

National Mission for Clean Ganga

Department of Water Resources, River Development & Ganga Rejuvenation

Ministry of Jal Shakti

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Request for Proposal for Empanelment of potential supplier for Supply, Installation and Commissioning of Online Continuous Effluent Monitoring System (OCEMS) Instruments with 5 Years of Operation and Maintenance

[Monitoring Parameters: Measurement of Flow, pH, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Total Suspended Solids (TSS)]
Category-II

RFP No. : TE-15015/2/2020-TECH- II

Issued on : 15th September 2021

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RFP No.: TE-15015/2/2020-TECH-II

Dated: September 14, 2021

I. NOTICE INVITING TENDER (NIT)

NMCG inviting proposals through Central Public Procurement Portal (<https://eprocure.gov.in/eprocure/app>) from interested firms who meet the eligibility criteria as per the Request for Proposal (RFP) document for Supply, Installation and Commissioning of Online Continuous Effluent Monitoring System (OCEMS) Instruments with 5 Years of Operation and Maintenance.

The interested bidders should submit The proposals along with the necessary documents have to be submitted only on e-procurement portal as stipulated in in the RFP document.

Bidders shall submit as part of its Proposal, a 'Bid Security Declaration Form' in the form and manner specified in the RFP document.

For detailed eligibility criteria and terms of reference, please refer to the Request for Proposal (RFP) documents which can be downloaded from NMCG Website (www.nmcg.nic.in) and e-procurement portal (<https://eprocure.gov.in/eprocure/app>) as per the schedule mentioned above.

NMCG reserves the right to cancel the bid at any time or amend / withdraw any of the terms and conditions contained in the Bid Document without assigning any reason thereof.

**Director General
National Mission for Clean Ganga**

II. INSTRUCTIONS TO BIDDERS

1. **Cost of Bid:** The bidder shall bear all costs associated with the preparation and submission of bid and NMCG in no case shall be responsible or liable for those costs, regardless of the conduct or outcome of the tender process.
2. The bidder is expected to examine all instructions, forms, terms and conditions in the RFP document. Failure to furnish all information required by the RFP document or submission of a tender not substantially responsive to the RFP document in every respect will be at the bidder's risk and may result in rejection of the bid.
3. The bidder shall not make or cause to be made by any alternation, erasure or obliteration to the text of the RFP document.
4. The bidder shall be a Single Entity. Joint Venture/ Consortium of entities is not allowed.
5. **Preparation of Bids**
 - 5.1 **Language:** Bids and all accompanying document shall be in English language. In case any accompanying documents are in other languages, it shall be accompanied by an English Translation. The English version shall prevail in matters of interpretation.
 - 5.2 **Form of Bid:** The form of bid shall be completed in all respects and duly signed and stamped by an authorized representative of the Bidder. Relevant power of attorney for signing the bid should be attached.
 - 5.3 **Currencies of Bid and Payment:** The bidder shall submit his financial bid in Indian Rupees and payment under this contract will be made in Indian Rupees.
6. **Clarifications by Bidders**
 - 6.1 Bidders requiring any clarification on the RFP may submit their queries to the NMCG through e-procurement portal before the date mentioned in the Schedule of Bidding Process at Clause 17.
 - 6.2 NMCG shall endeavour to respond to the queries within the period specified therein but not later than the date specified in the clause 17. The NMCG will post the reply to all such queries on the e-procurement portal and without identifying the source of queries. NMCG shall not be held responsible in any manner if prospective Bidders miss any notifications placed on e-procurement Portal.
 - 6.3 NMCG reserves the right not to respond to any questions or provide any clarifications, in its sole discretion, and nothing in this Clause 6 shall be construed as obliging the NMCG to respond to any question or to provide any clarification.
7. **Amendment of RFP**
 - 7.1 At any time prior to the deadline for submission of Proposal, the NMCG may, for any reason, whether at its own initiative or in response to clarifications requested by an Bidder, modify the RFP document by the issuance of Addendum/ Amendment and posting it on e-procurement portal.

7.2 In order to afford the Bidders a reasonable time for taking an amendment into account, or for any other reason, the NMCG may, in its sole discretion, extend the Proposal Due Date.

8. Pre-Proposal Meeting

8.1 To clarify and discuss issues with respect to the Project and the RFP Document, a Pre-Proposal meeting (“Pre-Proposal Meeting”) will be conducted virtually on the date and time specified in Clause 17. The advisory along with details of meeting link will be uploaded two days prior to the meeting date.

8.2 Attendance of the Bidders at the Pre-Proposal Meeting is not mandatory. NMCG will endeavor to respond to all queries received by the scheduled date as per clause 17 from all Bidders, irrespective of attendance of the Bidder in the Pre-Proposal Meeting.

9. Format and Signing of Bid

9.1 The documents comprising the bid shall be typed and all pages of the bid shall be signed by a person duly authorised to sign on behalf of the bidder. At the time of uploading, the Proposals shall be digitally signed by the bidder or a person or persons duly authorised to bind the bidder to the contract

9.2 The bid shall contain no alternations, omissions or additions except those to comply with instruction issued by NMCG, or are necessary to correct errors made by the bidder, in which case such corrections shall be initialled/signed by the person signing the bid.

10. Submission of Bids

10.1 The Bidders shall upload the electronic copy of the Proposal (with all pages numbered serially and by giving an index of submissions) through e-procurement portal after digitally signing of all the documents.

10.2 The Bidder shall upload the Technical Proposal and the Financial Proposal separately by using the appropriate sections on e-procurement portal.

10.3 NMCG, if required, will request the Bidder to submit the hard copy of original Bid Securing Declaration and Power of Attorney for scrutiny.

10.4 The Proposal shall be made in the Forms specified in this RFP. Any attachment to such Forms must be provided on separate sheets of paper and only information that is directly relevant should be provided. This may include photocopies of the relevant pages of printed documents. No separate documents like printed annual statements, company brochures, copy of contracts etc. will be entertained.

10.5 The rates quoted shall be firm throughout the period of performance of the assignment and discharge of all obligations of the agency under the Agreement.

10.6 **Validity of Bid:** The bid must remain valid and open for acceptance for a period of 180 [One Hundred and Eighty Days] from the date of opening of Bid.

11. **Late and Delayed Bids:**

Bidders are encouraged to submit their proposals online well in advance before the prescribed due date and time to avoid any delay or problem during the bid submission process. The Tender Inviting Authority will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders due to link failure/ internet problem etc.

12. **Opening and Evaluation of Technical Bid**

12.1 The electronic "Technical Proposals" shall be opened first, through e-procurement portal on the date and time specified in clause 17. The "Financial Proposals" shall remain unopened in the e-procurement portal, until the subsequent public opening following the evaluation of the Technical Proposals.

12.2 The Technical Bid of the bidder would be evaluated as per the eligibility criteria set out in the RFP document. Bids will be evaluated based on the information submitted by the bidders. However, NMCG reserves the right to seek clarification/documents from the bidders, if NMCG considers it necessary for proper assessment of the bid.

12.3 The Technical Bids will be evaluated based on eligibility criteria and only those Bidders who meet the requirement shall qualify for further evaluation.

13. **Opening of Financial Bid and Final Evaluation**

13.1 The electronic "Financial Proposals" of the technically qualified bidders shall be opened, through e-procurement portal on the date and time specified.

13.2 **The selection of the bidder shall be based on Least Cost Selection method.**

13.3 Failure of the Successful Bidder to comply with the requirements shall constitute sufficient grounds for the annulment of the LOA. In such an event, NMCG reserves the right to,
(a) invite the second lowest bidder and negotiate upon the following scenario, or
(b) take any such measure as may be deemed fit in the sole discretion of NMCG, including annulment of the Bidding Process.

13.4 NMCG shall empanel those suppliers those who has quoted the lowest price for a given item will be selected for that product.

13.5 The Empanelment will be valid for a minimum period of ONE YEAR, which could be extended for two more years based on satisfactory performance of the firm/company, on mutual consent, on the same rates or revised rates, terms and conditions on completion

of every year. However, NMCG reserves the right and has sole discretion to reject the lowest evaluated bid.

13.6 The Prices offered shall be valid for one year from date of award of Contract, and the agency / firm has to supply the goods with same discount rate throughout contract period irrespective of change of price schedules. There will be no additional charges for Delivery. The Delivery will be FOR on Free of Cost basis. The companies which cannot provide validity of rates for One Year and price list need not to apply

13.7 If more than one bidder happens to quote the same lowest price, NMCG reserves the right to decide the criteria and further process for Empanelment, decision of NMCG shall be final for Empanelment.

14. **Right to accept any Bid and to reject any or all Bids**

14.1 NMCG is not bound to accept the lowest bid or any bid and may at any time by giving notice in writing terminate the tendering process.

14.2 NMCG may terminate the contract/cancel the LOA if it is found that the bidder is blacklisted on previous occasions by any of the central/state government ministry/ department/ institutions/local bodies/municipalities/PSUs, etc.

14.3 NMCG may also terminate the contract/cancel the LOA in the event the Successful Bidder fails to furnish the performance security or fails to execute the agreement.

15. **Award of Contract**

15.1 NMCG will award the contract to the Successful Bidder to perform the contract satisfactorily as per the terms and conditions incorporated in the RFP document.

15.2 NMCG will communicate the Successful Bidder by Mail confirmed by letter transmitted by registered/speed post that his bid has been accepted. This letter (hereinafter and in the condition of contract called the "Letter of Award") shall prescribe the amount which NMCG will pay to the Successful Bidder in consideration of the execution of work/services by them as prescribed in the contract.

15.3 The Successful Bidder will be required to commence the assignment at the earliest as communicated by NMCG in this regard.

15.4 The Successful Bidder will be required to execute the contract for the services within a period of fifteen (15) days from the date of issue of Letter of Award.

16. **Bid Security and Performance Security**

16.1 Bid Security

The Bidder shall furnish as part of its Proposal, 'Bid Securing Declaration Form' as per the format stipulated in the RFP document.

16.2 Performance Security

The Successful Bidder shall be required to furnish a Performance Security prior to sign the contract (for an amount which is 3% of total project cost) in the form of Bank Guarantee from a scheduled Bank in acceptable form in favour of 'National Mission for Clean Ganga' payable at New Delhi. The Performance Security shall remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations. In case the contract period is extended further, the validity of Performance Security shall also be extended by the Successful Bidder accordingly. The format for BG for Bid Security is provided at Annexure-IX.

Failure of the Successful Bidder to comply with the requirements of above clauses shall constitute sufficient grounds for the annulment of the award and other actions as deemed necessary.

17. Schedule of Bidding Process

NMCG would endeavour to adhere to the following schedule:

S.No.	Event Description	Date and Time
1.	RFP Publish date	15 th September 2021
2.	RFP download start date	15 th September 2021 from 17:00 Hrs.
3.	Clarification start date	15 th September 2021 from 18:00 Hrs.
4.	Clarification end date and time	23 rd September 2021 at 18:00 Hrs.
5.	Pre-Bid Conference by Virtual Meeting Platform	23 rd September 2021 at 12:00 Hrs.
6.	NMCG response to queries	4 th October 2021
7.	Bid Submission Start Date & Time	11 th October 2021 at 11:00 Hrs.
8.	Bid Submission end date & time	20 th October 2021 upto 12:00 Hrs.
9.	Last date & time for downloading the RFP	20 th October 2021 upto 12:00 Hrs.
10.	Last date & time for submission (upload) of online bidding document (Proposal Due Date or PDD)	20 th October 2021 upto 12:00 Hrs.
11.	Opening of Technical Proposals through e-procurement portal	20 th October 2021 at 12:30 Hrs.
12.	Opening of Financial Proposal through e-procurement portal	To be informed later
13.	Signing of Agreement	Within 15 days of acceptance of LoA
14.	Validity of Proposal	180 days from Proposal Due Date

III. ELIGIBILITY AND EVALUATION CRITERIA

Technical

1. Having successfully completed the work for “**Online Data Acquisition, Monitoring & Control System through Local & Remote Terminals, based on GSM/WiFi or any other suitable System, including Supply of Field Instruments, for a minimum of 20 nos S.T.Ps / E.T.Ps**” under any Govt. ,Semi Govt., Govt. Undertaking body, within last five years and having a satisfactory performance certificate not less than 12 months old from the user body. (Performance certificate submitted should be signed from the end user by an officer not below the rank of Executive Engineer, is **mandatory**).
2. Authorization from O.E.M indicating the Tender No, if the bidder is not a O.E.M.
3. The Bidder/ Bidders’ Manufacturer should have supplied, installed & Commissioned Real Time Sewage Water Quality Monitoring System for stations with minimum 5 water quality Parameters.
4. Bidder or OEM should be directly operational in India minimum last 5 years from the N.I.T. date. with office set up in India.
5. The tenderer shall meet the requirements as mentioned in technical specification (Submit the product literature, catalogues/brochures for all the sensors, Servers, Solar panel (If applicable), software and Hardware as requested in the tender documents).
6. The tenderer must comply each and every point of CPCB SOP https://cpcb.nic.in/NGTMC/sop_ocems_stp.pdf as per latest guidelines and it will be tenderer’s responsibility to comply all SOP points during commissioning and Operation & Maintenance of OCEMS system.
7. The printed literature and catalogue/brochure giving full technical details should be included with the technical bid to verify the specifications quoted in the tender. The bidders should submit copies of suitable documents in support of their reputation, credentials and past performance in .pdf format.
8. The bidder should provide a complete list of spares and consumables required for 05 (five) years for trouble free operation and maintenance of the instrument and a certificate to be given by manufacturer that spare parts will be made available for five years.

Financial

9. The Minimum required annual turnover in respect of Procurement of Supply, Installation, and commissioning of goods for the successful Bidder/ Bidders’ Manufacturer in the last three (3) years shall be minimum **INR 10 Crore (Ten Crore)**.

10. Audited Balance Sheets of last five financial years with auditor's certificate regarding annual turnover from contracting business in each year.
(If the company was set up less than three years ago, audited balance sheet for the no of years since inception is to be submitted)
11. Profit/Loss A/c for last five financial years out of which the company should not be in loss more than 2 financial years.
12. Valid GST registration and clearance certificate (If applicable), Professional Tax. Clearance certificate, Income Tax Return for last three financial years with "Pan Card" & Trade License.
13. A written declaration in the form of the affidavit before the Notary as to correctness of the copies of all documents submitted and a declaration whether penalty/debarment etc. had been faced or not under any Govt./Semi Govt./Autonomous Body/Institution etc.

My Document (Non-Statutory Cover) containing

• **Certificates:**

1. Credential with completion certificates within last Five years under any Govt/Semi Govt. /Statutory or Local Bodies for successful completion of the work for "**Online Data Acquisition, Monitoring & Control System through Local & Remote Terminals, based on GSM/WiFi or any other suitable System, including Supply of Field Instruments, for a minimum of 20 nos S.T.Ps / E.T.Ps**" having value not less than 40% of the quoted rate with a performance certificate not less than 12 months old from the user body.

Or

As stated in Eligibility for Participation,

• **Company Details**

1. Registered Deed for Partnership Firm
2. Trade License for Proprietorship Firms.
3. Memorandum and Articles of Association for Limited Companies
4. Society Registration and Bye-Laws for Cooperative Societies.

- The bidder should not have record of poor performance or they should not have been blacklisted by any employer during the last five years prior to the date of the NIT. Such abandonment or punishment will be considered as disqualification towards eligibility. A declaration in this respect through affidavit has to be furnished by the prospective bidders.

• **Completion Certificate:**

- i. Completion Certificates for fully completed works during the last five financial years will only be accepted. Certificates issued for partly completed works if valued more than estimated cost of this tender will also be considered.

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- ii. Completion Certificate of work executed in NMCG will be considered. Completion Certificate of works executed in other Departments of Central/ State Government or Govt. undertaken organizations, may also be considered. Such Completion Certificates are to be issued by an officer not below the rank of Executive Engineer of above stated departments.

IV. TECHNICAL SPECIFICATION OF THE PROPOSED OCEMS SYSTEM

Monitoring Parameters: Flow, pH, Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), Biological Oxygen Demand (BOD), Total Nitrogen (TN) (as Nitrates & Nitrites) & Total Phosphorus (TP) etc. and provision for input data of the measurement of Fecal Coliform

The specification of the Controllers, Probes/Sensors, Server for centralized data connectivity for the OCEMS, Calibration of OCEMS, OCEMS Function check, Continuous Validation of OCEMS shall strictly be in compliance with the latest “Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)” & “S.O.P. Version 1.0”, issued by CPCB.

Some salient features of the equipment are as follows: - (The specifications given below are indicative and not exhaustive. The tenderer has to consider all technical aspect of the equipment to comply the latest Guidelines & S.O.P. issued by CPCB.)

1. Original Equipment Manufacture Qualification Criteria:

Sr. No	Item	Description of Requirement
1	Bidder or OEM Office	Bidder or OEM should be directly operational in India since last 2 years from the bid calling date.
2	OEM Company Certificates	TUV/USEPA/EPA/MCERTS

2. Technical Specifications and Salient Features Regarding Online Water Quality Monitoring System.

- i. Should be capable of operating unattended over prolonged period of time.
- ii. System should be UV-Visible double beam spectrometry.
- iii. System should have multipoint calibration facility.
- iv. System should be complied as per latest CPCB Direction.
- v. System should be complied new SOP published by CPCB.
- vi. Should produce analytically valid results with precision and repeatability.
- vii. The instrument/Analyzer should be robust and rugged, for optimal operation under extreme environmental conditions, while maintaining its calibrated status.
- viii. The Analyzer should have inbuilt features for automatic water matrix change adaption.
- ix. The instrument / Analyzer should have onboard library of calibration spectras for different industrial matrices with provision of accumulating further calibration matrices.
- x. Should have data validation facility with features to transmit raw and validated data to NMCG central server.

- xi. Should have Remote system access from NMCG central server provisioning log file access.
- xii. Should have provision for Multi-server data transmission from each station without intermediate PC or plant server.
- xiii. Should have provision to send system alarm to NMCG central server in case any changes made in configuration or calibration.
- xiv. Should have provision to record all operation information in log file.
- xv. For each parameter there should be provision for independent analysis, validation, calibration & data transmission.
- xvi. Must have provision of a system memory (non-volatile) to record data for at-least one year of continuous operation.
- xvii. Should have provision of Plant level data viewing and retrieval with selection of Ethernet, wireless, Modbus & USB.
- xviii. The correlation/interpretation factor for estimating COD and BOD using UV-Visible Absorption Technique shall be regularly authenticated/ validated and details provided.
- xix. Record of calibration and validation should be available on real time basis on NMCG central server from each location/parameter.
- xx. Record of online diagnostic features including sensor status should be available in database for user friendly maintenance.
- xxi. Expandable program to calculate parameter load daily, weekly or monthly basis for future evaluation with flow rate signal input.
- xxii. Must have low operation and maintenance requirements with low chemical consumption and recurring cost of consumables and spares.
- xxiii. System must support visualization of parameters data onboard which is real time and records on real time basis. The parameter files recorded on data logger of 4GB are non-editable to safeguard authenticity of parameters.
- xxiv. Sensor should be operational in high Chloride applications.
- xxv. Sensor integrated cable should be with IP68 rating and specially designed for submerged installations.
- xxvi. MOC of Sensor should be SS316L with compressed air cleaning facility.
- xxvii. Sensor must measure full spectrum scanning for each parameter at specific bands of multiple wavelengths and provides sum parameter for COD, BOD, TSS, pH, TN, TP parameters.
- xxviii. Extended life of xenon flash lamp in spectrophotometric sensor with minimum 1019 flashes should be available.
- xxix. All the remote stations should be operational in a real time mode and NMCG central station should be able to access any remote station.
- xxx. The remote stations should be field operational and tolerant to extreme environmental conditions in India, in high or low temperatures, high humidity coastal conditions and high temperature.

- xxxi. The communication between Remote and NMCG Central Receiving station must be two-way communication system utilizing GPRS.
- xxxii. Remote station should have built in GPS receiver for automatic position determination.
- xxxiii. NMCG Central Receiving station must have the capability to remotely configure all remote stations.
- xxxiv. Multiple Component Analysis with Pattern Recognition & Library of Effluent Matrix Variant.
- xxxv. Multiple Component analysis with Multi- Point Calibration for Total COD, BOD, TSS etc.
- xxxvi. Individual parameter method analysis, Individual Calibration, Individual Validation without any coefficient calculation from one parameter to another.
- xxxvii. Automatic Sampling during calibration as per published CPCB SOP must be featured as integral part of OCEMS and every sample collection automatic real time monitoring must be part of data submission to NMCG and other agency with sample collection tag number and sample collection timeline. The sample must be collected as per USEPA compliance and document in this direction must be submitted by bidder.
- xxxviii. Online data acquisition, monitoring & control system through local & remote terminals, based on GSM/WiFi or any other suitable System, including Supply of Field Instruments for the Sewage Treatment Plants.

2.1. Additional Technical Points:

- i. System should work on wavelength of 200-750nm and all analyses should have independent values.
- ii. System should have UV Visible dual beam technology.
- iii. System must have Automatic File Transfer features.
- iv. Automatic Sampling for laboratory measurement Feature Onboard.
- v. PLC Based basic features for process control to comply regulatory guidelines.
- vi. Probes and stations must be accessible remotely from any suitable device from any standard web browser e.g. via PC, Tablet, Notebook or Smart Phone.
- vii. System must have Impressive real-time zoomable, scrollable graphical visualization of all historical data including 3D-optical spectra.
- viii. System must have optimal display readability with Classic-, Day- and Night-Mode.
- ix. Quality controlled and documented status management of probes and stations must be available to eliminate the need for paper log books.
- x. Analyzer must provide self-adaptive, self-controlled data validation in real time.
- xi. It must ensure both sensitive and reliable alarm limits respectively setpoints for process control.
- xii. Analyzer System must analyze noise, outliers and other combinations in real time to reliably detect any malfunction at an early stage.
- xiii. Analyzer System must help to dramatically reduce false alarm rates.

- xiv. Analyzer System must have configurable auto-correction of data based on threshold, outlier and noise analysis.
- xv. Analyzer System must have unmatched event detection tools based on proven algorithms for real-time event detection that use data streams from all connected probes separately and in combination.
- xvi. Analyzer System must have capability of exploiting the enormous information contained in UV spectra which provide the most sensitive and stable data source for event detection.
- xvii. Analyzer System must be optimized for use of multi-dimensional spectral data
Analyzer System must have configurable auto-correction of data based on threshold, outlier and noise analysis.

3. Sensors shall meet following specifications:

Spectrometry Based multi-parameter probe:

- i. No parts to be replaced within 3 years, no consumables required.
- ii. System should have built-in spectral information for Sewage Water Quality data.
- iii. No sample preparation required.
- iv. Sensor shall be submersible in open channels or tanks.
- v. No moving parts in contact with Sewage water.
- vi. Auto compensation of potential interference by turbidity/solids.
- vii. Connection to Data Logger via IP68 connector.
- viii. Auto diagnostic features.

3.1. Minimum specification for pH Sensor

Parameter	Specification
Basic Requirement	<p><u>pH Sensor Specifications:</u></p> <ul style="list-style-type: none"> • Integrated temperature measurement and compensation should be provided in the pH sensor. • The pH sensor should have galvanically separated input. • Calibration history should be stored automatically in the sensor. • Field Sensor calibration • Signal Output – Digital • Sensor Check function/Diagnostics should be available in the pH sensor • protection type: IP 68 for both Sensor and Cable
Measuring Range	<ul style="list-style-type: none"> • Measuring Range: pH: 0 - 12 (Sensor should be designed for wastewater application) • Measuring: 0 to 60 Deg C

Parameter	Specification
Measuring Principle	ISE - Potentiometric -combined, non-porous reference electrode
Sensor Cable	Integrated 15-meter cable (minimum) with arrangement to increase length as per site conditions
Operating Temperature	Temp Compensation: 0 to +60 Deg C
Material of construction of sensor	The MOC must be SS316L / Titanium or equivalent to sustain the sensor in Sewage wastewater application.
Calibration	Calibrate pH meter with Certified (having international traceability) Buffer solutions of pH 4, 7, 9.2 & 10. Perform at-least two-point calibration within the expected range of the pH in the plant. For example, if pH is expected to be 7.8 then perform two points calibration with pH 7 and 9.2.
Certifications	TUV/MCERT/USEPA
Reagent Free	The pH combination electrodes should require very little maintenance and there should be no electrolyte replacement.
Voltage Protection	Transient Voltage Protection should be integrated in the sensor
Accuracy	≤ 0.1 units of pH certified reference standard
Resolution	≤ 0.01 units of pH
Response Time	≤ 30 seconds
Method of Measurement	Potentiometric-Automatic compensation of Temperature
Cleaning	Automatic cleaning
Operating Humidity	5 to 95% non-condensing
Interface connection to display	sys plug (IP 67), RS485
Power	12 VDC Nominal
Protection Class	IP68 for sensor and IP 67 for Transmitter
Operating Pressure	0... 400mbar
Signal output	Compatible with Data Acquisition System
Transmitter output	Default: 2 X 4-20 mA Additional optional: MODBUS RS485, HART, PROFIBUS.
Transmitter Mounting	Pole/wall mounted
Display	Colour TFT LCD 640X480 pixels with LED backlight
Diagnosics features	System diagnostics: power shutdown, sensor failure, data transmission failure.
	Parameter diagnostics: Calibration timeframe, calibration drift alert
	High/low parameter permissible thresholds limit diagnostic
	Maintenance and calibration schedule diagnostics
Enclosure Material	Stainless Steel with epoxy coating for Analyser

Parameter	Specification
Calibration frequency	Once after every 2 weeks
Tag plate	SS Tag plate

3.2. Specifications for Biochemical Oxygen Demand (BOD) sensor

Parameter	Specification
Basic Requirement	<p>Continuous Effluent Monitoring of BOD, COD, TSS with UV-Vis Full Spectrum dual beam technology</p> <ul style="list-style-type: none"> • System should work on wavelength of 200-750nm as per the CPCB guidelines and all analyses should have independent values. • System should have spectrophotometric probe made of SS316L/Titanium or equivalent. • Multi Parameter probe ideal for monitoring of BOD/COD/TSS in Municipal Wastewater. • The Sensor should have optimized function check referencing for excellent zero point and long-term stability. • The Sensor should provide compensation of interferences by evaluation of the whole measured spectrum. • System should be UV-Visible double beam spectrometry • System should have unlimited multipoint calibration facility as per CPCB SOP published on CPCB website in July 2020 • System should be complied as per latest CPCB Direction, SOP & Guidelines. • Should produce analytically valid results with precision and repeatability. • The instrument/Analyzer should be robust and rugged, for optimal operation under extreme environmental conditions, while maintaining its calibrated status. • The Analyzer should have inbuilt features for automatic water matrix change adaption. • The instrument / Analyzer should have onboard library of calibration spectras for different industrial matrices with provision of accumulating further calibration matrices. • For each parameter there should be provision for independent analysis, validation, Independent parameter calibration & data transmission.

Parameter	Specification
	<ul style="list-style-type: none"> Sensor integrated cable should be with IP68 rating and specially designed for submerged installations.
Measuring Range	0 - 200 mg/L(with possibility to check higher ranges)
Accuracy	+/- 2.0 % in reference solution. +/- 10% of Parameter value with reference to certified laboratory results or as per latest reference of published CPCB SOP/Guidelines, whichever is less.
Reagent & Consumables Free	<ul style="list-style-type: none"> The Sensor should not use any reagents and should be easy to use and operate without any running costs. The sensor should completely be reagent free for operation.
Measuring Principle	UV-Visible is double Beam Spectrophotometry with multipoint calibration from wavelength 200 – 750 nm, as per the CPCB Guideline, xenon flash lamp, 256 photo diodes, two beam measurement, complete spectrum
Measurement	Must be direct In-Situ/Submersible measurement in Outlet or Inlet of wastewater treatment plant
Operating Temperature	Operating temperature: -4°C to +50 °C; Storage temperature: -20 °C to +60 °C
MOC	The MOC must be SS316L / Titanium or equivalent to sustain the sensor in Sewage wastewater application.
Light Source	Must emit UV and Vis wavelength of light.
Sensor Cable	Integrated 15-meter cable (minimum) with arrangement to increase length as per site conditions
Inbuilt Cleaning	The sensor must have automatic mechanical cleaning facility with integrated system for cleaning at a predefined interval. Chemical cleaning is not recommended.
Calibration	Multipoint calibration for each spectrophotometric parameter
Protection Rating	Protection type: IP 68 for both Sensor and Cable
Certifications	TUV/MCERT/USEPA
Automatic compensation cross sensitivities	Turbidity / solids and temperature
Interface connection to display	MIL connector, IP 68, RS485, 12 VDC
Operating Humidity	5 to 95% non-condensing
Pressure	10 Bar
Power	12V DC Nominal
Signal output	Compatible with Data Acquisition System

Parameter	Specification
Resolution	≤ 1 mg/L or better
Response Time	≤ 60 seconds
Protection	Sensor IP-68 and Transmitter IP-67
Enclosure	Stainless Steel with epoxy coating for Analyser
Diagnosics features	System diagnostics: power shutdown, sensor failure, data transmission failure.
	Parameter diagnostics: Calibration timeframe, calibration drift alert
	High/low parameter permissible thresholds limit diagnostic
	Maintenance and calibration schedule diagnostics
Calibration frequency	Once in a month
Transmitter output	Default: 2 X 4-20 mA Additional optional: MODBUS RS485, HART, PROFIBUS.
Transmitter Mounting	Pole/ wall mounted
Display	Colour TFT LCD 640X480 pixels with LED backlight
Surge Protection	Inbuilt
Tag Plate	SS tag plate

3.3. Specifications for Chemical Oxygen Demand (COD) Sensor

Parameter	Specification
Basic Requirement	<p>Continuous Effluent Monitoring of BOD, COD, TSS with UV-Vis Full Spectrum dual beam technology</p> <ul style="list-style-type: none"> • System should work on wavelength of 200-750nm as per the CPCB guidelines and all analyses should have independent values. • System should have spectrophotometric probe made of SS316L/Titanium or equivalent. • Multi Parameter probe ideal for monitoring of BOD/COD/TSS in Municipal Wastewater. • The Sensor should have optimized function check referencing for excellent zero point and long-term stability. • The Sensor should provide compensation of interferences by evaluation of the whole measured spectrum. • System should be UV-Visible double beam spectrometry • System should have unlimited multipoint calibration facility as per CPCB SOP published on CPCB website in July 2020

Parameter	Specification
	<ul style="list-style-type: none"> • System should be complied as per latest CPCB Direction, SOP & Guidelines. • Should produce analytically valid results with precision and repeatability. • The instrument/Analyzer should be robust and rugged, for optimal operation under extreme environmental conditions, while maintaining its calibrated status. • The Analyzer should have inbuilt features for automatic water matrix change adaption. • The instrument / Analyzer should have onboard library of calibration spectras for different industrial matrices with provision of accumulating further calibration matrices. • For each parameter there should be provision for independent analysis, validation, Independent parameter calibration & data transmission. • Sensor integrated cable should be with IP68 rating and specially designed for submerged installations.
Measuring Range	0 - 300 mg/L(with possibility to check higher ranges)
Accuracy	+/- 2.5% in reference solution. +/- 10% of Parameter value with reference to certified laboratory results or as per latest reference of published CPCB SOP/Guidelines, whichever is less.
Reagent & Consumables Free	<ul style="list-style-type: none"> • The Sensor should not use any reagents and should be easy to use and operate without any running costs. • The sensor should completely be reagent free for operation.
Resolution	≤ 1 mg/L or better
Response Time	≤ 60 seconds
Measuring Principle	UV-Visible is double Beam Spectrophotometry with multipoint calibration from wavelength 200 – 750 nm, as per the CPCB Guideline, xenon flash lamp, 256 photo diodes, two beam measurement, complete spectrum
Measurement	Must be direct In-Situ/Submersible measurement in Outlet or Inlet of wastewater treatment plant
Operating Temperature	Operating temperature: -4°C to +50 °C; Storage temperature: -20 °C to +60 °C

Parameter	Specification
MOC	The MOC must be SS316L / Titanium or equivalent to sustain the sensor in Sewage wastewater application.
Light Source	Must emit UV and Vis wavelength of light.
Sensor Cable	Integrated 15-meter cable (minimum) with arrangement to increase length as per site conditions
Inbuilt Cleaning	The sensor must have automatic mechanical cleaning facility with integrated system for cleaning at a predefined interval. Chemical cleaning is not recommended.
Calibration	Multipoint calibration for each spectrophotometric parameter
Protection Rating	Protection type: IP 68 for both Sensor and Cable
Certifications	TUV/MCERT/USEPA
Automatic compensation cross sensitivities	turbidity / solids
Interface connection to display	MIL connector, IP 68, RS485, 12 VDC
Operating Humidity	5 to 95% non-condensing
Pressure	10 Bar
Power	12V DC Nominal
Signal Output	Compatible with Data Acquisition system
Protection	Sensor IP-68 and Transmitter IP-67
Enclosure	Stainless Steel with epoxy coating for Analyser
Diagnosics features	System diagnostics: power shutdown, sensor failure, data transmission failure.
	Parameter diagnostics: Calibration timeframe, calibration drift alert
	High/low parameter permissible thresholds limit diagnostic
	Maintenance and calibration schedule diagnostics
Calibration frequency	Once in a month
Transmitter output	Default: 2 X 4-20 mA Additional optional: MODBUS RS485, HART, PROFIBUS.
Transmitter Mounting	Pole/ wall mounted
Display	Colour TFT LCD 640X480 pixels with LED backlight
Surge Protection	Inbuilt

3.4. Specification for Total suspended solids (TSS) sensor

Parameter	Specification
Basic Requirement	<p>Continuous Effluent Monitoring of BOD, COD, TSS with UV-V is Full Spectrum dual beam technology</p> <ul style="list-style-type: none"> • System should work on wavelength of 200-750nm as per the CPCB guidelines and all analyses should have independent values. • System should have spectrophotometric probe made of SS316L/Titanium or equivalent. • Multi Parameter probe ideal for monitoring of BOD/COD/TSS in Municipal Wastewater. • The Sensor should have optimized function check referencing for excellent zero point and long-term stability. • The Sensor should provide compensation of interferences by evaluation of the whole measured spectrum. • System should be UV-Visible double beam spectrometry • System should have unlimited multipoint calibration facility as per CPCB SOP published on CPCB website in July 2020 • System should be complied as per latest CPCB Direction, SOP & Guidelines. • Should produce analytically valid results with precision and repeatability. • The instrument/Analyzer should be robust and rugged, for optimal operation under extreme environmental conditions, while maintaining its calibrated status. • The Analyzer should have inbuilt features for automatic water matrix change adaption. • The instrument / Analyzer should have onboard library of calibration spectras for different industrial matrices with provision of accumulating further calibration matrices. • For each parameter there should be provision for independent analysis, validation, Independent parameter calibration & data transmission. • Sensor integrated cable should be with IP68 rating and specially designed for submerged installations.
Measuring Range	0 - 300 mg/L(with possibility to check higher ranges)
Accuracy	With Calibration: <1% of the measured value ± 0.01 FNU/NTU+/- 10% of Parameter value with reference to certified laboratory results

Parameter	Specification
	or as per latest reference of published CPCB SOP/Guidelines, whichever is less.
Reagent & Consumables Free	<ul style="list-style-type: none"> The Sensor should not use any reagents and should be easy to use and operate without any running costs. The sensor should completely be reagent free for operation.
Resolution	≤ 1 mg/L or better
Response Time	≤ 60 seconds
Measuring Principle	UV-Visible is double Beam Spectrophotometry with multipoint calibration from wavelength 200 – 750 nm, as per the CPCB Guideline, xenon flash lamp, 256 photo diodes, two beam measurement, complete spectrum
Measurement	Must be direct In-Situ/Submersible measurement in Outlet or Inlet of wastewater treatment plant
Operating Temperature	Operating temperature: -4°C to +50 °C; Storage temperature: -20 °C to +60 °C
MOC	The MOC must be SS316L / Titanium or equivalent to sustain the sensor in Sewage wastewater application.
Light Source	Must emit UV and Vis wavelength of light.
Sensor Cable	Integrated 15-meter cable (minimum) with arrangement to increase length as per site conditions
Inbuilt Cleaning	The sensor must have automatic mechanical cleaning facility with integrated system for cleaning at a predefined interval. Chemical cleaning is not recommended.
Calibration	Multipoint calibration for each spectrophotometric parameter
Protection Rating	Protection type: IP 68 for both Sensor and Cable
Certifications	TUV/MCERT/USEPA
Automatic compensation cross sensitivities	turbidity / solids
Interface connection to display	MIL connector, IP 68, RS485, 12 VDC
Operating Humidity	5 to 95% non-condensing
Pressure	10 Bar
Power	12V DC Nominal
Signal output	Compatible with Data Acquisition System
Protection	Sensor IP-68 and Transmitter IP-67
Enclosure	Stainless Steel with epoxy coating for Analyser
Diagnostics features	System diagnostics: power shutdown, sensor failure, data transmission failure.

Parameter	Specification
	Parameter diagnostics: Calibration timeframe, calibration drift alert
	High/low parameter permissible thresholds limit diagnostic
	Maintenance and calibration schedule diagnostics
Calibration frequency	Once in a month
Transmitter output	Default: 2 X 4-20 mA Additional optional: MODBUS RS485, HART, PROFIBUS.
Transmitter Mounting	Pole/ wall mounted
Display	Colour TFT LCD 640X480 pixels with LED backlight
Surge Protection	Inbuilt

3.5. Specification for Total Nitrogen (TN)

Parameter	Specification
Basic Requirement	<p>Total Nitrogen Sensor Specifications:</p> <ul style="list-style-type: none"> • Integrated measurement for parameters compensation should be provided in the Total Nitrogen Sensor. • Calibration history should be stored automatically in the sensor. • Field calibration facility • Signal Output –Digital • Sensor Check function/Diagnostics should be available in the Total Nitrogen Sensor. • Protection type: IP 68 for both Sensor and Cable • Preferably built-in automatic sensor aperture cleaning assembly
Measurement Principal	Multiparameter Probe, Ion Selective Electrode, Common reference electrode non-porous / non-leaking reference electrode, two measuring electrodes, one compensation electrode
Reagent Free	The Ammoniacal Nitrogen and Nitrate Nitrogen electrodes should require very little maintenance and they should not require any add on chemical for continuous measurement.
MOC	The MOC must be SS316L / Titanium or equivalent to sustain the sensor in Sewage wastewater application.
Sensor Cable	Integrated 15-meter cable with arrangement to increase length as per site conditions

Parameter	Specification
Voltage Protection	Integrated in the sensor
Measuring Range	Total Nitrogen: 0...500 mg/L (measurable up to 1000 mg/l considering the sewage waste water environment)
Calibration	Matrix adjustment against any reference value, multi-point calibration possible with multiple standard solution.
Measurement Accuracy	± 5 % of measured value ± 0.2 mg/l in standard solutions
Operating Temperature	Temp Compensation: 0 to +60 Deg C
Certifications	TUV/MCERT/USEPA
Response time	60 sec
Power supply	10 - 30 VDC
Interface connection	sys plug, IP 67, RS485
Operating pressure	0 - 1 bar
Protection	Sensor IP-68 and Transmitter IP-67
Enclosure	Stainless Steel with epoxy coating for Analyser
Diagnostics features	System diagnostics: power shutdown, sensor failure, data transmission failure.
	Parameter diagnostics: Calibration timeframe, calibration drift alert
	High/low parameter permissible thresholds limit diagnostic
	Maintenance and calibration schedule diagnostics
Calibration frequency	Once in a month
Transmitter output	Default: 2 X 4-20 mA Additional optional: MODBUS RS485, HART, PROFIBUS.
Transmitter Mounting	Pole/ wall mounted
Display	Colour TFT LCD 640X480 pixels with LED backlight
Surge Protection	Inbuilt

3.6. Specification for Total Phosphorus analyzer

Parameter	Specification
Measurement Range	Auto-ranging: 0.0016 to 16.3 ppm (Total Phosphorus)
CHEMICAL METHOD	
Phosphate	Phosphomolybdenum blue
Background color correction	Compensated at the measurement wavelength

Parameter	Specification
Self-cleaning	Programmable automatic chemical rinsing – piston cleaned every measurement
MEASUREMENT MODE	
Batch measurement	User-selectable 1 to 4 measurements per hour
Sample streams	Single or up to 3 streams – sequencing is programmable
MEASUREMENT PERFORMANCE	
Accuracy	<±5 % of reading or ±0.005 ppm (whichever is the greater)
Repeatability	<Max. ±5 % of reading or ±0.030 ppm (whichever is the greater)
Resolution	0.001 ppm or 1 ppb
Measurement units	mg/l, ppm, ppb, µg/l
Calibration	2-point, automatic calibration, with the option of manual initiation. The interval between automatic calibrations manually selectable from four times a day to once per week
ENVIRONMENTAL DATA	
Ambient Operating Temperature	5 to 45 °C (41 to 113 °F)
Ambient Operating Humidity	Up to 95 % RH non-condensing
Sample Temperature	1 °C to 40 °C (32 °F to 104 °F)
Sample Flow	Continuous, 200 to 500 ml/min
Sample Pressure	5 psi maximum
Sample Limitations	Samples containing particles 100 microns (0.004 in) in diameter or larger may require pre-filtration
MAINTENANCE	
Routine service interval	12 months
Reagent consumption	0.75 ml of each reagent per measurement
Display	Color, TFT, liquid crystal display (LCD) with built-in backlight and brightness adjustment Diagonal display area 145 mm (5.7 in) 76800 pixel display
MECHANICAL DATA	
Ingress protection	IP31
Sample connections	Inlet: 6 mm OD push-fit x 1/4 in BSP elbow Outlet: 10 mm OD push-fit x 3/8 in BSP elbow
Materials of construction	Electronics enclosure: 10 % glass loaded polycarbonate Main enclosure: Noryl Lower tray: 20 % glass loaded polypropylene Door: Acrylic

Parameter	Specification
ELECTRICAL	
Power supply ranges	100 to 240 V max. AC 50/60 Hz \pm 10 %
ANALOG OUTPUTS	
Single and multi-stream analyzers	6 isolated current outputs, fully assignable and programmable over a 0 to 20 mA range (up to 22 mA if required)
ALARMS/RELAY OUTPUTS	
Single- and multi-stream analyzers	<p>One per unit:</p> <ul style="list-style-type: none"> · Stop relay · Attention relay · Failure relay · Calibrate relay <p>Six per unit Fully user-assignable alarm relays</p>
Rating	<p>Voltage 250 V AC 30 V DC</p> <p>Current 5 A AC 5 A DC</p> <p>Loading (non-inductive) 1250 VA 150 W</p>
CONNECTIVITY/COMMUNICATIONS	
Ethernet connection	Web server with ftp For real-time monitoring, configuration, data file access and email capability
Data Handling, Storage and Display	
Security	Multi-level security: Operator and configuration Password or security switch
Storage	Removable Secure Digital (SD) card
Trend analysis	Local and remote
Data transfer	SD card or FTP
Diagnostics features	System diagnostics: power shutdown, sensor failure, data transmission failure.
	Parameter diagnostics: Calibration timeframe, calibration drift alert
	High/low parameter permissible thresholds limit diagnostic
	Maintenance and calibration schedule diagnostics
Calibration frequency	Once in a month
Transmitter output	<p>Default: 2 X 4-20 mA</p> <p>Additional optional: MODBUS RS485, HART, PROFIBUS.</p>
Transmitter Mounting	Pole/ wall mounted
Display	Colour TFT LCD 640X480 pixels with LED backlight

Parameter	Specification
Surge Protection	Inbuilt

3.7. Specification for Smart Controller and Data logger

Parameter	Specification
Basic Requirement	<p>Controller should have the latest features of highly advanced Multi Parameter Controller having capability of handling at least 5 (five) Sensors in a single controller configuration for the parameters COD, BOD, TSS, pH, TN, TP and must be expandable for more parameters & sensors as and when required.</p> <ul style="list-style-type: none"> • With Sensor ID recognition • High EMC interference immunity • Control unit should be latest touch screen display for the quick selection of software functions • Integrated lightning protection • With integrated back up controller function • The system should start automatically after the power is reset to the system (in case of power failure). • The system should have Service mode for cleaning /calibration/maintenance activities. • High-end IoT (Internet of Things) terminal preferably based on an industrial PC, minimum IP65 grade. • Large graphic display (minimum 9”) with backlight with adequate contrast for clear viewing in low ambient light and sunlit bright outdoor lighting conditions. • Sensor and station management of up to 20 parameters: automatic cleaning, data logging, sample & calibration incl. history and multipoint calibration, sensor function check, user management, easy data transfer via USB-stick etc. • The Controller should preferably be able to power all the sensors and terminals or accessories attached to it without having to need any additional power sources in the system for increased protection against lightening and possible electromagnetic interference. The controller shall be low power operation and operable in 220VAC / DC (to be generated within the controller itself). • IoT (Internet of Things) and M2M (Machine to Machine) connectivity: Minimum 1 Gb/s Ethernet, 300 Mb/s Wi-Fi

Parameter	Specification
	<p>802.11a/b/g/n and optional worldwide HSPA+ 3G interface, remote control (http), data transfer into cloud via FTP, SSH and TML</p> <ul style="list-style-type: none"> • Process interface to SCADA via: Modbus RTU/TCP, SDI-12, Profibus DP, analog 0/4-20mA and relay outputs • Integration of third party sensors via: analog 0/4-20 mA and digital (solid state) inputs, Modbus RTU/TCP • Easily extendable: 8 slots to customize I/Os, additional software features like online data validation and event detection optional
Display	<ul style="list-style-type: none"> • With large (size 9" preferably), both touch screen & key pad type are acceptable. The system should preferably have the facility of Impressive real-time zoomable, scrollable graphical visualization of all historical data including 3D-optical spectra. • Display should be with improved reading precision through special backlit graphic touch screen display.
Power Supply	<ul style="list-style-type: none"> • 10-36VDC or 100-240VAC Power Supply. • The controller should be low power consuming with consumption of less than 5W.
Number of sensors to be connected	<ul style="list-style-type: none"> • Minimum 4 (Four) Sensors to be connected
Output Communication	<ul style="list-style-type: none"> • Galvanically Separated current outputs (0/4-20 mA) that can be assigned arbitrarily • USB-interface for data transfer, upgrading firmware etc. • It should be possible to download the data via the USB interface an extremely fast data exchange to USB memory stick.
Data Logger	<ul style="list-style-type: none"> • 2 GB RA M minimum or higher as suitable for the system • Internal integrated Data logger with minimum data memory for 5 years parameters recording & logs data recoding (when 8 parameters, logged every 15 minutes) • The controller should store the sensor configurations and calibrations and shall preferably depict the details when remotely accessed. • The controller should have Log file to record the diagnostics. • Data logger must have provision of a system memory (Non-volatile) to record data for at least one year of continuous operation. • Lifetime Free firmware update.

Parameter	Specification
Accessibility	<ul style="list-style-type: none"> The system should be fully programmable with multiple levels of access control with help of Electronic-Key for data security and protection against non-authorized access to avoid any tampering or changes to the system configuration by unauthorized access
Status LED	<ul style="list-style-type: none"> The system should have a status LED on Data logger terminal as well as on spectrophotometric probe that gives reliable and fast information regarding function and status of system. And the Controller/Probe must show a LED for diagnostic purposes on the front. These LED should show diagnostic alert about normal and malfunctions of the system at a glance.
Operating Temperature	<ul style="list-style-type: none"> Ambient Conditions Operating temperature: -4°C to +50 °C Storage temperature: -20 °C to +60 °C
Housing Material	<ul style="list-style-type: none"> Non corrosive e.g. Acrylonitrile-Styrene-Acryl ester polymer / Powder Coated Aluminium Alloy / Stainless Steel 316
Protection Rating	<ul style="list-style-type: none"> IP 66 / equivalent NEMA standard for controller Integrated Lightning Protection. According to EN 61326 enhanced overvoltage protection for the entire system, implemented in each component IEC/EN/UL/CSA 61010-1 IEC/EN/UL/CSA 61010-2-201 IEC/EN 60529
Essential features for the System	<ul style="list-style-type: none"> System must have Automatic File Transfer features Automatic Sampling for laboratory measurement Feature Onboard PLC Based basic features for process control to comply regulatory guidelines Camera Integration onboard in data logger for future regulatory compliance. System must have display unit (size 9" preferably) both touch screen & key pad type are acceptable. The system should preferably have the Impressive real-time zoomable, scrollable graphical visualization of all historical data including 3D-optical spectra. Remote system must be protected by a user-configurable firewall Analyzer must provide self-adaptive, self-controlled data validation in real time. Analyzer System must have unmatched event detection tools based on proven algorithms for real-time event detection that use

Parameter	Specification
	<p>data streams from all connected probes separately and in combination</p> <ul style="list-style-type: none"> • Analyzer System must have capability of exploiting the enormous information contained in UV spectra which provide the most sensitive and stable data source for event detection • Analyzer System must be optimized for use of multi-dimensional spectral data. • Analyzer System must have configurable auto-correction of data based on threshold, outlier and noise analysis.

3.8. Specification for Electromagnetic Flow meter FLOW SENSOR

3.8.1. Full Bore Electromagnetic Type Flow meter [Applicable for closed conduit flow].

- i. There shall be one number of Full bore Electromagnetic flow meter on the outlet header/manifold of the S.T.P. The flow meters is to be installed and commissioned for measuring the instantaneous flow rates as well as the total flow for a period of time of the station passing throughout the common manifold. The flow rates shall be indicated in m³/hr & total flow in cubic meter. The flow sensor shall be suitable to measure sewage water. The flow meter shall be electromagnetic inline type to provide indication, totalization and signal transmission of the liquid. The display is required at the Control Room around 50 mtr away from the transmitter installation point on the pipe line and also should be compatible with the SCADA system (should have RS485 port, Modbus, Profibus, or any suitable communication port). Amplification of signals, if necessary, are to be incorporated. The flow meter must be capable of measuring velocity of water upto 3 m / sec with accuracy of $\pm 0.5\%$. Flow sensitivity must be ± 0.3 m/s at any flow rate. The linearity of the instrument shall be 0.1% of scale. The sensor must have enclosure of class IP-68. The tenderer shall clearly indicate the position of flow sensor. The flow meter shall be calibrated at the factory to its actual flow range in m³/hr as specified in the data sheets. Wet calibrate meters (at 5 points over the specified flow range) by gravimetric or volumetric methods.
- ii. A factory calibration certificate shall be provided with the meter. Flow meters shall have facility to detect the empty pipe condition either by additional sensor, flow sensors or other methods / technologies subject to project specific requirements. The unit shall also withstand an Isolation Test up to 1800V for 2 sec.
- iii. The transmitter unit shall be microprocessor based, of modular shall be easily configurable through integral keypads. The electronics shall be of modular construction for ease of maintenance and future expandability.

- iv. The transmitter shall be provided with Alpha-numerical illuminated display for rate of flow and totalized flow indication. The data storage shall be on EEPROM to preserve data on power failure without battery backup. The unit shall have high electromagnetic compatibility according to IEC 801/VDE 0843 and NAMUR recommendations. The unit shall be provided with extensive self-diagnostics for operational security with resulting error messages enunciated at the alarm output.
- v. By pass arrangement shall be considered for the bigger pipe size with bypass manual isolation valves (3 Numbers) for maintenance purpose. Flow sizing calculation for meter sizing selection shall be furnished for approval.

3.8.1.1. The data sheet for flow sensor is as follows.

The flow meter will be full bore electromagnetic type should be capable to handle flow of sewage Water.

Parameter	Specification
Type	Pulsed DC electromagnetic.
Accuracy	± 0.25 % of measure value.
Repeatability	± 0.2 %
Size of flow meter	As per designed diameter of the common delivery manifold.
Sensor type	In line full bore electromagnetic.
Process connection	Flanged type.
Weather protection class	IP68 NEMA 6 P or as per the specified by EIC.
Liner Material	POLYURETHANE/ Hard Rubber/PTFE OR COMPLY TO THE IP REQUIREMENT OF CHEMICAL / BIOLOGICAL IMPACT
Meter Size	As per flow sizing calculation
Minimum conductivity	20 us/cm
Full scale velocity	1 to 5 m/sec.
Process temperature	-10 to +50°C max.
Process pressure	10 Bar max.
Electrodes	SS 316 L/ SS 316.
Coil housing	As per Manufacturers standard,
Flange MOC	Carbon steel.
Flow sensor tube	SS304
Cable between sensor and transmitter	Copper cable of Length minimum 50 meters with arrangement to increase length as per site conditions
Flow transmitter	Microprocessor based, Pole/wall mounted.

Parameter	Specification
Type of display of transmitter	Display should be LCD or LED type and the size should be suitable for making it visible from at least 6m distance.
Out put	4-20 mA DC
Power supply	240 V AC 50 Hz and shall be supplied from the 415 V PDB at a maximum distance of 50 m.
Input	From flow tube
Web server	The flow meter should be compatible for connection with web server for remote facility display facility.
Protection class	IP 68.
Calibration	Calibration shall be accredited according to ISO/IEC 17025.
Grounding Type	Ring/Strap
Empty pipe detection	Required

3.8.1.2. Data Sheet of Flow Sensor

i. Flow Sensor

- a. Type :
- b. Make :
- c. Model No :
- d. Flange Rating :
- e. Electrodes :
- f. Flow Range :
- g. Metering Tube :
- h. Sensor Housing :
- i. Connection / Junction Box :

ii. Flow Transmitter/Converter

- a. Type :
- b. Display :
- c. Enclosure :
- d. Power Supply :
- e. Signal cable :
- f. Cable Gland :
- g. Terminals :

3.8.2. Ultrasonic Flow Meter [Applicable for open channel flow]

- i. The sensors should be suitable for the non-contact measurement of contaminated liquids, regardless of the pressure or electrical conductivity.

- ii. Suitable for open channel flow.
- iii. Perfectly suitable for – retrofit measurement – flow monitoring – improving measuring points.
- iv. Interface for easy integration into all common distributed control systems: – HART – PROFIBUS DP/PA –
- v. Easy, safe and menu-guided sensor mounting to ensure precise measuring results.
- vi. Automatic frequency scan for optimized installation and maximum measuring performance.
- vii. IP 68 grade protection for the probes for under water usage.
- viii. The measuring system should operate on the principle of transit time difference.
- ix. Open channel flow measuring system shall consist of level transducer, flow computer and flow transmitter as one unit that is compact electronics and one remote mounted flow indicator cum totalizer microprocessor based. The level of the fluid in the flume/weir shall be measured by the ultrasonic level transducer. The level measured shall be used along with the physical characteristics of the flume to compute the flow rate.
- x. The level transducer shall be suitable for flange or bracket mounting as required and shall be environmentally protected as per IP65. It shall have ambient temperature compensation and adjustable datum setting facilities.
- xi. The design and application of ultrasonic level meter shall take into account the channel construction, the material size, shape, environment, process fluid or material, the presence of foam granules, size etc.
- xii. The installation shall avoid any degradation of performance from spurious reflections, absorption, sound velocity variations, sensor detection area, temperature fluctuation, specific gravity changes and condensation. For application where spurious reflections are unavoidable the control unit shall be provided with facilities for spurious reflection rejection.
- xiii. The structure required for supporting the level sensor, platform, railings etc. shall be included in the scope.

3.8.3. Flow meter/ Flow sensor or Flow Tube fixing chamber [As applicable].

For fixing of Flow Tube at the delivery pipe line, leak proof chamber is to be constructed with rung - ladder of dimension 2.5M x 1.5M x 2.5M (approx.) is to be constructed if required as per site condition and rung-ladder for 2.5 getting down. [for full bore electro-magnetic flow meter].

Construction of adequate dimension of flow stabilizing channel (V-Notch Weir or as applicable) as per the prerequisite for installation of ultrasonic type flow meter is included in the scope. [for open channel flow application].

3.9. Backup Power Supply: -

The scope includes the supply, Installation & Commissioning of Online UPS back up with adequate no of maintenance free battery of minimum back up time of 2 hours. The output of the UPS shall be full wave rectification type.

- i. The UPS shall be floor mounted, self-contained and metal clad and shall be suitable for operating on a nonlinear load.
- ii. It shall be front door accessible.
- iii. The UPS system shall be true On-Line.
- iv. The ON LINE UPS shall be incorporating a six-pulse rectifier and pulse width modulation inverter technology with 100% microprocessor control with built in static and manual bypass switch.
- v. The UPS shall incorporate a DC under voltage trip circuit to electrically trip the UPS in order to protect the battery.
- vi. The noise level of the unit shall not exceed 60dB (A) at 1m from the UPS cabinet.
- vii. The output of the inverter shall be a sine wave having less than 5% THD for linear loads and less than 4% to 50% nonlinear load. It shall be suitable for load power factor 0.8 lag.
- viii. The load crest factor shall not be less than 3:1.
- ix. The unit shall have dynamic response such that a 100% step load causes an output voltage transient of less than $\pm 4\%$ with a recovery time of less than 4ms.
For three phase output units the output voltage shall not vary by more than $\pm 1\%$ for an unbalance for 10%.
- x. Indicators to indicate on SCADA/OCMS
 - UPS status
 - UPS alarm conditions
- xi. The UPS shall provide a volt free contact output to indicate:
 - Warning. i.e low battery capacity
 - Fault
 - Static bypass in use.
- xii. The UPS shall have an overload capacity of 150% for 30 seconds and shall be protected in the event of a short circuit of the output.
- xiii. The batteries shall be housed, either within the UPS enclosure or within a separate matching battery cubicle suitable for location adjacent to the UPS.
- xiv. The batteries shall be maintenance free lead acid type sealed for life.

Objective of project:

As per the directive of CPCB, the work has been taken up towards the implementation of self-regulatory mechanism for online monitoring of the treated sewage for different parameters like Flow, pH, B.O.D, C.O.D, TSS, Total Nitrogen (TN), Total Phosphate (TS) through installation of Online Continuous Effluent Monitoring System (OCEMS) for all the existing S.T.Ps which are under different stages of construction, operation & maintenance under Namami Gange Programme. This is in compliance with the order of Hon'ble NGT issued u/s (5) of Environmental Protection Act 1986. This (OCEMS) is supposed to monitor the desired data online with a continuous data transmission facility to the server of NMCG, SPMGs, Executing Agency(s) & CPCB in a 24X7 manner in exact compliance with the latest Guidelines & S.O.P. published by CPCB.

The scope includes, Supply, Installation, Testing, Commissioning & Operation and Comprehensive Annual Maintenance for five (05) years from the date of successful completion of Trial Run of the effluent quality monitoring system for online (continuous) measurement of Flow, pH, Total Suspended Solids (TSS), Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Total Nitrogen (TN) & Total Phosphate (TP) by single / multiple analyzer with various sensors (full spectrum spectral measurement in the UV-VIS range 200-750nm) performing reagent and chemical free analysis with automatic cleaning of sensor, signal cables and power cables, local data acquisition and display of data on continuous basis for up linking the data to NMCG, SPMGs, Executing Agency(s) & CPCB approved complete in all respect as per Central Pollution Control Board (CPCB) guidelines for online continuous monitoring system for effluents with power back up system and as contained in Technical Specifications.

Scope of the contract:

The turn-key contract comprises Design, Engineering, supply, storage, Installation and commissioning of the Electro-Mechanical Equipment, trial Run for one month and comprehensive operation and maintenance for a period of twelve months upon completion of trial run except in so far as the contract otherwise provides, the provision of all labour, materials, constructional plant, temporary works and everything (whether temporary or permanent in nature) required for completion and operation & maintenance so far as the necessity for providing the same is specified in or reasonably to be inferred from the contract.

IMPORTANT: - BIDDER CAN QUOTE THE RATES FOR ALL THE INSTRUMENTS OR SOME OF THE INSTRUMENTS AGAINST ONE TENDER DOCUMENT. HOWEVER, SEPARATE PRICE BID AND TECHNICAL BID SHOULD BE SUBMITTED FOR EACH ITEM CLEARLY MENTIONING THE ITEM CODE NUMBER, ITEM NAME ON THE TOP OF THE ENVELOPES WITH SENDERS NAME AND ADDRESS. THE NMCG RESERVES THE RIGHT TO ACCEPT THE TENDER IN FULL OR IN PART. THE BID FOR EACH ITEM SHOULD BE IN SEPARATE SHEETS/PAGES AND FOR THE SAKE OF IDENTITY, COMPILATION, INSTRUMENT/ITEM CODE NUMBER AND DESCRIPTION OF ITEM SHOULD BE WRITTEN ON THE TOP OF EACH BID. ITEMS-WISE TECHNICAL SPECIFICATION AND PRICE SHOULD BE IN SEPARATE SHEETS i.e. THERE SHOULD BE SEPARATE ENVELOPES

FOR EACH ITEMS CONTAINING TECHNICAL, PRICE BID & ITEMS WISE EMD; IN CASE, BIDDERS DESIRES TO QUOTE MORE THAN ONE ITEM. **Those tenders do not comply the above instructions will not be considered.**

Item wise details of the lump sum prices and interim payment schedule:

The successful tenderer will, against each of the job items quoted in the schedule of prices on lump sum basis, submit a detailed break-up of lump sum prices for the approval of the Executing Agency(s) for the purpose of preparing interim payment schedule and calculating the consumption of materials to be issued by the Authority, as applicable. The break ups will be such so as to fairly agree with the lump sum price quoted. The Superintending Engineer shall have the authority to modify the break-up of prices keeping, however, the total of the prices equal to the lump sum amount quoted. Lump sum prices quoted in the schedule of prices shall remain fixed irrespective of the variations in quantities during actual execution compared with those provided in the break-ups. The above mentioned details should be submitted by the contractor as early as possible in their own interest, after receipt of the Work Order to enable himself to start any sub-items of work and to receive interim payments.

Evolution and issuing of work order: -

Tender Evaluation Criteria: The technical bids will be opened and evaluated by a duly constituted committee. After evaluation of the technical bid, the financial bid for only those offers which have qualified in the evaluation of technical bid will be opened. After examination of the technical bid and price bid, NMCG will finalise the list of selected bidder for instruments and forward the list to the concerned Client (SPMGs) including their price schedule. Client will issue the letter of award to the selected bidder for respective numbers of instruments for delivery at respective Regional Offices. The payment against the delivery of instruments shall be made by respective SPCB in accordance to terms and conditions of this bid.

The decision of NMCG will be final in case the quote received for any item is equal for the technically qualifying bidders, which will be governed by criteria, including number of such instrument supplied in past, proximity of the service centers or proximity and availability of service engineer to the place of installation, other factors required to be considered for optimized cost to the client on its life cycle cost analysis of 5 years.

NMCG shall evaluate all the proposals and the shortlisted proposals to issue work order for execution of work.

Supervisory Staff:

The Contractor shall engage an experienced and qualified Site Manager to be in day to day charge of the work and he should be authorized to receive instructions from the EIC. He shall receive orders given by the EIC from time to time and shall act on them promptly. The Contractor shall, during working hours, maintain engineer and supervisors of sufficient training and experience to supervise the various items and operations of the work. Orders and directions given to such engineers and supervisors or other staff of the Contractor shall be deemed to have been given to the Contractor. The Chief Engineer of the Contractor responsible for this work, by whatever designation he may be known, but who will be specified on award of the Contract shall at least

once in a fortnight inspect the works and shall discuss with the EIC the conduct and progress of the work.

TERMS OF PAYMENT:

A. Supply, Installation, Commissioning & one-year mandatory O&M of the equipment

- (i) 60% value of the item shall be payable on receipt of materials at site.
- (ii) The next 10% value of equipment shall be payable on successful completion of the commissioning of equipment.
- (iii) The next 10% value of the equipment shall be payable after successful completion of the Operation & Maintenance work of the entire installation for the first year.
- (iv) Balance 20% (5% for each year = 20 %) value of the equipment shall be payable after efficient & successful completion of the Operation & Maintenance work of the entire installation for the subsequent 4 years.

B. Operation & Maintenance

After successful completion of the work or not more frequent than once in every three months, whichever is later.

Standards:

1. All Electro-mechanical supply of materials and or equipment under this specification shall be designed, manufactured, constructed and tested in accordance with latest revision of the relevant Indian Standards (IS), British Standards (BS). Hydraulic Institute Standards (HIS), CPHEEO manual, ISO and International Electro Technical Commission (IEC) publication unless otherwise stated.
2. All electro mechanical installation shall meet the requirement of latest revision of relevant code of practice. In addition, all electrical installations shall also meet the requirement of Indian Electricity Rules, 1956 and Indian Electricity Act, 2003 as amended upto date.
3. In addition, any rules or regulation applicable to the work shall also be followed and obeyed. In case of any discrepancy, the decision of the EIC shall be final and binding upon the contractor.

Daily operation of the Built-up Eletro – Mechanical installation:

1. The installation generally mean all electro-mechanical equipments and accessories supplied, installed, tested, commissioned with allied civil works by the contractor for the complete built up pumping station.
2. Primary responsibility of the contractor is to operate and maintain the stated installation daily at the set time fixed by the department in good workmanship like manner. The set time is not firm and may vary.
3. The tenderers are advised to quote their rates for the specific item of comprehensive O&M considering all pros and cons of the situation which may eventually affect their rate. No claim what so ever shall be entertained by the department on such account.
4. The cost of all consumables, hardware and any goods which may be required during this period shall have to be provided by the contractor and the same shall also be taken into consideration while pricing the specific item of O & M.

5. Printed log book shall be provided by the contractor and all data, readings during operations of the pumping system shall have to be recorded by the contractor. The format of the log recording shall have to be got approved by the department before printing.
6. During such operation and maintenance by the contractor, the conditions of the equipments and accessories shall be monitored and if necessary, remedial measure shall be taken by the contractor at his own cost.

Day to day routine maintenance of the installation:

1. The contractor has to ensure the operativeness of the entire installation in the best conditions by supplying and or fixing any items or any goods or any tools & plants required for the smooth and trouble free operation and maintenance of the pumping station.
2. All consumables, hardware like grease, petroleum jelly, CTC, CRC, HRC fuses, wire fuses, indicating lamps including tube / SV / MV lamps and other spares for electrical luminaries (ballast, igniter, capacitors etc.) shall be supplied by the contractor during the O & M phase of work. The cost for such repair and or replacement shall be included in the specific item of operation and maintenance of the station.
3. Cleaning of the entire Pump House, Sub Station with equipment including lighting shed to achieve maximum light output from the lighting installations shall also be the responsibility of the contractor within this contract.
4. The contractor has to carry out the routine maintenance in such a way so as to up-keep the installation at all time. Any damage and or defects observed in the performance of the each and the individual equipments and or in any instruments and accessories during the pendency of the operation and maintenance period (phase – IV of the completion time allotted) under this contract shall be mend good and or set right by the contractor at his own cost.
5. The contractor has to contact and liaison with municipal engineers and or any responsible person of the municipality in case of any site need and or demand since the entire job is being done for the beneficiaries of the local area.
6. The contractor has to contact local electricity board office in case of disruption of power supply and or any breakdown due to the reasons of the power supply company. The contractor shall lodge complain with them for such event of disruption in supply and arrange for restoration of the normal supply system. In the event of necessity at site, the contractor shall have to contact the local police or security authority for maintaining all sort of normalcy in the premises.

Damages due to faulty erection and or due to faulty operation & maintenance:

Any damages caused to the equipments and or any installations due to the faulty and or defective erection and or operation and maintenance made by the contractor, shall be made good by the contractor at his cost and risk. Decision of the department in this regard shall be final and binding upon the contractor. In the event of failure to repair, mend good or set right the defects observed within a reasonable period of time from such intimation by the department, the same shall be repaired, mend good as the case may be, at the risk and cost of contractor.

Comprehensive maintenances:

The contractor has to bear in mind that this operation and maintenance are exclusively comprehensive in nature. Any item / items / spares if any is / are required to be replaced / repaired / mend good for smooth and trouble free operation of the entire installations, the same shall be met by the contractor at his cost. Decision on the requirement / replacements / mending good damages shall be taken by the department and binding upon the contractor.

Completion Period and payment schedule:

A. Payment of fees for Supply, installation and operation.

Construction, Operation & maintenance	Time Allowed	Job to be completed for declaration of completion of the work	% of fee paid	Cumulative %
1 st Milestone	60 days	Supply, delivery, storage of the Equipment / Materials.	60 %	60 %
2 nd Milestone	50 days	Installation, testing including pre-commissioning tests and commissioning of the system. (Including trial run for 30 days of entire installation as per requirement)	10 %	70%
3 rd Milestone	365 days	Comprehensive mandatory efficient & successful Operation & Maintenance work of the entire installation for 1 st years.	10 %	80%
4 th Milestone	1460 days	Comprehensive mandatory efficient & successful completion of the Operation & Maintenance work of the entire installation for the subsequent 4 years.	5% for each year = 20 %	100%

B. Payment of fees for O & M.

S.No.	Time Allowed	Particulars	% of Fee Paid	Cumulative %
1	1460 days	Comprehensive mandatory operation & maintenance of the successfully build pumping station with all associated equipment for 4 years.	6% for each quarter = 16 %	96 %
2	1825 days	Final completion certification of O & M period.	4 %	100%

Annexure-I

Tender Submission Letter

To
National Mission for Clean Ganga,
1st Floor, Major Dhyan Chand National Stadium,
India Gate, New Delhi-110002

Sub: RFP for *[insert project name]*

Ref: RFP No.

I/ We, the undersigned, offer to provide our services as per scope of work, as mentioned in RFP, to National Mission for Clean Ganga. We are hereby submitting our bid, in a sealed envelope.

I/We, hereby declare that:

- (a) We are submitting herewith our Bid, with the details as per the requirements of the tender, for your evaluation and consideration.
- (b) We submitted the Bid Security Declaration Form in accordance with the tender Document.
- (c) I/We have read carefully the terms and conditions of tender document attached hereto and hereby agree to abide by the said terms and conditions.
- (d) The bid is unconditional.
- (e) I/We undertake that documents submitted are genuine/authentic and nothing material has been concealed. I/We understand that the contract is liable to be cancelled, if it is found to be having obtained, through fraudulent means/concealment of information.
- (f) We shall make available to the NMCG any additional information it may find necessary or require to clarify, supplement or authenticate the Bid.
- (g) Until a formal agreement is prepared and executed, acceptance of this tender document shall constitute a binding contract between NMCG and us subject to the modifications, as may be mutually agreed to, between NMCG and us.
- (h) We agree to keep this bid valid for acceptance for a period of *[insert number of days as per tender requirement]* from the date of opening the bid.

We understand that the NMCG is not bound to accept any tender that the NMCG receives.

Yours faithfully,

Authorised Signatory
(with Name, Designation, Contact no. and Seal)

Note: On the Letterhead of the Bidder.

Annexure-II

Bidder's Authorization Certificate

To

National Mission for Clean Ganga,
1st Floor, Major Dhyan Chand National Stadium,
India Gate, New Delhi-110002

Sub: RFP for *[insert project name]*

Ref: RFP No.

Dear Sir,

I/ We {Name/ Designation} hereby declare/ certify that {Name/ Designation} is hereby authorised to sign relevant documents on behalf of the Agency in dealing with tender No. _____ dated _____. He/ She is also authorised to attend meetings & submit technical & commercial information/ clarifications as may be required by you in the course of processing the Bid. For the purpose of validation, his/ her verified signatures are as under.

Thanking you,

Name of the Bidder: -

Authorised Signatory :-

Verified Signature:-

Seal of the Organisation :-

Date:-

Place:-

Note: Please attach the valid power of attorney in favour of person signing this authorisation letter.

Annexure-III

Performa for Affidavit
(on non-judicial stamp paper of Rs. 100/-)

I _____ Proprietor/Director/Partner of the Agency M/s. _____ do hereby solemnly affirm that our Agency M/s. _____ has never been blacklisted/debarred by any organization/office and there has not been any work cancelled against them for poor performance in the last three years reckoned from the date of invitation of Bid.

.....

Name of the Bidder

.....

Signature of the Authorised Signatory

.....

Name of the Authorised Signatory

Place: _____

Date: _____

Annexure-IV

Information on Bidder's Organisation

S.No.	Particulars	Details
1.	Name of the Bidder	
2.	Address of the Bidder	
3.	Incorporation status of the Bidder / Associate (Relevant Certificate to be submitted in Technical Bid)	
4.	Year of Establishment	
5.	Valid GST registration No. (Copy of certificate to be submitted)	
6.	Permanent Account No. (PAN) (Copy of PAN Card to be submitted)	
7.	Name and Designation of the contact person to whom all references shall be made regarding this Bid	
8.	Telephone No. (with STD Code)	
9.	E-mail id of the Contact Person	
10.	Fax No. (with STD Code)	
11.	Website (if any)	

.....

Name of the Bidder

.....

Signature of the Authorised Signatory

.....

Name of the Authorised Signatory

Place: _____

Date: _____

Annexure-V

Relevant Experience undertaken during the last 5 years

[table to be updated as per the requirement]

S. No.	Description of Project / Scope of the work	Location of the work	Name of the Client	Actual value of the Project	Stipulated time for completion	Actual time taken for completion
1.						
2.						
3.						

Supporting documents such as copies of documents as stipulated in the **Eligibility Criteria** to be attached.

.....
Name of the Bidder

Signature of the authorised signatory: _____

Name of the Authorised Signatory: _____

Date: _____

Place: _____

Annexure-VI

Financial Information of Bidder's Organisation

Amount in Rupees.

S.No.	Parameters	FY
1	Turnover	

Note:

Copy of audited balance sheet and profit and loss account for the aforesaid financial years must be submitted.

.....

Name of the Bidder

.....

Signature of the Authorised Signatory

.....

Name of the Authorised Signatory

Place: _____

Date: _____

Annexure-VII

Financial Proposal (BoQ)

(This form is provided at <https://eprocure.gov.in/eprocure/app>. Bidders are advised to download and fill the required details in the permitted cells and upload the same)

Annexure-VIII

FORM OF BID SECURING DECLARATION

Date: _____

Tender Reference No.: _____

Project Name: _____

To:

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for Bidding, or submitting Proposals in any contract with the Employer for the period of time of 6 (six) months from the date of notification, if we are in breach of our obligation(s) under the Bid conditions, because we:

- (a) have submitted a non-responsive proposal; or
- (b) have withdrawn our Bid during the period of Bid validity specified in the Letter of Bid; or
- (c) having been notified of the acceptance of our Bid by the Employer during the period of Bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security in accordance with the Bid conditions.

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

Name of the Bidder

Name of the person duly authorized to sign the Bid on behalf of the Bidder _____

Title of the person signing the Bid _____

Signature of the person named above _____

Date signed _____ day of _____, _____

Annexure-IX

Form of Bank Guarantee for Performance Security

To
National Mission for Clean Ganga
1st Floor, Major Dhyan Chand National Stadium,
Near India Gate,
New Delhi-110002

WHEREAS _____ [Name and address of the Manpower Service Provider] (hereinafter called "the Agency") has undertaken, in pursuance of Contract No. _____ dated _____ to provide the services on terms and conditions set forth in this Contract _____ [Name of contract and brief description of works] (hereinafter called the "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Agency shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Agency such a Bank Guarantee;

NOW THEREOF we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Agency up to a total of _____ [amount of Guarantee] _____ [in words], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of Guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Agency before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the services to be performed there under or of any of the Contract documents which may be made between you and the Agency shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

The liability of the Bank under this Guarantee shall not be affected by any change in the constitution of the Agency or of the Bank.

"This guarantee shall also be operatable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation."

Notwithstanding anything contained herein before, our liability under this guarantee is restricted to Rs. _____ (Rs. _____) and the guarantee shall remain valid till _____. Unless a claim or a demand in writing is made upon us on or before _____ all our liability under this guarantee shall cease.

Notwithstanding anything contained hereinabove"

- A. Our liability under this guarantee shall not exceed Rs. _____ (Rupees _____).
- B. This bank guarantee shall be valid up to _____.
- C. We are liable to pay the guarantee amount or any part thereof under this bank guarantee only and only if you serve upon us, a written claim or demand on or before _____.

Signature and Seal of the Guarantor _____

In presence of

Name and Designation

1. _____
(Name, Signature & Occupation)

Name of the Bank

Address

2. _____
(Name & Occupation)

Date

DRAFT CONTRACT

Supply, Installation and Commissioning of Online Continuous Effluent Monitoring System (OCEMS) Instruments with 5 Years of Operation and Maintenance

I. CONTRACT

THIS CONTRACT (hereinafter called the “RC Contract/ Contract/ RC” is made on the _____ day of the month of _____, 2020 between

National Mission for Clean Ganga (NMCG), a society registered under the Societies Registration Act 1860, having its office at 1st Floor, Major Dhyan Chand National Stadium, India Gate, New Delhi-110002 (hereinafter called “Purchaser” or “NMCG” which expression shall, unless excluded by or repugnant to be context be deemed to include its administrators, successors and assigns) of the one part

And

_____ {Name of the Firm} having its office at _____ (hereinafter called the “Supplier” which expression shall, unless excluded by or repugnant to be context be deemed to include its successors, legal assigns, executors or administrators) of the second part.

WHEREAS

- a) the Purchaser had invited bids (vide its Tender no. dated _____ for Supply of the goods to NMCG/ other locations in PAN India/ Ganga Basin 5 States (hereinafter called “the Materials”);
- b) the Supplier, having represented to the Purchaser that he has the required experience and resources, has offered to provide in response to the aforesaid tender;
- c) the Purchaser has accepted the proposal of the Supplier and agrees to buy and the Supplier agrees to supply the Materials in conformity with the specifications specified in Appendix A of this Contract and in accordance with the terms and conditions of this Contract.

NOW, THEREFORE, IT IS HEREBY AGREED between the parties as follows:

1. The following documents attached hereto shall be deemed to form an integral part of this Contract:
 - a) The General Conditions of Contract;
 - b) The Special Conditions of Contract;
 - c) The following Appendices:
 - Appendix A: Bill of Materials
 - Appendix B: Letter of Award (LoA) issued by the Purchaser
 - Appendix C: Copy of BOQ

Appendix D: Performance Bank Guarantee

2. The mutual rights and obligations of the Purchaser and the Supplier shall be as set forth in the Contract, in particular:
 - a) the Supplier shall carry out and complete the supply of Materials in accordance with the provisions of the Contract; and
 - b) the Purchaser shall make payments to the Supplier in accordance with the provisions of the Contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year first above written.

All other terms and conditions of the tender document, clarifications, corrigendum and addendum if any shall form integral part of this Contract.

For and on behalf of
National Mission for Clean Ganga

For and on behalf of
{Name of the Supplier}

.....
.....

.....
.....

II. General Terms and Conditions

1. GENERAL PROVISIONS

1.1. **Definitions** Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

- (a) "Applicable Law" means the laws and any other instruments having the force of law in India for the time being.
- (b) "Supplier" means the firm/agency that will supply the Materials to the Purchaser under the Contract.
- (c) "Contract" means the Contract signed by the Parties and all the attached documents listed in its Clause 1, i.e. the General Conditions (GC), the Special Conditions (SC), and the Appendices.
- (d) "Materials" means supply of T-Shirts, Bags, Caps, Badges, Aprons and Bands by the Supplier to the Purchaser.
- (e) "Effective Date" means the date on which this Contract comes into force and effect pursuant to Clause GC 2.
- (f) "GC" means these General Conditions of Contract.
- (g) "SC" means the Special Conditions of Contract by which the GC may be amended or supplemented.
- (h) "Government" means the Government of India.
- (i) "Party" means the "Purchaser" or the "Supplier", as the case may be, and "Parties" means both of them.
- (j) "Services" means the work to be performed by the Supplier pursuant to this Contract, as described in Appendix A hereto.
- (k) "In writing" means communicated in written form with proof of receipt.

1.2. Law governing the Contract

This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the applicable laws of India, for time being in force as amended from time to time.

1.3. Subletting:

The Supplier shall not sublet, transfer or assign this contract or any part thereof without the prior written consent/approval of the NMCG. In the event of the Supplier contravening this condition, the contract is liable to be terminated and the Purchaser will be free to get the balance work or services under the contract executed at the risk and cost of the Supplier. The Supplier shall be liable for all the losses, damage which the NMCG may sustain in consequence or arising out of the services being provided under the contract.

1.4. Notices:

1.4.1. Any notice, request or consent required or permitted to be given or made pursuant to this

Contract shall be in writing. Any such 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 post/e-mail to such Party at the address specified in the SC.

- 1.4.2. A Party may change its address for notice hereunder by giving the other Party notice in writing of such change to the address specified in the SC.

2. Contract Period

The contract will be effective from the date of award of work or signing of this Contract. The Contract is deemed to have started from _____ (hereinafter referred to as "Date of Start/Effective Date"). The Contract is for a period of 24 months. The Purchaser shall have the right to extend the term for subsequent year(s) based on the satisfactory performance of the Supplier and mutually agreed terms and conditions.

3. Contract Price

- (a) The total value of the Project is as per Financial Bid and is Rs. _____ (Rupees _____ only) ("Contract Price").
- (b) The Contract Price shall be paid as per the Financial Bid subject to any additions and adjustments thereto, or deductions there from, as may be made pursuant to the Contract.
- (c) Prices charged by the Supplier for the Materials delivered and the related services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid.
- (d) Prices will remain valid and firm during the Contract Period.

4. Scope of Contract

The Supplier undertakes to supply to the Purchaser, and the Purchaser undertakes to accept and pay for on the terms and conditions stipulated in this Contract for the Materials (T-Shirts, Bags, Caps, Badges, Aprons and Bands) at unit rate as specified in Appendix C.

The estimated annual quantities of the Materials are indicated at Scope of Work of this RFP document. This RC is in the nature of a standing offer for items of quantity of which may or may not be ordered in full. The Purchaser will place work orders during the currency of this RC for meeting requirements of Materials as and when required. The Supplier is bound to supply any quantity at the contracted rate during the currency of this contract as per the provisions of contract.

5. Delivery

- (a) Items mentioned in Scope of Work will be transported in bulk quantity to Ganga Basin 5 States (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal) during the contract period;
- (b) Other items (may be individual) will be delivered in PAN India;

- (c) Out of the total quantity tentatively fixed for 19 items, around 25% will be delivered at O/o NMCG.
- (d) The delivery of the Materials shall be completed within the stipulated time period indicated in workorder issued from time to time as and when required.
- (e) Work order may include some or all the items, the Supplier shall submit the invoice for the items supplied as per work order on every such occasions.
- (f) The Supplier has to deliver the Materials to the Purchasers' office without any extra cost irrespective of the quantities involved. The expected timelines are given below:

Activity	Expected Timeline
Supply of Material mentioned in Scope of Work	Within 10 days from the date of work order having been placed during the Contract Period or any other timeline as mentioned in the work order.

- (g) The Supplier, if faced with problems in timely delivery, which are beyond their control at any time during the contract, shall immediately inform the Purchaser in writing, about the causes of the delay and tentative duration of such delay etc. The Purchaser, on receipt of such notice, shall analyze the facts at the earliest and may at its sole discretion, extend the delivery/ Contract Period as deemed reasonable.
- (h) Any delay by the Supplier in the supply of Materials will make the Supplier liable to any or all of the following:
 - i. Forfeiture of Performance Bank Guarantee
 - ii. Imposition of Liquidated Damage
 - iii. Termination of the Contract for default

6. Payment Terms

(a) Supply, Installation, Commissioning & one-year mandatory O&M of the equipment

- I. 60% value of the item shall be payable on receipt of materials at site.
- II. The next 10% value of equipment shall be payable on successful completion of the commissioning of equipment.
- III. The next 10% value of the equipment shall be payable after successful completion of the Operation & Maintenance work of the entire installation for the first year.
- IV. Balance 20% (5% for each year = 20 %) value of the equipment shall be payable after efficient & successful completion of the Operation & Maintenance work of the entire installation for the subsequent 4 years.
- V. O& M payment

(b) Completion Period and payment schedule:

A. Payment of fees for Supply, installation and operation.

Construction, Operation & maintenance	Time Allowed	Job to be completed for declaration of completion of the work	% of fee paid	Cumulative %
1 st Milestone	60 days	Supply, delivery, storage of the Equipment / Materials.	60 %	60 %
2 nd Milestone	50 days	Installation, testing including pre-commissioning tests and commissioning of the system. (Including trial run for 30 days of entire installation as per requirement)	10 %	70%
3 rd Milestone	365 days	Comprehensive mandatory efficient & successful Operation & Maintenance work of the entire installation for 1 st years.	10 %	80%
4 th Milestone	1460 days	Comprehensive mandatory efficient & successful completion of the Operation & Maintenance work of the entire installation for the subsequent 4 years.	5% for each year = 20 %	100%

(c) B. Payment of fees for O & M.

S.No.	Time Allowed	Particulars	% of Fee Paid	Cumulative %
1	1460 days	Comprehensive mandatory operation & maintenance of the successfully build pumping station with all associated equipment for 4 years.	6% for each quarter = 16 %	96 %
2	1825 days	Final completion certification of O & M period.	4 %	100%

(d) In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to supply the Materials and remedy any defects therein in all respects and in conformity with the provisions of the Contract.

(e) The Purchaser hereby covenants to pay the Supplier in consideration of the supply of the Materials and 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 in the Contract.

(f) The Supplier's request for payment shall be made to the purchaser in writing, accompanied by invoices describing, as appropriate, the Materials delivered and related

services performed, and by the required documents submitted pursuant to conditions of the Contract and upon fulfilment of all the obligations stipulated in the Contract.

- (g) Payment will be made to the Supplier within fifteen (15) days on completion of supply and acceptance by the Purchaser for each supplies. The Supplier shall submit a pre-receipted bill/invoice along with satisfactory supply reports/ delivery challans duly signed by the Purchaser.
- (h) NMCG has right to inspect/ cross verify/ ask for delivery receipts pertaining to any/ all consignment at the time of processing of invoice.
- (i) All payments will be made in Indian Rupees only.
- (j) Any penalties/ Liquidated Damages, as applicable, for delay and non-performance, as mentioned in this Contract, will be deducted from the payments for the respective supplies.
- (k) Taxes, if any and as applicable, will be deducted/ paid as per the prevalent rules and regulations.
- (l) Payment in case of those Materials which replacement or removal for defects or rejected shall be made only prescribed specification or alternate Materials have been delivered to the destination as required by the Purchaser.
- (m) That in the event of the Supplier having failed to execute the Contract or any part of the Contract and /or failed to rectify any defect or any obligation within the Contract after issue of notice of 15 days, the Supplier shall be liable for damages and the Purchaser shall have the right to get it done on the risk and expenses of the Supplier.
- (n) All payments under this Contract shall be made to the accounts of the Supplier as specified in SC.

7. Purchaser's Rights

- (a) The Purchaser reserves the right to make changes within the Scope of the Contract at any point of time.
- (b) The Purchaser reserves the right to place work order(s) during any period up to 24 months from the effective date of contract taking into account the same unit price for individual items as mentioned in the Financial Bid. The right of refusal of not getting the work done lies with the Purchaser.
- (c) If the Purchaser does not procure any subject matter of procurement specified in the tender document/ Contract due to change in circumstances, the Supplier shall not be entitled for any claim or compensation.
- (d) Since the Contract is for rates for various items, thus orders for items as per required quantities may be placed on the rates and conditions given in the Contract which will be valid for 24 months from the effective date of Contract.
- (e) As per the requirements, from time to time, the Purchaser shall issue a work order to the Supplier for supply of various items in one or more categories. However, the Contract does not guarantee the Supplier to receive any minimum/ committed number of work order(s) from Purchaser.

- (f) The work order shall specify the quantity of various items to be supplied along with delivery schedule.
- (g) The Contract for the Supply (RC) can be repudiated at any time by the Purchaser, if the supplies are not made to his satisfaction after giving an opportunity to the Supplier of being heard and recording the reasons for repudiation.
- (h) Before accepting the supply of Materials, the Materials will be inspected by the Purchaser. The Supplier has to ensure that the Materials supplied are in conformity with the specifications specified in the contract and the same can be checked during period of the Contract at the cost of the Supplier.

8. Quantity Variation Clause

The quantities mentioned in this contract are indicative only. The required quantities may vary to +/- 25%. However, the approved rate of each item as per Financial Bid and other terms and conditions shall remain unchanged during the period of the Contract. It will be entirely the discretion of the Purchaser to exercise this variation option or not. Additionally, the Purchaser reserves the right to not buy the quantities of some of the items that it does not require as stated in the Financial Bid.

9. Penalty for delayed services/ Liquidated Damages

As time is the essence of the contract, delivery period mentioned in the workorder should be strictly adhered to. If the supplier fails to supply the Materials as per specifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of 1% per day of delay of respective work order value subject to a maximum of 10% beyond the due date. Such money will be deducted from any amount due or which may become due to the supplier.

10. Performance Standards

- (a) The Supplier has to supply the Materials to the Purchaser within the timelines mentioned in the tender during the Contract Period or the timelines mentioned in the work order.
- (b) That in the event of the Supplier having failed to execute the Contract or any part of the Contract in accordance with the terms of the Contract or within reasonable time allowed by the Purchaser or shall be failing to perform the Contract or there shall be sub-standard performance on the Contract, the Performance Guarantee shall be forfeited and in that connection the decision of the Purchaser shall be final and binding.
- (c) In case any counterfeit or sub-standard Materials supplied by the Supplier, the Purchaser, at its own discretion, can also get the Materials audited for a random check to discourage the supply of counterfeit Materials supplied by the Supplier. Supply of counterfeit or sub-standard Materials will also attract termination of Contract and other suitable action against the Supplier.

11. Performance Security

The Supplier has furnished Performance Bank Guarantee No. _____ dated _____ amounting to Rs. _____/- (which is 10% of the total estimated value of the contract) and valid for a period of sixty (60) days beyond the date of completion of all contractual obligations. In case the contract period is extended further, the validity of Performance Bank Guarantee shall also be extended by the Supplier accordingly.

12. Specifications and Standards

- (a) All items supplied shall strictly conform to the specifications laid down in the tender document/contract and wherever Materials have been required according to ISI/ ISO/ other applicable specifications/ certifications/ standards, those items should conform strictly to those specifications/ certifications/ standards. The supply shall be of best quality and description. The decision of the competent authority of the Purchaser whether the Materials supplied conform to the specifications shall be final and binding on the Supplier.
- (b) The Materials supplied under this Contract shall conform to the standards mentioned in bidding document and, when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the country of origin of the Materials.

13. Rejection of Materials

- (a) Materials not approved during inspection shall be rejected and will have to be replaced by the Supplier at his own cost within the time fixed by the Purchaser.
- (b) The rejected Materials shall be removed from Purchaser's premises by the Supplier within Ten (10) days of intimation of rejection, after which Purchaser shall not be responsible for any loss, shortage or damage and shall have the right to dispose of such Materials at his discretion, at the Supplier's risk and on his account.

14. Packing

- (a) The Supplier shall provide such packing of the Materials as is required to prevent its damage or deterioration during transit to reach destination, as indicated in the Contract. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation and open storage.
- (b) The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as is required for such Materials.

15. Transportation

The Supplier shall be responsible for transport by any means viz. sea, rail, road or air and delivery of the material in the good condition to the Purchaser at destination. In the event of any loss, damage or any shortage the Supplier shall be liable to make good such loss and shortage found at the checking/ inspection of the Materials by the Purchaser. No extra cost on such account shall be admissible.

16. Assignment or Transfer of Obligation:

This Contract shall inure to the benefit of each of the parties and their respective successors and neither party shall otherwise assign the benefit or burden of this Contract to any others, without the previous written consent of the other party.

17. Force Majeure

(a) Neither party shall be responsible to the other for any delay or failure in performance of its obligations due to any occurrence commonly known as Force Majeure which is beyond the control of any of the parties, including, but not limited to, fire, flood, explosion, acts of God or any governmental body, public disorder, riots, embargoes, or strikes, acts of military authority, epidemics, strikes, lockouts or other labour disputes, insurrections, civil commotion, war, enemy actions.

(b) If a Force Majeure arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser, the Supplier shall continue to perform his 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. The Supplier shall be excused from performance of his obligations in whole or part as long as such causes, circumstances or events shall continue to prevent or delay such performance.

18. Termination

(a) Termination on expiry of the Contract: The Contract shall be deemed to have been automatically terminated on the expiry of the Contract period unless the Purchaser has exercised its option to extend the Contract in accordance with the provisions, if any, of the Contract.

(b) Termination on account of Force Majeure: Either party shall have the right to terminate the Contract on account of Force Majeure, as set forth in this contract.

(c) Termination on account of Insolvency: In the event the Supplier at any time during the term of the Contract becomes insolvent or makes a voluntary assignment of its assets for the benefit of creditors or is adjudged bankrupt, then the Purchaser shall, by a notice in writing have the right to terminate the Contract and all the Supplier's rights and privileges hereunder, shall stand terminated forthwith.

(d) Termination for Default: The Purchaser may, without prejudice to any other remedy for breach of contract, by a written notice of default of at least thirty (30) days sent to the Supplier, terminate the Contract in whole or in part:

- (i) If the Supplier fails to deliver any or all quantities of the Materials within the time period specified in the Contract or any extension thereof granted by Purchaser;
or

- (ii) If the Supplier fails to perform any other obligation under the contract within the specified period of delivery of service or any extension granted thereof; or
 - (iii) If the Supplier, in the judgement of the Purchaser, is found to be engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the contract; or
 - (iv) If the Supplier commits breach of any condition of the contract.
- (e) Termination for Delay: The Supplier shall be required to supply the Materials as per defined schedule in the workorder. If the Supplier fails to do so within 20 days, the Contract may be terminated by the Purchaser by giving thirty (30) days written notice unless the Purchaser has extended the period with levy of Liquidated Damages.
- (f) Termination for Convenience
Purchaser, by a written notice of at least thirty (30) days sent to the Supplier may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated and the date upon which such termination becomes effective.
- (g) Consequences of Termination: The Materials that are delivered at destination within seven (7) days after issue of the notice of termination to the Supplier shall be accepted by the Purchaser at the Contract terms and prices and paid for subject to other terms and conditions of this Contract. In all cases of termination herein set forth, the obligation of the Purchaser to pay shall be limited to the period upto the date of effective termination unless stated otherwise in this Contract. Notwithstanding the termination of the Contract, the parties shall continue to be bound by the provisions of the Contract that reasonably require some action or forbearance after such termination.

19. Indemnity

The Supplier shall indemnify, protect and save the Purchaser/NMCG against all claims, losses, costs, damages, expenses, action suits and other proceeding, resulting from infringement of any law pertaining to patent, trademarks, copyrights etc. or such other statutory infringements in respect of all the Materials supplied by him.

Purchaser reserves the right to recover the cost towards any damage/loss caused due to the negligence on the part of the Supplier engaged.

20. Settlement of Disputes

- 20.1. **Amicable Settlement:** Performance of the contract is governed by the terms & conditions of the contract, in case of dispute arises between the parties regarding any matter under the contract, either Party of the contract may send a written Notice of Dispute to the other party. The Party receiving the Notice of Dispute will consider the Notice and respond to it in writing within 30 days after receipt. If that party fails to respond within 30 days, or the dispute cannot be amicably settled within 60 days following the response of that party, Arbitration clause mentioned hereunder shall become applicable.

- 20.2. **Arbitration:** In the case of dispute arising upon or in relation to or about the contract between the Purchaser and the Supplier, which has not been settled amicably, any party can refer the dispute for Arbitration under (Indian) Arbitration and Conciliation Act, 1996. Such disputes shall be referred to an Arbitral Tribunal consisting of 3 (three) arbitrators, one each to be appointed by the Purchaser and the Supplier, the third arbitrator shall be chosen by the two arbitrators so appointed by the parties and shall act as Presiding Arbitrator. In case of failure of the two arbitrators, appointed by the parties to reach a consensus regarding the appointment of the third arbitrator within a period of 30 days from the date of appointment of the two arbitrators, the Presiding arbitrator shall be appointed by the Secretary of the Ministry / Department. The Arbitration and Conciliation Act, 1996 and any statutory modification or re-enactment thereof, shall apply to these arbitration proceedings.
- 20.3. Arbitration proceedings shall be held in New Delhi, India and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.
- 20.4. The decision of a majority of arbitrators shall be final and binding upon both parties. The expenses of the arbitrators as determined by the arbitrators shall be shared equally by the NMCG and the Supplier. However, the expenses incurred by each party about the preparation, presentation shall be borne by the party itself. All arbitration awards shall be in writing and shall state the reasons for the award.
- 21. Jurisdiction of Courts**
Jurisdiction of courts for dispute resolution shall be New Delhi only.

III. SPECIAL CONDITIONS OF CONTRACT

SCC Clause No.	Ref. of GC Clause No.	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.	1.4	<p>Addresses: NMCG: National Mission for Clean Ganga (Ministry of Water Resources, River Development & Ganga Rejuvenation), 1st Floor, Major Dhyan Chand National Stadium, Near India Gate, New Delhi -110002 Tel: +91-11-23072900/901; Fax: +91-11-23049567</p> <p>Supplier: (Contact Persons name and contact details) </p>
2.	2	Effective date of contract.....
3.	3	The Contract Price is Rs. _____ (Rupees.....) exclusive of all applicable taxes and duties.
4.	9 (j)	<p>Account Details of the Supplier: Name and Address of the Beneficiary: Bank: Branch: Address of the Bank: Account Number: Account Type: RTGS/NEFT/IFSC CODE: MICR NO:</p>