front panel preferably have ON / OFF Switch.

4.1.3 The display of the entire important status signal viz. Sample flow, temperature, concentration, range selection, manual / auto mode, zero / span mode and all error messages should be on front panel.

4.1.4 The analyzers should operate at operating voltage 230 volts ± 10 volts AC and 50 Hz (ϖι) 3% frequency. The power supply input to be protected against spikes from and to the analyzer by an LC filter. The power connection cable should be CEE type complete with 15 Amperes plug adaptable to Indian mains socket.

4.1.5 The analyzers must function properly in Indian conditions without any defect between 0 – 40^{o} C ambient temperature, 10 – 95% relative humidity and in high ambient dust levels. The data capture rate should not be less than 90% of operational time.

4.1.6 The Manufacturer shall provide comprehensive hands-on training for operational & preventive maintenance for one week in the respective State for three persons per station.

4.1.7 The analyzers should complete with calibration system. The calibration system should be delivered along-with respective span gas cylinder and permeation tubes. The span gas concentration should be within 60 – 90% of first measuring range. **The analyzer must have zero point internal calibration system and in agreement with minimum detection limit of each analyzer**. The calibration procedures are to be integrated into the software system for automatic calibration & remote calibration.

CALIBRATION GAS CYLINDER

4.1.8 **The supplier has to supply the calibration gas cylinder (highly polished aluminium 10 liters water capacity), along with SS Regulator, traceable to NIST for each components (SO_2, NO, CO, NH_3, Benzene & Toluene) along with SS regulator for the multipoint calibration**. The synthetic air and N2 cylinder (99.99% purity with certificate) should be in Carbon Steel cylinder of 47 Liters water capacity along with SS Regulator.

4.1.9 The analyzers shall be supplied with all ancillaries necessary for operation with pump (preferably in built) and any other items such as charcoal scrubber, Teflon air sample intake filter, drier, Teflon tubing suitable for connection to air sampling manifold. All such items are to be itemized. Dust filter in all the analyzers should be provided before solenoid valve to protect frequent chocking of solenoid valve.

4.1.10 The connector systems for out-going signal for recording and the computer terminal should be on back panel with screw type connecting pins.

4.1.11 All ambient gas analyzers shall be approved by the USEPA / TUV. However, in case of BTEX Analyzer, it shall be approved by USEPA/TUV/MCERT. For Ammonia Analyzer specifications as given will be considered. **Method of measurement used shall also comply with the stipulation on National Ambient Air Quality Standards (NAAQS) 2009** (Details of Methods of Measurement is available at MoEF and CPCB websites). All analyzers shall be micro – processor controlled with automatic calibration using an external dilution calibrator and calibration standards. All analyzers should be fully integrated in the rack cabinet, fully calibrated & tested before supply and ready for start – up at the respective sites. Analyzer must exhibit performance equal to or better than values specified in the Calibration & test certificate provided with each analyzer.

4.1.12 The manufacturer shall specify the cross sensitivity of measurement for all the analyzers.

4.1.13 Each set of analyzers shall be supplied with two copies of elaborate operation manuals comprising details as below:
Parts (I) should comprise installation, operational and troubleshooting details; Parts

(II)should have details about preventive, routine and corrective maintenance;

Parts(III)should comprise details of all electrical, electronic and pneumatic circuit diagrams, details of each spare parts, catalogue No. etc. and details of each electronic card / PCB's; and

Parts (IV)Schematic diagram for possible repair & maintenance.

Parts (V) Standard Operating Procedure (SOP) for each analyzer.

Parts (VI) List of equipments and other accessories along with contact details of supplier.

4.1.14 Digital Output:

(3) Multi drop RS 232 port shared between gas Analyzers, Dust Analyzer ($PM_{2.5}$& PM_{10}), Meteorological Sensors and computer for data, status and control. Communication should have a USB port, TCP/IP Ethernet connection

4.1.15Quality Control and Standard

Data shall be collected and validated according to US EPA standards, using the methodologies included in 40 Code of Federal Regulations. All analyzers shall have current US EPA reference or equivalent method designation and shall be of the latest design.

The supplier shall submit a Standard Operating Procedure for the air quality monitoring stations to the Buyer at the time of bid submission. This Standard Operating Procedure shall be approved by the Buyer prior to award. The Standard Operating Procedure shall contain the following:

(2) Operating procedures for all analyzers and meteorological sensors
(3) Calibration procedures
(4) Calibration schedule
(5) Maintenance procedures
(6) Maintenance schedule
(7) Data validation procedures
(8) Quality Assurance procedures
(9) Sample quality assurance documentation
(10) Sample Air Quality Report

The calibration procedures for analyzers shall conform to US EPA methodologies and shall include daily calibration checks, by weekly precision checks and linearity checks every six weeks. All analyzers shall undergo full calibration in every three months. Data obtained from these calibration checks and copies of associated Quality Assurance and calibration documentation, shall be submitted to the Buyer along with the Air Quality Data.

Air Quality Data shall be submitted to the Buyer on Real Time basis through automated system and on a monthly basis in the form of an Air Quality Report. This report shall includetabular and graphic information on gas and dust concentrations as well as meteorological data for each site. The data shall be reported in the form of 15 minute averages and shall also include daily, weekly and monthly averages, minimum, maximum, standard deviations, total data captured and percent data capture. It should also have stat validation

mechanism and delayed data check mechanism. The Air Quality Report shall also include wind roses where wind speed and direction are measured.

4.2 SAMPLING SYSTEM

A suitable sampling system as specified by USEPA having 10 ports manifold and fitted with a suction pump to draw ambient air. System duly equipped with moisture removal systems should be provided for sampling of ambient air separately for gaseous and dust measurement.

Gases sampling system:

4.2.1	Height of the sampling system:	Approx. 1.0 meter above the roof
4.2.2	Roof entry cut out:	Stainless Steel
4.2.3	Conduit:	Stainless Steel
4.2.4	Inner sampling system:	Borosilicate glass
4.2.5	Sampling head:	Stainless Steel
4.2.6	Manifold:	10 port for tubes 6 x 1 mm, self-tightening.
4.2.7	Sample air flow sensor	Uni-directional sample air flow measuring device should be installed at the sampling system to measure the flow of ambient air through sampling system. The output of signal should be connected to computer to ascertain the continuous flow of sample from ambient air. The suction pump operational status should also be connected to the computer as a separate channel.

4.3 19" RACK

Suitable 19" Rack cabinet to accommodate all analyzers, calibrators, Zero air generators, data logger etc. The dimension of the rack without doors, with aluminum section and rear of 2 mm steel sheet, one removable roof plate, fitted with 4 filling eyebolts. Four roof fixing screws included in package to replace the lifting eyebolts. One gland plate three part, one pair of 475 mm (19") mounting angles depth adjustable in 25 mm pitch pattern fitted on two fixing angles approximately 150 mm unit from the front standard. To accommodate panel width of 19" size: width = 600 mm, Height = 1400 mm and Depth = 800 mm. The 19" racks should be screwed to the floor of the station with anti-vibration pads. All nuts and bolts shall be cadmium coated.

(5) AMBIENT AIR QUALITY MONITORING ANALYSERS (GAS)

5.1 AMBIENT SULPHUR DIOXIDE (SO_2) ANALYSER

01.	Principle	:	UV Fluorescence
02.	Measurement	:	SO_2in Ambient Air
03.	Display	:	Digital
04.	Ranges	:	Auto ranging 0 - 200 ppb
05.	Lower Detectable Limit	:	1 ppb
06.	Noise Level	:	0.5 ppb
07.	Zero Drift	:	< 1 ppb/24 Hrs. with automatic zero compensation
08.	Span Drift	:	<1 ppb in 24 hrs.
09.	Linearity	:	± 1% of full scale
11.	Response Time	:	120 sec or less
12.	Calibration	:	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications(4.1.7 to 4.1.9)
13.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
14.	Digital Output	:	Multiple drop RS 232, USB port /TCP/IP ,Ethernet

5.2AMBIENT OXIDES OF NITROGEN (NO-NO_2-NOx) ANALYSER

01.	Principle	:	Chemiluminiscence
02.	Measurement	:	NO-NO_2- NO_x in Ambient Air
03.	Display	:	Digital
04.	Ranges	:	Auto ranging 0-2000 ppb
05.	Lower Detectable Limit	:	1 ppb
06.	Noise Level	:	0.5 ppb
07.	Zero Drift	:	< 1 ppb/24 Hrs.
08.	Span Drift	:	< 2% in 15 days of full scale
09.	Linearity	:	± 1% of full scale
10.	Response Time	:	120 sec or less
11.	Calibration	:	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications (4.1.7 to 4.1.9).
12.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
13.	Digital Output	:	Multi drop RS 232 port, USB port /TCP/IP ,Ethernet

5.3 AMBIENT AMMONIA ANALYSER (NH_3)

01.	Principle	Chemiluminiscence (NH_3 conversion to NO by oxidation. NO_2 also converted to NO. The difference obtained by measuring NO in output of two sample stream as equal to NH_3)
02.	Measurement	NH_3in Ambient Air
03.	Display	Digital
04.	Ranges	Auto ranging 0-1000 ppb
05.	Lower Detectable Limit	1 ppb
06.	Noise Level	0.2% of reading
07.	Zero Drift	<5 ppb /24 Hrs.
08.	Span Drift	< 2% in 15 days of full scale

09.	NH_3/NO converter	Quartz at approx. 1000^0 C
10.	Linearity	± 1% of full scale
11.	Response time	<300 second
12.	Rise / fall Time (95% of the final value)	< 30 Sec
13.	Calibration	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications (4.1.7 to 4.1.9).
14.	Analog Output	0 – 1 V, 0 – 10 V, 2 – 20 mA /4 – 20 mA a Digital output
15.	Digital Output	Multi drop RS 232 port, USB port /TCP/IP ,Ethernet

5.4 AMBIENT CARBON MONOXIDE (CO) ANALYSER

01.	Principle	:	Non Dispersive Infra-Red (NDIR) with Gas Filter Correlation/ Cross Flow Modulation Method
02.	Measurement	:	CO in Ambient Air
03.	Display	:	Digital
04.	Ranges	:	Auto ranging 0 - 100 ppm.
05.	Lower Detectable Limit	:	0.1 ppm
06.	Noise Level	:	0.05 ppm with time constant ± 30 seconds
07.	Zero Drift	:	< 0.2 ppm/7 days
08.	Span Drift	:	< 1% full scale in 24 hrs.
09.	Linearity	:	Continuous ± 1%
10.	Response Time	:	60 seconds or less
11.	Calibration	:	Please see Multi-calibration section (Sl. No. 7) and also calibration section in General Specifications (4.1.7 to 4.1.9).
12.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
13.	Digital Output	:	Multiple drop RS 232port, USB port /TCP/IP ,Ethernet

5.5 AMBIENT OZONE (O_3) ANALYSER

01.	Principle	:	UV Photometric / Chemiluminiscence
02.	Measurement	:	O_3 in Ambient Air
03.	Display	:	Digital
04.	Range	:	Auto ranging 0 - 500 ppb
05.	Lower Detectable Limit	:	1.0 ppb
06.	Noise level	:	± 0.5 ppb
07.	Zero Drift	:	< ½% per month
08.	Span Drift	:	< 1% per month
09.	Linearity	:	Continuous ± 1%
10.	Response Time	:	30 seconds or less
11.	Calibration	:	With built in Zero and span generator and also see Multi-calibration section (Sl. No. 7)
12.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
13.	Digital Output	:	Multiple drop RS 232 port, USB port /TCP/IP ,Ethernet

5.6 AMBIENT BTEX ANALYSER

5.6.1 GENERAL

A complete analyzer system comprising of sampling pump, transfer line, analyzer, detector, calibrator, computer hardware and software for instrument control, data storage, display, acquisition, processing and for selective determination of volatile compounds in ambient air optimized for Benzene, Toluene, Ethyl Benzene and o, m, p –Xylenes. Continuous unattended measurement system of individual BTEX should work without external cryogenic cooling. System should have protocol compatible to communicate & transfer data to DAS. Raw data storage capacity without erase minimum for three month or more. The system should be delivered with all necessary spares, consumables, tubing etc. for making it functional.

5.6.2 TECHNICAL SPECIFICATIONS

A single stage membrane Pump collect ambient sample automatically an inbuilt adsorption trap. Subsequent, the sample will be dissolved and injected on wide bore capillary gas chromatographic separation. Sample volume controlled by thermal mass flow controller (dust protected). Sample flow range may be 20 -100 ml/min or more (adjustable). Sample volume should be between 400 ml – one liter or more of ambient air over a 10-15 min sampling cycle. All sample transfer tubing should be in stainless steel and flow & pressure sensor to be preferred with digital display.

5.6.3 DETECTOR

Photo Ionization Detector (**PID**) or other equivalent detector as per EPA/EU/TUV/MCERT approved specifications, which do not require hydrogen or other das to operate it. The system should have auto-clean & auto calibration facilities. PID Lamp eV should be 10.6eV. PID sensitivity sensor should be available to check sensitivity.

5.6.4 MINIMUM SPECIFICATIONS

Principal	:	Based on gas Chromatographic separation and Photo Ionization Detector (PID)
Measurement	:	Benzene, Toluene, Ethyl-benzene, m.p-Xylene and 0-Xylene.
Display	:	Digital
Range	:	0 - 100 ppb (0.32 – 325$\mu g/m^3$)
Lower detectable limit	:	0.2 ppb (0.65$\mu g/m^3$) for 15 min cycle for Benzene
Temperature Range	:	5 - 35^oC or more
Repeatability	:	Retention Time : <0.1% RSD Concentration: <1.0% RSD
Typical Cycle Time	:	Total Cycle Time should not exceed 15min i.e. Sample Collection Time -15 min approx. Analytical Time- 15 min approx.
Sample Volume	:	1 liter for 15 min cycle.
Desorption tube	:	Carbotrap
Pre concentration	:	Carbopack
Calibration	:	The Analyzer should be capable to calibrate through Multi Calibration System also. Please see Multi-calibration section (Sl. No. 7) And also calibration section in General Specifications (4.1.7 & 4.1.9).
Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
Digital Output	:	Multi drop RS 232 port, USB port /TCP/IP ,Ethernet
Approval	:	USEPA/TUV/ MCERT approved BTEX Analyzer

(6) CONTINUOUS AMBIENT AIR QUALITY MONITORING ANALYSERS (PARTICULATES)

6.1 CONTINUOUS PM_{10}MONITORING ANALYSER (β-RAY ATTENUATION)

Based on the principle of β-ray attenuation, particulate sampled through the instrument and collected on fiberglass filter tape. Before and after sampling,β-ray radiation is measured by scintillation / G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of PM_{10}.

01.	Principle	:	β-ray attenuation
02.	Particle Size Cut Off	:	0 - 10 Microns
03.	Measuring Range	:	0 – 1000 $\mu g/m^3$
04.	Resolution	:	1% of the measurement range
05.	Lower Detection Limit	:	< 4.8$\mu g/m^3$(1 hour)
06.	Detector	:	Plastic Scintillator / GM Counter / Silicon-Semiconductor base
07.	Air Flow Rate	:	16.7 Liters / minute
08.	Filter Material	:	Glass Fiber Filter
09.	Display	:	LED / LCD
10.	Sampling Head	:	Dynamic heated sampling line with proper outer insulation for measurement of PM_{10}, with adjustable temperature 20 – 70 ^{U}C
11.	Calibration	:	Reference membrane facility should be provided for calibration of analyzer.
12.	Compatibility	:	Analyzer should be compatible with protocols of DAS system to be used in station.
13.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
14.	Digital Output	:	Multi drop RS 232 port USB port /TCP/IP /Ethernet
15.	Roll Length	:	Minimum 20 meters
16.	Measurement cycle time	:	1 hour
17.	Approval	:	USEPA/TUV approved Analyzer

6.2 CONTINUOUS $PM_{2.5}$MONITORING ANALYSER (β-RAY ATTENUATION)

Based on the principle of β-ray attenuation, particulate sampled through the instrument and collected on fiberglass filter tape. Before and after, sampling β-ray radiation is measured by scintillation / G.M. counter. An internal microprocessor handles all sequences and automatically calculates the concentration of $PM_{2.5}$.

01.	Principle	:	β-ray attenuation
02.	Particle Size Cut Off	:	0 – 2.5 Microns
03.	Measuring Range	:	0 – 1000 $\mu g/m^3$
04.	Resolution	:	1% of the measurement range
05.	Lower Detection Limit	:	< 4.8 $\mu g/m^3$ (1 hour)
06.	Detector	:	Plastic Scintillator / GM Counter / Silicon-Semiconductor base
07.	Air Flow Rate	:	16.7 Liters / minute
08.	Filter Material	:	Glass Fiber Filter
09.	Display	:	LED / LCD
10.	Sampling Head	:	Dynamic heated sampling line with proper outer insulation for measurement of $PM_{2.5}$ with adjustable temperature 20 – 70 ^{U}C

11.	Calibration	:	Reference membrane facility should be provided for multipoint calibration of analyzer.
12.	Compatibility	:	Analyzer should be compatible with protocols of DAS system to be used in station.
13.	Roll Length	:	Minimum 20 meters
14.	Analog Output	:	0 – 1 V, 0 – 10 V, 2 – 20 mA / 4 – 20 mA
15.	Digital Output	:	Multi drop RS 232 port ,USB port /TCP/IP ,Ethernet
16.	Measurement Cycle Time	:	1 hour
17.	Approval	:	USEPA/TUV approved Analyzer

Note: A distance of around 1.5 meter should be maintained between two sampling heads of $PM_{2.5}$ and PM_{10}samplers.

(7) MULTICALIBRATOR

Calibration system should provide for the calibration of the ambient air quality monitoring analysers (Gas).

7.1 MULTI POINT GAS CALIBRATION SYSTEM:

(1) The Gas Calibration System should be capable to do the following:
   a. Multipoint calibration using automatic dilution system for the calibration of SO_2, NO, CO, NH_3 and BTEX analyser.
   b. Auto calibration (user selectable).
   c. Generate zero air of 99.9% purity (High Performance Zero Air Generator to be provided).
   d. Having facility for O_3 Generator for stable and repeatability calibration.
   e. Gas Phase Titration (GPT) with O_3 generator having 100% converter efficiency for conversion of NO to NO_2.
   f. Calibration using permeation tubes for which at least two chambers based Permeation system has to be provided.
   g. The Permeation System should be capable to accept permeation tubes up to 6 cm in length and 2cm in diameter with user selectable temperature setting of 40 ^{O}C and 50 ^{O}C.

(2) System should be 19" rack mountable.
(3) System should be DAS compatible for remote calibration from Central Server.
(4) The system should also have facility for multipoint calibration of Ozone analyzer.

7.2 METEOROLOGICAL, FLOW AND ELECTRONICS CALIBRATION

The supplier should provide calibration devices or calibration check devices for all the meteorological parameters namely temperature, wind speed, wind direction, relative humidity, solar radiation, rain fall as per the specifications of the manufacturers.

(8) METEOROLOGICAL SYSTEM

8.1 The meteorological instrumentation should be interfaced directly with the Data Acquisition System after passing through a lightning protection isolation box. A crank -up telescopic 10 meters tower should be erected for mounting of meteorological sensors. The relative humidity and solar radiation sensors should be mounted on the tower. The specifications are as follows:

(A) WIND SPEED

Range (Operation)	:	0 – 60 m/s or better
Sustainability	:	Upto 75 m/sec
Accuracy	:	± 0.5 m/sec or better
Resolution	:	0.1 m/sec
Sensor Type	:	Ultrasonic
Threshold	:	0.5 m/sec or less
Response time	:	10 ec or better

(B) WIND DIRECTION

Range	:	0 – 359 degree
Accuracy	:	± 3 degree or better
Resolution	:	1 degree
Sensor type	:	Ultrasonic
Threshold	:	0.5 m/sec or less
Response time	:	11 ec or better

II. (C) AMBIENT TEMPERATURE

Range	:	-10 ^{o} C to 60 ^{o} C
Accuracy	:	± 0.2 ^{o} C or better (with radiation shield)
Response	:	10 seconds in still air
Resolution	:	0.1 °C
Sensor type	:	Resistance type
Response time	:	10 sec or better

(D) RELATIVE HUMIDITY

Range	:	0 to 100% RH
Accuracy	:	± 3.0 % or better
Resolution	:	1%
Sensor type	:	Capacitive / Solid State
Response Time	:	10 sec or better

(E) SOLAR RADIATION

Range	:	0 to 1500 W/m^2 or better
Accuracy	:	± 5.0 % or better
Resolution	:	5W/m^2
Sensor type	:	Silicon Photo diode

(F) RAINFALL

Range	:	0.2 mm to 100 mm /hr
Accuracy	:	± 5% or better
Resolution	:	0.2 mm
Sensor type	:	Tipping bucket rain gauge or any other suitable sensor
Response Time	:	10 sec or better

(G) TELESCOPIC CRANK – UP METEOROLOGICAL TOWER

The wind speed, wind direction, temperature, relative humidity and solar radiation sensors are to be mounted on the Meteorological Tower. The tower is to be a free standing four section telescopic tower provided with a hand crank to raise and lower the instruments mounted on the tower. Specifications are as follows:

Extended Height	:	10 meters
Retracted Height	:	2 metres
Wind load Limit	:	0.7896 sq. m. (8.5 sq. ft) at 50 mph
Number of Sections	:	4
Construction material	:	Galvanised steel or aluminium

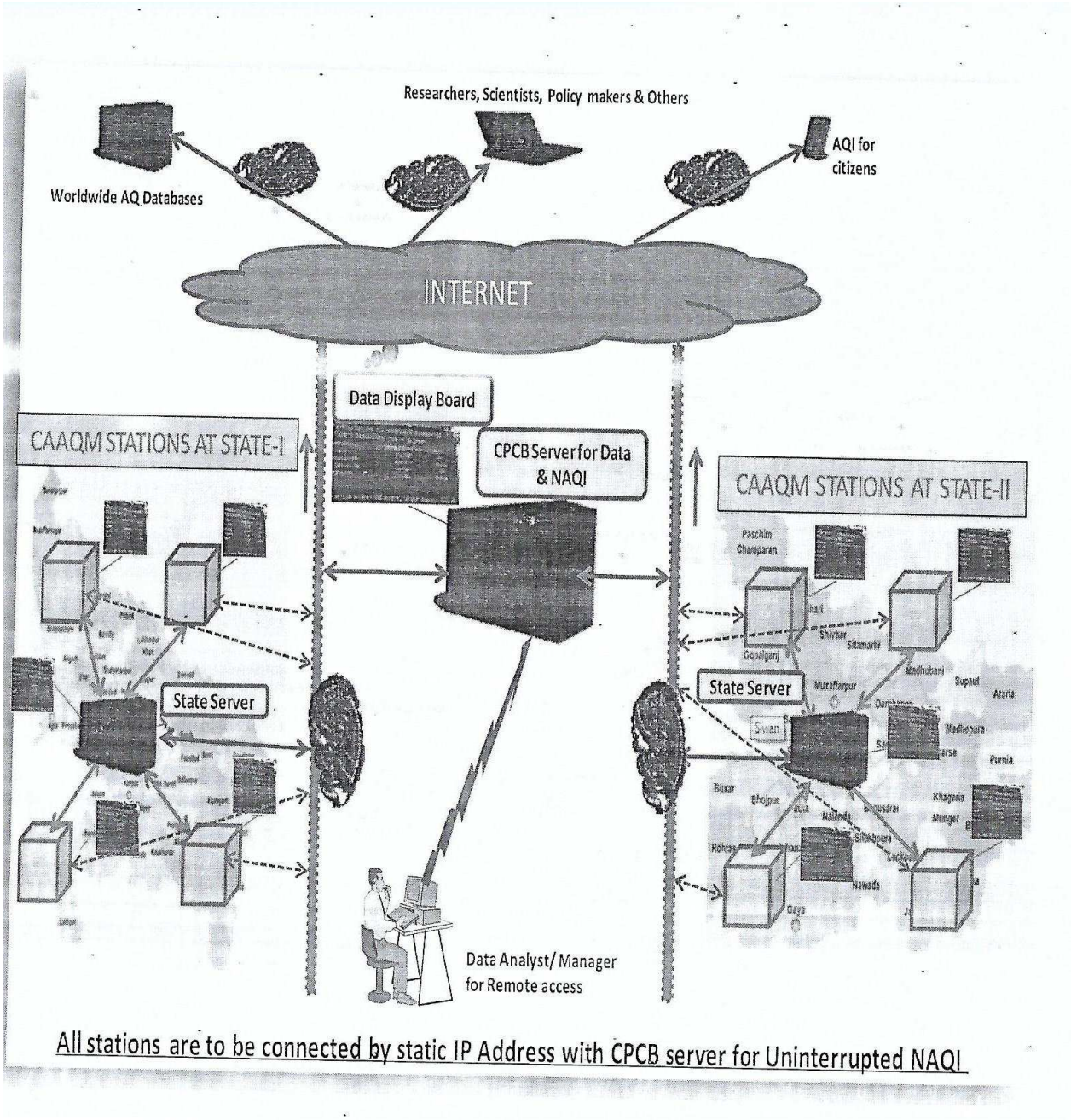
Note:

(i) Humidity and temperature sensors are to be supplied with weather and thermal radiation shield made of anodized aluminium and sensor should be supplied with all necessary cables, connector and mounting arrangements as required.

(ii) All the meteorological sensor should be certified/ traceable to World Meteorological Organization (WMO) and software should also have certification from the appropriate international agency.

9. DATA ACQUISITION AND COMMUNICATION SYSTEM

9.1 Typical Architecture for Data Connectivity



- This architecture defines data transmission from all connected CAAQM Stations to State Data Center and Central Data Centre in parallel through internet (leased lines) in real time basis.
- All Stations are to be connected by static IP address with CPCB Server (Central Data Server) for uninterrupted NAQI.
- There should also provision in the station itself for data display of Pollutants parameters, Meteorological parameters and NAQI on display system near to Station.
- Each CAAQM Stations measure their respective pollutant and meteorological parameters and get them stored in data logger before transmission.
- From Data logger, data transmits for data display, and also through internet the same data is transmitted to Central server as well as State server for data display at Central level and State level, parallely.
- Data display system at all locations display Pollutant, Meteorological and NAQI data on real time basis of all connected CAAQM Stations.

9.2 Data Acquisition and Handling System at Station

Type I: System comprises of data logger having DAS and station computer.

Or

Type 2: System comprises of station computer with DAS facilities.

Data logger/DAS with 8 analog, 24 digital inputs. Ability to log channels at different intervals and should have capability of averaging and displaying real time data and averaged data over a period of 1 min, 15 min, ½ hr, 1 hr, 4 hrs, 8 hrs, 24 hrs, 1 month and year. Communication between data logger and station computer should be using standard USB/RS232/RS485/ Ethernet Connector. The data logger should have internal battery with charger and if it is PC based UPS serves the purpose.

The data logger/DAS should support LAN and Internal GSM modem/ Wifi for data transfer to central server. Station computer for data logging will be in addition to workstation computer required for calculating AQI, and will be of same or better specifications that of work station computer.

The supplier is supposed to install Computer System alngwith DAS of suitable high-end specification as per the design & specifications of DAHS. Real Time Data to be simultaneously transmitted from station computer to Central Servers at respective UPPCB and CPCB.

Computer:

Brand new Computer of reputed make like HP, Dell, Lenovo, Compaq, IBM, Acer, Apple, Microsoft of configuration mentioned in the item "Work Station Computer for AQI" or better and compatible with DAHS to be supplied.

Presently network is envisaged for 250 such stations.

9.3 WORKSTATION COMPUTER FOR AQI

This has to be installed at CAAQM station for the preparation of AQI along with the station computer.

This PC would be controlled through remote mechanism with CPCB for the purpose of installation & maintenance of AQI Software. The supplier will maintain the Computer System (Hardware, OS, etc.)

Sr.No		Specifications
1	**CPU**	Intel® Core i7 8th generation or higher
2	**Memory**	8 GB DDR-IV, or better
3	**Ethernet ports**	Integrated intel ® Ethernet LAN 10/100/1000
4	**PCI Slots**	Two PCIex16 half height
5	**Optical Drive**	DVD R/W Internal
6	**HDD's**	3.5" 1TB, SATA drives
7	**Power Supply**	Standard suitable power supply
8	**Key board**	Optical Keyboard same as OEM
9	**Mouse**	Standard Optical Mouse same as OEM
10	**I/O ports**	Minimum 6 USB (at least 4 ports of 3.0)
11	**Monitor**	22" Wide or higher LED FHD Color Monitor
12	**Wireless adapter**	USB Wireless adapter x 1 no.
13	**OS support**	Open source Linux CentOS
14	**Warranty**	Warranty on site OEM warranty – comprehensive
15	**Type**	Desktop (Flat)/Tower

9.4 MANAGEABLE CISCO SWITCH (RACK MOUNTABLE)

Ethernet switch with LAN and WAN ports.

24 port managed fast/ gigabit Ethernet Cisco Switch with LAN and WAN ports (Atleast 04 PoE Ports) of latest series for installation at respective UPPCBs OR better

9.5 REMOTE MONITORING TOOL/SOFTWARE

Remote calibration & validation management software and its licenses for the entire project duration for stations computer and central servers located at UPPCBs and CPCB.

Data Acquisition Software (DAS) & it's licenses to be provided for Central Servers at each UPPCB and CPCB.

The remote connectivity tool/software like Teamviewer with License, procurement, installation & up-dataion for the complete duration for each UPPCB & CPCB, is to be done by the supplier.

9.6 21 U BLACK INDUSTRIAL RACK

This is to be installed at Central Sever location (at respective UPPCB's Head Office and CPCB-Delhi).

Sr. No	Specifications	QTY / site
1	**19" Industrial Rack, 21U , Color Black Consisting of:-**	**1**
2	Steel Enclosure, 9 Folded profile of dimensions 800 mm width * 1000 mm Depth * 42 U height, supporting 1000 Kgs load. Bottom cover with knock out holes for cable entry to be provided. Three pairs of horizontal support shall be fitted on both right and left sides.	1

Sr. No	Specifications		QTY / site
	Foldable Front & Rear Door to its half size while opening, shall be of		
3	100% perforated. Provision for mounting fans on Rear door with concealed AC wiring.		2
4	Fan 230V, 90 CFM to be mounted on Rear Door.		4
5	AC Main Channel vertical two nos., 12x 5/15 Amps Sock RT-AQMP Make: Anchor with 32 Amps MCB make : Northwest or better		2
6	Horizontal Cable Manager		20
7	Vertical Cable Manager		10
8	Copper based Electrical Grounding / Earthing Strip. Provision for Fifteen (15) points.		1 Set
9	Each set of: a) Castor with Brake -- 2 Nos.		1 Set
	b) Adjustable screw legs --4 Nos. OR		
	c) Base frame – 1 No.		
10	Light provision activation in the rack up on opening of the front/rear door.		1
11	H/W Packet of 20 SRT-AQMP.		2

If anything else is required to setup the system, vendor need to have provision at the time of quoting.

9.7 RACK SERVER

This is to be installed at Central Sever location (at respective UPPCB's Head Office and CPCB-Delhi) along with the 21U Industrial Rack.

Sr.No	Specifications	
1.	CPU	Single CPU, Intel Xeon Quad Core E51620V3 3.50 GHz or higher, 10MB Cache per socket or higher. The Mother Board should support Dual Sockets.
2.	Memory	32 (32 GB Support for each CPU) DDR-4, 1333/1600/1866/2133MHz, upgradable to 128 GB
3.	Mother Board	Intelmotherboardhavingcompatibilityto configuration desired
4.	HDD	3*500GB SAS or better
5.	Ethernet Port	2 *Dual port Gigabit NIC Cards with autosensing and on copper (total 4 ports). All four ports supporting iSCSI protocol to connect to iSCSI based SAN storage
6.	PCI Slots	Provision for 2 *PCIexpress 2 * PCIe X2 or more slots to accommodate additional FC/Gigabit Cards Graphics Adaptors
7.	Optical Drive	DVD R/W 16X Drive or better, External USB based
8.	Form Factor	2U rack model with rail kit or better
9.	Key board	Standard Optical wireless Keyboard

Sr.No	Specifications	
10.	Mouse	Standard Optical Wireless Mouse
11.	I/O ports	2 *USB ports, front & 2USB port Back,
		1 VGA Port, 1 external SAS, 1* Serial
12.	Monitor	22" Wide LCD TFT Colour monitor
13.	RAID Controller	RAID 5 minimum
14.	Wireless adapter	USB Wireless adapter x 2 nos.
15.	Antivirus	Standard Antivirus (McAfee / Norton / Trend Micro) for duration of 3 years
16.	Redundant Power Supply & Fans	Redundant Power Supply 1+1, Redundant Fans
17.	Warranty	Warranty is comprehensive 24x7 on site including spares for 3 / 3 / 3 years with 4 hours support
18.	OS	Compatible OS should be provided.

9.8 WIRELESS ACCESS POINT (AP)

This is required alongwith server at respective central station (UPPCBs and CPCB).

S. No.	**Type of Access Point**	**Stand alone**
1	Deployment	Indoor
2	Mounting	Ceiling/ Wall
3	Antenna Type	Internal
4	Number Of Radios	Dual
5	Frequency Band	2.4GHz, 5.0GHz, 2.4GHz & 5.0GHz
6	Supported Wi-fi Standards	802.11 a/b/g/n/ac
7	Wireless Speed Up to (Mbps)	800
8	Max Wireless Signal Range in Mts	20
9	Channel Width (MHz)	80
10	Maximum Data Rate MBps	800
11	Supported Encryption	WEP, WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i, EAP-TLS.,WEP,WPA-PSK,WPA-TKIP,802.11,EAP-TLS,WPA AES
12	Receiver Sensitivity in db	-99
13	Transmit power (tx)(dBm)	3
14	Radio Resource Management such for power channel, coverage hole detection and performance optimization	Available
15	Support for Load Balancing between 2-4 Ghz and 5 Ghz	Available
16	Support for Configurable Carrier Threshold	Available
17	Device Management	Web-based Configuration Interface (GUI)
18	Support for Mesh Networking	Available

19	Support for QoS for Voice over Wireless	Available
20	Support for MU-MIMO	Available
21	Number of MIMO supported & Spatial Streams	2 x 2 :2
22	Number of WLAN (SSID) per AP	16
23	Maximum clients Nos	100
24	Support for Autonomous access-point option	Available
25	Number of 10/100/1000 port	1
26	mGig support	Available
27	Support for Beam forming	Available
28	Support for QoS and Video Call Admission Control capabilities	Available
29	Support for Rogue access point detection	Available
30	WPC certified	Yes
31	Wi-Fi CERTIFIED	Yes
32	Powering options (Such as AC/DC, 802/3af PoE, 802/3at PoE+), specify	802.3af PoE
33	Power POE (Watt)	11
34	Environmental Standard : plenum-rated (UL2043) for Indoor and IP67 for Outdoor	Yes
35	Operating Temperature Range (Degree C)	0-40
36	Operating Humidity (%RH)	95
37	Dimension (mm x mm x mm)	13.8*13.5*3.3
38	Weight (grams)	220
39	On Site OEM Warranty (Years)	5 Years

9.9 UTM (UNIFIED THREAT MANAGEMENT) DEVICE

This is required at respective UPPCBs Central station

Support and Warranty

Appliance should have EAL4+ Certification and ICSA certification for Firewall.

Appliance Throughput

- Firewall throughput of more than 5 Gbps.
- Minimum 1.2 Gbps of Antivirus Throughput
- Minimum 1 million Concurrent sessions
- Minimum 1 Gbps of IPS throughput
- Minimum 45,000 New Sessions/second
- Minimum 800 Mbps of IPsec VPN throughput
- Minimum of 1000 IPsec tunnel support and 50 SSL VPN user support. License for the same should be included in the BOM.
- 810/100/1000 interfaces supporting Hardware Bypass.

General Features

- Should be appliance based and rack mountable
- Identity based Firewall
- Intrusion Prevention System
- Gateway Anti-virus
- Gateway Anti-spam
- Web Content & Application Filtering
- Bandwidth Management
- Inbuilt-on Appliance Reporting

- Network: OSPF, Round Robin load balance, RIPv2, BGP, equal &unequal cost load balance, High Availability, QOS, etc. Round Robin Balance, Server Load Balancing.
- Support for user authentication over SMS.
- Country Based Blocking, FQDN support and should support MIX mode deployment
- 4 Eye Authentication feature for data integrity.

Gateway Antivirus, Anti-Spyware and Anti-Spam

- The proposed Integrated Anti-Virus/Ant-Spyware should have Web coast Checkmark Certification as part of a UTM. Virus, Worm, Trojan Detection and Removal, Automatic Virus signature database update, Real-Time blacklist, MIME header check, Redirect spam mails to dedicated email address, image-spam filter, Spam Notification, Zero hour Virus outbreak protection. Recurrent pattern Detection Technology for AS. Self Service Quarantine area.

Web and Application Filtering:

- The proposed Content Filtering should have at least one Certification as part of a UTM viz. Web coast Checkmark. URL, Keyword, File type block, Block Java applets, cookies, ActiveX, Block malware, phishing, pharming URL, block P2P application, anonymous proxies, Customized block on group basis. System should have Minimum of 70+ categories with more than 100 million URLS supported with more than 5000 application support.

Security Features

- **Intrusion Prevention System (IPS):** The proposed IPS should have Certification as part of a UTM viz. Web coast Checkmark. For different attacks like Mail Attack, FTP Attack, HTTP Attack, DNS Attack, ICPM Attack, TCP/IP Attack, DOS and DDOS Attack, TelNet Attack. Signatures: Default (more than 2000+), Custom , IPS Policies: Multiple, Custom, User-based policy creation, Automatic real-time updates from CR Protect networks, Protocol Anomaly Detection

- **VPN**:

  IPsec, L2TP, PPTP and SSL as a part of Basic Appliance, VPN redundancy, Hub and Spoke support, 3DES, DES, AES, MD5,SHA1 Hash algorithms, IPsec NAT Transversal, VPNC Certified.
- **Load Balance:**
  For Automated Failover/Failback, Multi-WAN failover, WRR based Load Balancing. High availability: Active-Active. QOS, OSPF, RIPv2, BGP, Policy routing based on Application and User support Round Robin Load Balancing.

- **Bandwidth Management:**
  Application and user identity based bandwidth management, Multi WAN bandwidth reporting, Guaranteed and Burstable bandwidth policy. Bandwidth for User, Group, Firewall Rule, URL and Applications.

- **Monitoring and Reporting System:**
  Should Include reports for Centralized management, Monitoring & Logging, Command line interface. Monitoring Gateways, **Monitoring suspicious activity and alerts,** Graphical real-time and historical monitoring, email notification of reports, viruses and attacks reports. IPS, Web filter, Antivirus, Anti-spam system reports. IP and User basis report, >40+ Compliance reports and >1000+ drilled down reports on the appliance with 250+ GB of storage.

License for UTM (Unified Threat Management)

Three Years for Gate Way Antivirus, spyware, Anti-Spam, content and application filtering. IPS, reporting and support License period will be counted after activation

9.10 PRINTER SPECIFICATIONS

COLOUR Laser Jet Multi Function Printer (Print-Scan-Copy)

- Print speed black: 25 ppm min
- Print Speed Colour : 5 ppm min
- Scanner
- Resolution: 1200 x 1200 dpi
- Processor speed 1200 MHz Print or better
- Paper handling input, standard 250-sheet input tray or better
- Duplex printing Automatic (standard)
- Media sizes supported A4 A5
- wireless connectivity and automatic two-sided printing
- automatically connect to wireless network,
- Easily print from virtually anywhere in the office with Ethernet and wireless connectivity
- Connect via USB, and access tools from PC to manage printer.
- 1,500-page toner cartridge or better

9.11 CONNECTIVITY FOR DATA TRANSFER

A) LEASED LINE CIRCUIT

1Mbps capacity leased line connectivity with 99% uptime service level agreement (SLA) to be provided by the firm at each station location. The leased line may be provided on copper or optical fiber or through RF depending upon the location. 04 nos. of Real IPs to be obtained alongwith the Lease Line Circuit. Router equipped with 01 WAN Port and minimum 08 LAN Ports is to be procured alongwith the Leased Line Circuit.

B) BROADBAND

1Mbps capacity broadband connectivity from other than one already providing leased line connectivity shall be provided by the firm at each station.

C) GSM /Hotspot Connectivity

Internet connectivity will have to be provided by the firm for the entire project duration at LED location either using GSM or Hotspot connectivity

10. DATA ACQUISITION SOFTWARE FOR STATION (CAAQM)

The software captures data from all channels in the system and stores in the station Computer.

(i) Data Acquisition

a. Frequency of data acquisition
   i. User selectable 1,5,30,60,120 second averaging duration online digitally.
   ii. Minimum frequency will be subject to capability of analyzer cycle.
b. Channel size
   i. 32 Channels or more supported
   ii. Expandable to 64 channels, if required in future
c. Data input
   Either Analog (0-1 volt/0-10 volt/2-20mA/4-20mA)
   or Digital to configure with the PC. The condition is that system should remotely operatable.
d. User configurable channels, stations and equipment with communication parameters.
e. Analyzer data channel should comprise of Name, Units, Communication Address, Validity Range, Operation and Error Status.
f. Provision to incorporate conversion factors such as PPB to $\mu g/m^3$ etc.

g. Software should be equipped to configure the analyzers with it, irrespective of g.company make and communication protocol of the analyzer and the output mode i.e. Analog or Digital (RS 232) of the instrument.
h. The output should be provided in user defined units.

(ii) Data Collection

a. Average data over user selectable time (1,5,30,60 seconds time interval) period.
b. Operational status, Error status, calibration status and calibration values observed from the analyzer should be captured and should be made available along with the data with a frequency of maximum five minutes.
c. System should collect of the diagnostics of the instrument comprising actual diagnostics parameters and their values at least once in every five minute to check the state of the health analyzer.
d. Calibration parameters
    i. Provision to entering zero calibration, span calibration values of gas cylinder/permeation to devices
    ii. Provision for collecting zero calibration, span calibration values(pre calibration & post calibration) in to the database for further analysis.
    iii. Provisions to collect electronic system pre calibration & post calibration values from the analyser to ascertain the percentage deviation/ correction applied during each calibration and record it in database at station & Central computer.

(iii) Data Storage

a. Data along-with diagnostic, calibration, alarms should be stored at station computer at a defined path.
b. Interval of data dumping will be same as defined in the data collection.
c. System should be capable to keep every second acquired data from 32 channels for a period of minimum five years.
d. Current data should be stored as per ISO-7168-1:1999I format and should be available in folder named as c:\Data\ at an interval of 15 minutes. As an example c:\data\01.05.2015.xml. the file will be appending without double data entry and as per ISO format.
e. Data should also be stored for last two years in E:\data\Year\Month\day i.e. e:\data\2015\05\01.05.2015.xml ….
f. If data encryptionis done, then decryption procedure should be made available in soft file format to check the data at station at any point of time. To convert data on continuous basis for exporting to AQI software, procedure should be available without any licensing. AQI calculating Software will be provided by CPCB/UPPCB.

(iv) Data Display (Statistical analysis of data)

a. Main window for real time display of all measured parameters with status of all analyzers/sensors.
b. In 4-in-4 graphs and4-in-1 graph formats
c. In tables of 4-in-1 format
d. Real time multi – graphs over user selectable time period i.e. 6.00 AM to 6.00 AM etc.
e. Display of graphic & tabular display of the current data.
f. Graphical form should comprise of 4-4 graphs, 4-1 graphs in user defined format (1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly; user definable time series)
g. Tabular form should comprise of 4 channel list in user defined format (1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly; user definable time series)
h. Station instruments basic configuration etc. should be visible on screen continuously.

i. Statistical analysis tools like regression analysis, co-relation analysis and other analysis as per industry standards in the field of environment should be available and if not the firm should develop these for CPCB within a time frame of six months.
j. The system should have procedures for normal analysis tools like calculation of data with respect to a threshold value, average, minimum, maximum, calculation of violating value with respect defined values(National Air Quality Standards) for defined period for the database etc.
k. Data analysis of diagnostics parameters
l. Data analysis of Pre calibration and post calibration data (if facility not available, should be developed within six months)
m. Data analysis of corrections applied of each calibration cycle (if facility not available should be developed within six months)

(v) Data Backup

i. There should be defined data backup procedure through which data can be extracted from station computer in simple text format/excel/ ISO format(user definable).
ii. There should be defined restore procedure also to restore the data in case of data loss.
iii. A display screen should be available to update the user about data availability.

(vi) Data Validation automatic checks at station software.

i. Zero level and span level checks if performed cyclically and defined results are not obtained up to +/- 5%(user definable 0-10%) then system should alarm the user of system failure and the recorded alarm should be transmitted to central software.
ii. After instruments perform the calibration the results obtained should be recorded and should be transmitted to central computer.
iii. There should be provision of two databases one is raw database and another corrected database.
iv. Validation of data through calibration database Pre calibration & post calibration values collected.

(vii) Calibration of systems

a. Calibration window for analyzer for the calibration from computer.
b. Remote Access to Calibration: Calibration exercise need to be done remotely. All necessary arrangements for it should be made in the system.
c. Calibration data file may be prepared separately and data should be excluded from the database
d. Calibration database need to be formed, stored and transmitted to central server.
e. Calibration cycles to be as per the models of the instruments.
f. Calibration records should store the calibration values displayed by instrument.
g. Diagnostics during calibration should also be recorded.

(viii) Location of station

i. Fixed and Mobile Stations location to be recorded and North correction feature should be available.
ii. Latitude and longitude of stations be recorded

(ix) Data transfer to Central

All data captured at station computer should be transferred to central software.

i. User selectable time frame for transmission of data to central server.
ii. Diagnostics (actual diagnostics parameter values recorded each time in the station), configurations(station channel configurations), alarms(generated alarms) should be transmitted.

(x) Data transfer to Display Boards at Public site

software should have provisions to connect data output including current pollutants concentration, AQI, advertisement, etc. to the display boards (LEDs), to be installed at public site. For the purpose Data display device has been recommended in the document.

11. DATA ACQUISITION SOFTWARE AT THE CENTRAL STATION AT EACH UPPCB & CPCB

Data communication system handles the data transmission of an ambient air quality network and receives incoming messages / signals from remote stations. The central software processes signals and data and displays it. Detailed requirement is as below:

A (i) Software at Central Station

a. Software should not have any restriction on number of locations and computers either technologically or in terms of licensing.
b. Should display multiple stations on – line data (momentary values) in tabular text and graphic format.
c. Data should be received by the central from all locations maximally within 5minutes duration or at user defined time intervals.
d. Data along-with diagnostics and calibration details should be transmitted at central from all connected locations.
e. Should support dialup systems, broadband connectivity, wireless connectivity, 2G or 3G or any new technology which shall be in place during project time should be compatible and if not, need to developed by the system provider up-to project duration without additional charges.
f. Should have the remote control facilities for calibrations (Zero & Span) of instruments and measuring range modifications.
g. Should have facility for displaying data communication error reports, image management which should be recorded and should be available for display.

(ii) Data Display at Central Station

a. In 4-in-4 graphs, 4-in-1 graph and/or 16-in-1 graph formats
b. In terms of 4-in-1 table format
Real time multi – graphs over user selectable time periodi.e. 6.00 AM to 6.00 AM etc.
c. Display of graphic & tabular display of the current data like simple 3D line and column chart, polar diagnostics and 3D perspective column chart.
d. Graphical form should comprise of 4-4 graphs, 4-1 graphs in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)
e. Tabular form should comprise of 4 channel list in user defined format i.e. 1, 5, 10, 15, 30 min, 1hour, 4, 8, 24 hour, 30 days and yearly. (user definable time series)
f. Display of data using selectable name of different stations.
g. Generation of Wind Roses, Pollution Roses (minimum 12 directional)with user defined time limits.
h. Calculate vector mean of wind direction.
i. Programmable downloading of data.
j. Comparison of data w.r.t. Standards in Graphical form and tabular form with information of values exceeds the Standards.
k. Specific data zooming facility
l. Database correction procedure

m. Separate user ID and Password for correction of database so that all regional level users, if authorized, can validate their regions data and the events be recorded along with ID, date & time, on monthly basis.
n. Data validation trail recording.

(iii) Data Export

Data export in ISO 7168 format is required to be done automatically.
Possibility to export the data files in Excel, Text and other formats Tabular form should be in user defined format i.e. 1, 5, 10, 15, 30 min, 1 hour, 4, 8, 24 hour, 30 days and yearly.

(iv) Data Import

a. In case of communication medium fails there should a mechanism to shift the data into Pen drive (Physical medium for data collection) physically and a procedure to import the same on central software.

(v) Printing

a. Possibility to connect different types of printers and auto printing facility for all displays generated throughout the analysis of data at any point of time.

(vi) Delayed data checks & Validation of data at Central Software at UPPCB

a. After instruments perform the calibration the results obtained should be recorded and should be transmitted to central computer and stored.
b. Zero level and span level checks if performed cyclically and defined results are not obtained up to +/- 5% (user definable 0-10%) then system should generate alarm to the user for system failure and the recorded alarm should be transmitted to central software and stored. There should be provisions to read these alarms in a database for corrective actions and for comparison of data for acceptability or rejection.
c. Software utility should be provided through which validation of data could be done at UPPCB and the validated data files be synced with database at CPCB.
d. The utility should provide date wise access to the data available in the station computer in the editable form alongwith provision to record events/remarks and should store in the database in the station computer as "Validated Data". However, the raw data should remain intact.
e. Validated files should also be stored in the stations computer in a foldere at C:\Data\stationName\Datevalid.txt (Ex:C:\Data\NehruNagar\21062019valid.txt). This file format should be same as **csv file format** as mentioned at Annexure-I.

(vii) Data display at CAAQM Locations and UPPCB Offices

a) At CAAQM Station:

A display board will have to be supplied & installed by the supplier at each CAAQM Station or nearby to it (may be few kilo meters) for which space to be provided by CPCB/UPPCB/PCC etc.

b) At UPPCB Offices:

A display board will have to be supplied & installed by the supplier at each UPPCB Office for which space to be provided by CPCB/UPPCB/PCC etc.

c) CPCB/UPPCB intends to show the content:
   i. Information from External Sources
   ii. Information drawn from Internal databases
   iii. Advertisement in the form of Text, Slides, Charts, Videos etc.
   iv Live Feeds

d) Content Management System

Content Management for Data Display Boards is to be managed both locally & Centrally. Hence, the supplier is requested to provide software for local (at CAAQMS) & Central content management (at CPCB & UPPCB). The central software should be capable to operate simultaneously at UPPCB and CPCB. There could be two different softwares at UPPCB & CPCB to manage contents of display boards of CAAQM Station & UpPCB Office.

Therefore, Display Board Data Transmission Device (DBDTD) should be capable to collect the content from local station, UPPCB Central Software and CPCB Central Software manually through scheduling procedure for different durations (Minutes, Hours, Days, Weeks, Months, Years etc.), zone-wise, state-wise, group-wise, device-wise, content-wise separately as there will be of different contents to be displayed at different locations.

The central software should have the capability of Remote machine status monitoring b management. It should be capable to provide on-screen display of remote display board (live screen of display board).

Establishing the required connectivity by using necessary devices (either through LAN, Wi-Fi, GSM etc.) between the DBDTD and CPCB & UPPCB to run the content seamlessly is within the scope of the supplier.

(viii) Remote Procedures (**if not available facility should be developed by the firm**)

i. Central software should have capability to allow to connect any station computer through remote.
ii. Central software administrator should be able to go for remote calibration of any of the systems.
iii. Software should be capable to operate remote stations configurations.
iv. Control panel window should be available for controlling each analyzer that means each analyser should be controllable separately through remote software being provided with the software system.
v. Alarm window for valid alarms of all analyzers and sensors.
vi. It should have transparent data – connection to each analyzer from remote.
vii. System should be capable to remotely configure all stations through remote location using configuration file to maintain the uniformity. The configuration command from central at UPPCB location should be active.

(ix) Data Reports Generation

a) To prepare reports hourly, weekly, monthly, yearly in user defined interval and formats.
b) Mean, Median, Percentile, Maximum, Standard deviation, Frequency analysis and Maximum Frequency analysis.
c) Data Comparison
   Software should be able to compare any of the four channels irrespective of type of data in the system with respect to each other on a single time scale user selectable.

d) Data Comparison on different time scale
Software should be able to compare data on the basis of different time scales like one station (x) parameter (y) of one given date is compared with other station (z) parameter (y) on any other date in a single graph.

e) Data reports, calibration reports and status reports with user time periods.

f) Historic multi – curves / graphs over user selectable time period.

g) Report generation over user selectable time period (instantaneous or averaged over a period of 1, 15, 30 min, 1 hr, 4, 8, 12, 16 and 24 hrs etc.).

h) Diurnal variation, standard deviation, regression and other statistical parameter reporting possibilities with various available mathematical methods.

i) If required separate report generation procedures have to be developed for which firm will be responsible for project duration.

j) Daily report from each station should be generated and sent through email for hourly data of each parameter (including meteorological parameters, diagnostics of instruments and calibration of instruments if performed during that day) automatically format for which can be mutually agreed upon.

k) Data should be downloadable in Excel Sheet, CSV format through user selection.

l) Provision should be there to use raw as well as validated data for generation of all types of graphics including windroses and pollution roses.

B. SECURITY

Software should be totally secured with protection against virus, malware etc. Security device like firewall for VPN Tunneling should be installed.

C. OTHER TECHNICAL CONDITIONS

Compatible Hardware required for data transmission through Data Display Connection Device has to be installed.
Should support the latest formats of Windows 32 bit or 64 bit. Any new patches developed or upgraded software during project duration should be provided without additional cost.
Manual of complete system should be provided.
Firm should provide the hardware required for data acquisition along with all the software's required like OS, Networking software, Remote functionality software and should maintain hardware and software for project duration.
All softwares like OS, Data Acquisition Software, Remote Calibration Software, Content Management Software etc. used for the entire project, should be either open source or with license. Copy of licenses should be provided to UPPCB/CPCB.

12. DISPLAY BOARD DATA TRANSMISSION DEVICE

S. N	Item Desc.	Specifications
1.	PROCESSOR	Intel® Corei5 equivalent Or Better
2.	Memory	6 GB, Memory slots for Micro SD or full size SD card slot with Memory support for at-least 8 GB
3.	Ports	a. One HDMI b. LAN Port for Ethernet Network Connection c. Minimum of 3 USB Port with support for USB 2.0 or USB 3.0.
4.	OS Support	Linux, or Windows OS
5.	Communication Options	a. LAN Communication b. Wifi Communication – Wifi Hotspot enabled/ GPRS Comm. Enabled

S. N	Item Desc.	Specifications
6.	Power Supply	5 to 12 V DC through 220 V 50Hz AC Supply adapter or USB driven.
7.	Size	Mechanical Chassis Size not to exceed 10'' x 6''x 6'' with stand alone tower/box.
8.	Operating Environment	Operating Temperature 0° C to +50° C Humidity upto 90%
9.	Device Support	05 Years
10.	Antivirus	It should be secured. If Windows, than licensed anti-virus should be there during the project duration.
11.	General	Supplier will configure and deploy the communication mechanism. Complete manual of the device should be provided.
12	Accessories	01 Meter HDMI Cable
13.	Internet	To be provided by the vendor either through GSM SIM or through Wifi Enabled Dongles.
14.	Display Board should show	Last data saved.
15.	Display board should show	Last updated time should be displayed
16	Software	The vendor is responsible to provide software which can download the data from Station computer, AQI, Advertisements etc. store it and display on the Display Board seamlessly.

13. DAY LIGHT & NIGHT VISIBLE TRUE COLOR DATA DISPLAY SYSTEM

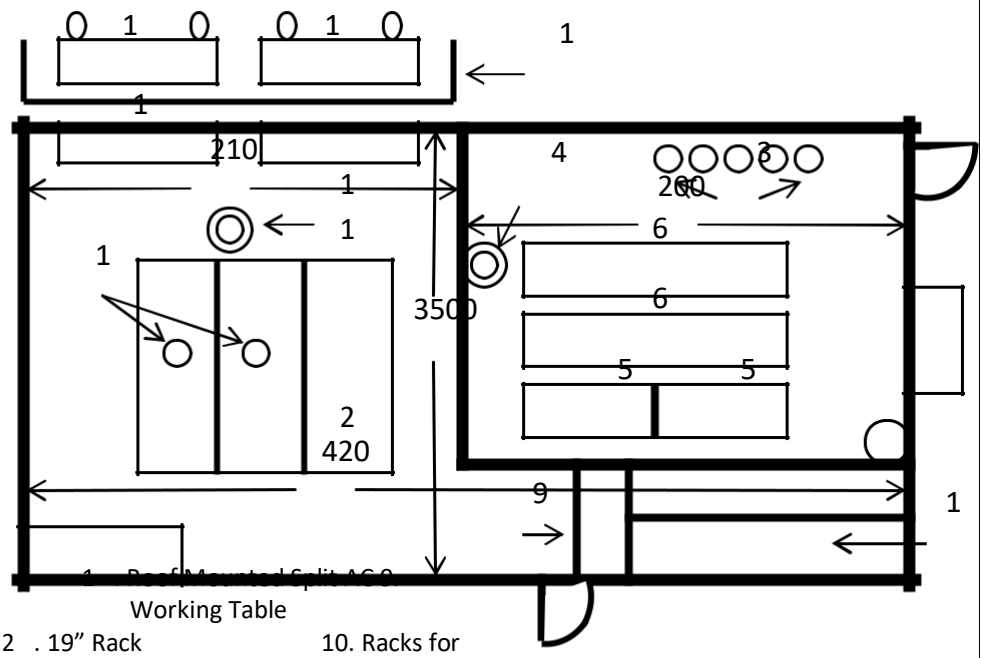
(A) LOCATION NEAR TO CAAQM STATION

1.	Size of Display System (H X W) feet and Pixel	4 X 8 feet , P6, 6mm (+/- 0.5 mm) pixel pitch,
2.	Visibility Range	~10 Meters (Day time)
3.	Brightness	7000 NIT or higher
4.	Display of Colour Elements	SMD 3535 or better
5.	Minimum Life span of the system	LED Life 100000 Hours
6.	Viewing angle	Viewing angle of 140^{o} Horizontal/140^{o} Vertical
7.	Operating and non operating Temperature	-15 to 55^{O} C
8.	No of Color	281 trillion Colors , 256 brightness level dimming capability
9.	Data processing	16 bit data processing, 100 % Digital
10.	Scan rate and refresh frequency	Scan Ratio 1:1 and with minimum 1920 Hz refresh frequency
11.	LED internal and External Cabinet type , Serviceability	Internal LED frame should be made of Aluminium and External cabinet should be factory made without pin holes , LED Display should be serviceable from front and back.
12.	Color Temperature - Adjustable	4500 - 9000 K range
13.	Input Power Requirement/ Consumption	220 V, 50/60Hz , Power consumption 200 W (maximum) / m^2

14.	Display Board Mounting	Structure based upon location. Uni-Pole (05 meters) arrangement or Handing is in the scope of supplier
15.	General	The system should also have the facility to display the environmental picture through video camera/vcr/cd player etc. for public awareness.
16.	Power Cable Laying	Depending upon location, cabling is to be done by the firm
17.	Device at Display Board to pick up data from stations and trnsmmit it to LED Display.	Display data connectivity device/system with GSM SIM has to be installed nearby LED board which will pick up data from station computer through Internet. LED to be placed away from through Internet .LED to be placed away from the station premises.
18.	Certification	BIS
19.	IP Rating	Display Module IP67, Cabinet IP 65

14. ANNEXURE

(A) Drawing of a CAAQM Station



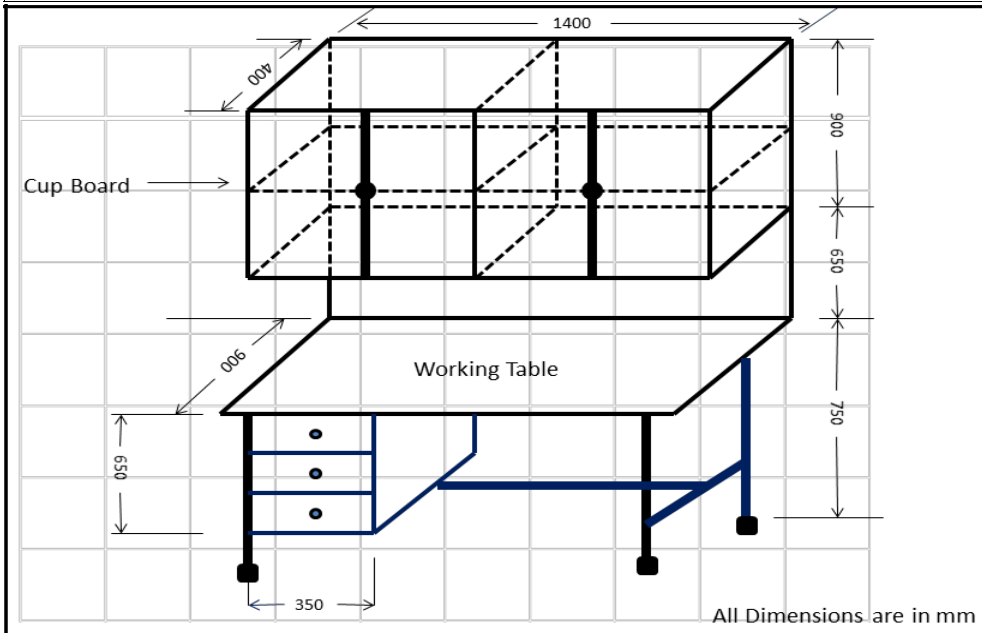
2 . 19" Rack spare parts

3 . Gas Bottles

10. Racks for

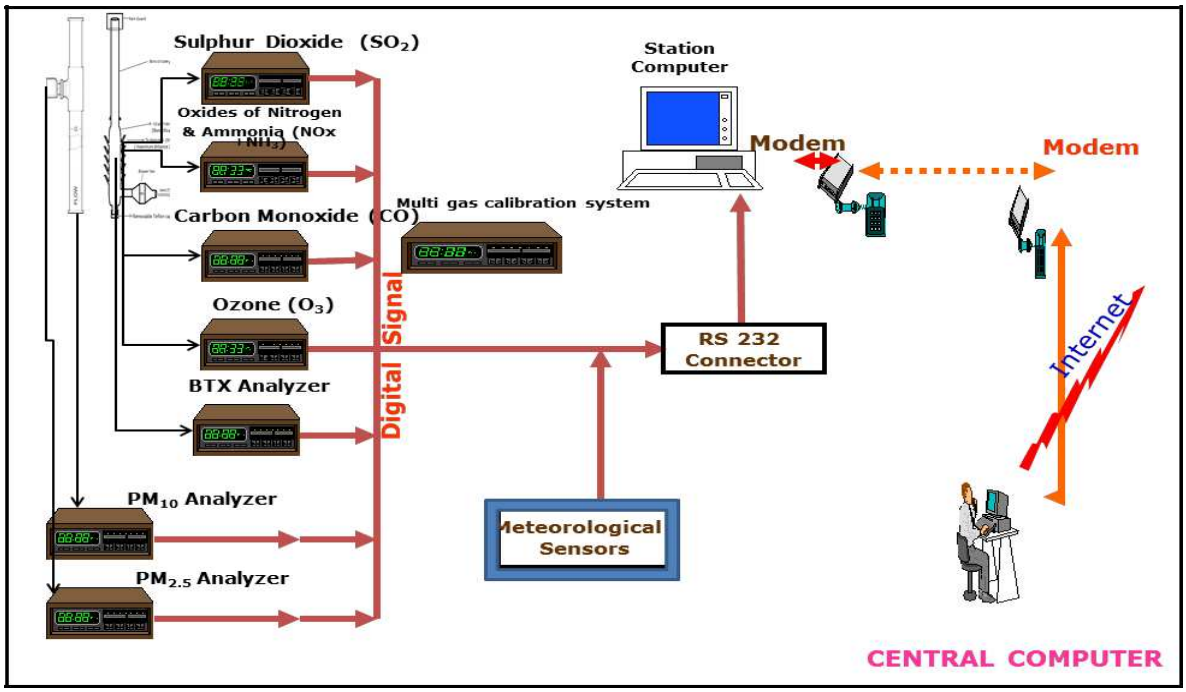
11. Ambient

Drawing of Continuous Ambient Air Quality Monitoring Station



Drawing of Cup Board and Working Table

3. Architecture of CAAQM System



(C) Protocol for Data Transmission from CAAQM Stations

Presently CPCB is operating NAQI network which uses this protocol mentioned below for the data collection at central server to generate NAQI which is made available to the public. The Instrument Supplier will have to generate the data output immediately after installing the CAAQMS at any location in this format so that station gets integrated into the existing system immediately.

However, the proposed procedure given in this document of data management through ISO 7168 format would be applied after proper system checks and setup. In parallel both systems will be operated for nearly six months and finally, ISO based system will be adopted for future data management from CAAQMS in the entire country.

1. Data Format

- Data file on real time basis having 15 minutes average values in a prescribed format attached at Annexure-I should be generated at the station for which Instrument Supplier is responsible.
- File should be updated after every 15 minutes.
- Data intervals like 00:15, 00:30, 00:45, 01:00 should be fixed at the station.

- Station file name should be exactly as the name of the station to be displayed on the web portal. i.e. Sanathnagar, NehruNagar. Here precaution is to be taken that no space between words should be given or no special characters should be used.

- File should be recorded in a folder c: \data \sanathnagardata.txt
- File should allow data appending sequentially.
- Date of last file record appended in the file should be recorded and data afterwards beplaced in the data file.
- File appending should continue subject to max 97 lines. First in First out mechanism shall be followed in keeping file size to 97 lines.
- Hence, in the specified folder c:\Data\ there will be a single file which will keep appending as per format attached.
- Duplicate entry of any data should not be made in the file.
- System should have capability to create previous record data file for which user will give the date. This is required to have lost data makeup in the final database, if any.

2. Data Mapping

- Protocol for each parameter is fixed as below:
    1. 15 Minutes average value will be provided by the operator of the CAAQMS
    2. Each UPPCB will have the parameter as mentioned in the table only. Not even a small gap or space is provided other than the mentioned table is acceptable.

3.Standard Parameter Naming Protocol and Conversion factors Table

Parameters Name	**Parameter Abbreviations**	**Unit**	**Conversion factors at 25°C**
Rack Temperature	Temp	°C	
Carbon Monoxide	CO	mg/m3	1ppm=1.145mg/m3
Sulphur Dioxide	SO2	µg /m3	1ppb=2.62 µg/m3
Nitric Oxide	NO	µg /m3	1ppb=1.23 µg/m3
Nitrogen dioxide	NO2	µg /m3	1ppb=1.88 µg/m3
Oxides of Nitrogen	NOx	Ppb	--
Ozone	Ozone	µg /m3	1ppb=1.96 µg/m3
Particulate Matter less than	PMio	µg /rn3	--
10 Micron size			
Wind Speed	WS	m/s	--
Wind Direction	WD	Deg	--
Ambient Temperature	AT	°C	--
Relative Humidity	RH	%	--
Barometric Pressure	BP	mmHg	--
Solar Radiation	SR	W/mt2	--
Rain Fall	RF	Mm	--
Vertical Wind Speed	VWS	Degree	--
Particulate Matter less than 2.5 micron size	PM2.5	µg /m3	--
Benzene	Benzene	µg /m3	1ppb=3.19 µg/m3
Toluene	Toluene	µg /m3	1ppb=3.77 µg/m3

Xylene	Xylene	µg /m3	1ppb=4.34 µg/m3
Ethyl Benzene	Eth-Benzene		1ppb=4.34 µg/m3
M+P_Xylene	MP-Xylene		1ppb=4.34 µg/m3
Methane	CH4	µg /m3	1ppb=0.65 µg/m3
Ammonia	NH3	µg /m3	1ppb=0.70 µg/m3
Formaldehyde	HCHO	µg /m3	1ppb=1.23 µg/m3
Mercury	Hg	µg/m3	1ppb=8.20 µg/m3

Note: 1. Any other parameter can be added with the prior approval of IT Division ONLY.

4. Internet Connectivity

- Internet connectivity should be available on 24X7 basis for data transmission with an uptime of 99.9%. For this purpose every CAAQM station should have two kinds of connection:
  - i) Leased Line Circuit of at least 01 Mbps capacity
  - ii) Broad Band connectivity through telephone line. Both facilities should be configured in ready to use condition. If possible auto failover should be created.

Note: Connectivity through Data card is not acceptable except in any special circumstances, where both of these types of connectivity's are not available. For such case CPCB IT Division shall be consulted before taking a final decision.

5. Other Information:

a. Area Map showing station location
b. Latitude, Longitude and altitude of the station
c. Photo of station along with nearby areas
   i. One page write-up about the station activities in the vicinity of station including major pollution sources like nearby road, rail, restaurants, generator sets, etc.

Annexure — I

File Name: sanathnagar

1,2,3,4,5,6,7,8,
Station name, Parameter, Date from, Date to, Value, calibrationflag, maint flag, Remark,
Sanathnagar,CO,27-04-2015 13:00,27-04-2015 13:15,0.2497,0,0,analyserfaulty,
Sanathnagar,C0,27-04-2015 13:15,27-04-2015 13:30,0.2470,0,0,analyserfaulty,
Sanathnagar,C0,27-04-2015 13:30,27-04-2015 13:45,0.2470,0,0,analyserfaulty,
Sanathnagar,C0,27-04-2015 13:45,27-04-2015 14:00,0.2470,0,0,analyserfaulty,
Sanathnagar,Ozone,27-04-2015 13:00,27-04-2015 13:15,59.6710,0,0,flowproblem,
Sanathnagar,Ozone,27-04-2015 13:15,27-04-2015 13:30,59.5960,0,0,analyserfaulty,
Sanathnagar,Ozone,27-04-2015 13:30,27-04-2015 13:45,59.5960,0,0,analyserfaulty,
Sanathnagar,Ozone,27-04-2015 13:45,27-04-2015 14:00,59.5960,0,0,analyserfaulty,
Sanathnagar,N0,27-04-2015 13:00,27-04-2015 13:15,0.5922,0,0,analyserfaulty,
Sanathnagar,N0,27-04-2015 13:15,27-04-2015 13:30,0.4435,0,0,0,
Sanathnagar,N0,27-04-2015 13:30,27-04-2015 13:45,0.4435,0,0,0,
Sanathnagar,N0,27-04-2015 13:45,27-04-2015 14:00,0.4435,0,0,0,
Sanathnagar,So2,27-04-2015 13:00,27-04-2015 13:15,3.5233,0,0,0,
Sanathnagar,So2,27-04-2015 13:15,27-04-2015 13:30,3.7278,0,0,0,
Sanathnagar,So2,27-04-2015 13:30,27-04-2015 13:45,3.5233,0,0,0,
Sanathnagar,So2,27-04-2015 13:45,27-04-2015 14:00,3.7278,0,0,0,
Sanathnagar,RT,27-04-2015 13:15,27-04-2015 13:30,33.2260,0,0,0,
Sanathnagar,RT,27-04-2015 13:30,27-04-2015 13:45,33.2240,0,0,0,
Sanathnagar,AT,27-04-2015 13:45,27-04-2015 14:00,33.0960,0,0,0,
Sanathnagar,AT,27-04-2015 14:15,27-04-2015 14:30,33.3740,0,0,0,
Sanathnagar,RH,27-04-2015 13:15,27-04-2015 13:30,41.3080,0,0,0,
Sanathnagar,PM10,27-04-2015 13:15,27-04-2015 13:30,30.3000,0,1,analyserfaulty,
Sanathnagar,PM10,27-04-2015 13:30,27-04-2015 13:45,30.3000,1,0,analyserfaulty,

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Please note:

Here 0-zero stand for normal operation of instruments in **calibration flag status**

1-Stands for calibration mode ON and data will not be considered for averaging purpose.
Same is true for Maintenance mode where 0-normal and 1 maintenance mode ON

References:

1 Technical Handbook for Installation, Maintenance, Calibration, Data Connectivity and Data Quality Check of Continuous Ambient Air Quality Monitoring System (Real Time)

2 Guidelines for the Measurement of Ambient Air Pollutants, Volume-II

3 National Ambient Air Quality Standards (2009)