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List of abbreviations in RFP

S.No.	Abbreviations	Explanation
1	GIT	General Instructions to Tenderers / Bidders
2	RFP	Request for Proposal
3	NIT	Notice Inviting Tender
4	LTEO	Long Term Ecological Observatories
5	TE	Tender Enquiry
6	DCS	Digital Signature Certificate
7	NIC	National Informatics Centre
8	OEM	Original Equipment Manufacturer
9	IGST	Integrated Goods and Service Tax
10	SGST	State Goods and Service Tax
11	CGST	Central Goods and Service Tax
12	CDEC	Custom Duty Exemption Certificate
13	CDMC	Comprehensive Annual Maintenance Contract
14	FOR	Freight on Road
15	FOB	Freight on Board
16	GCC	General Conditions of Contract
17	OSC	Original Software Company
18	MoMSME	Ministry of Micro, Small & Medium Enterprises
19	BG	Bank Guarantee
20	DDO	Drawing and Disbursing Office
21	NSIC	National Small Industries Corporation
22	LD	Liquidated Damages clause
23	NOC	No Objection Certificate
24	TDS	Tax Deducted at Source
25	PAN	Permanent Account Number
26	DTAA	Double Taxation Avoidance Agreement
27	LC	Letter of Credit
28	FAT	Factory Acceptance test

29	SAT	Site Acceptance test
30	IFSC	Indian Financial System Code
31	MICR	Magnetic Ink Character Recognition
32	PSU	Public Sector Unit
33	TBRG	Tipping Bucket Rain Guages
34	DAS	Data Acquisition System
35	GPRS	General Packet Radio Service
36	AWS	Automatic Weather Stations
37	IoT	Internet of Things
38	SMF	Sealed Maintenance Free
39	FRP	Fiber Reinforced Plastic
40	NIST	National Institute for Standards and Technology
41	RTC	Real Time Clock
42	TTL	Transistor Transistor logic

**LTEO, CES, IISc
Bangalore**

Tender Enquiry No.

Dated:

**SECTION – I
GENERAL INSTRUCTIONS TO TENDERERS/BIDDERS (GIT)**

1. Introduction:

The Purchaser has issued this TE documents for procurement of services related as mentioned in “**Request for Proposal (RFP)**”, which also indicates, *inter alia*, the required stores, delivery schedule, terms and place of work/delivery etc. This section (“General Instructions to Bidders”) provides the relevant information as well as instructions to assist the prospective Bidders in preparation and submission of bids.

Bidders shall have to agree/accept all the terms and conditions of bids including payment terms etc. Acceptance shall be unconditional and bidders shall have no claim and right in future on their terms if any.

2. Language of Tender:

The tender submitted by the bidder and all subsequent correspondence and documents relating to the tender exchanged between the bidder and the purchaser, shall be written in English language.

3. Eligible Goods and Services:

All goods and related services to be supplied under the contract shall have their origin in India or any other country with which India has not banned trade relations. The term “origin” used in this clause means the place where the goods are mined, grown, produced, or manufactured or from where the related services are arranged and supplied.

4. Tendering Expense

The bidder shall bear all the costs and expenditure incurred and/or to be incurred by them in preparation, and submitting their tender including attending the pre-bid conference and or arranging demonstration of Product/Services or Field trials that may be deemed necessary by the Purchaser.

5. Pre-Bid Conference:

Pre-bid conference shall be held as per Notice Inviting Tender (NIT) schedule so as to provide an opportunity to the participating bidders to interact with LTEO officials with regard to various tender provisions/clauses, before the bids are submitted. Bidders should depute their authorised representative for pre-bid meeting. In case, due to the points/doubts raised by the prospective bidders, needs to be modified, and then the same will be considered for modification. After pre-bid conference, tender conditions will be

frozen. **No change will be permissible after opening of Bids.** Clarification needed if any may be sent before commencement of pre-bid meeting. No reply in this regard shall be sent to individual bidders. **Pre-bid** queries can be sent on email ID Lteoscience.ces@iisc.ac.in with copy to Lteochair.ces@iisc.ac.in.

6. Regular visit of website:

Prospective bidders are advised to see IISC website at <https://www.iisc.ac.in/business-with-iisc/tenders/> on regular basis for any change in NIT schedule, amendment / corrigendum in Tender Document (T.E.) including technical requirement and pre-bid minutes etc.

7. Amendments to Tender Enquiry (TE) documents:

At any time, prior to the deadline for submission of bids, the purchaser may, for any reason deemed fit by it, modify the TE documents by issuing suitable amendment(s) to it. The amendment will be uploaded to <https://www.iisc.ac.in/business-with-iisc/tenders/> only. In order to provide reasonable time to the prospective bidders to take necessary action in preparing their bids as per the amendment, the purchaser may, at its discretion extend the deadline for the submission of bids and other allied time frames, which are linked with that deadline. Prospective bidders are advised to visit <https://www.iisc.ac.in/business-with-iisc/tenders/> on regular basis for any change in NIT schedule, amendment /corrigendum in Tender Document including technical requirement.

8. Submission of bids:

Bidders are requested to submit their Bid/quotation in two bids, i.e., TECHNICAL bid and COMMERCIAL bid. Both the Technical and Commercial bid should be put in separate sealed envelopes, and put together in another cover stating “Quotation for Automatic Weather Stations” and should reach us on or before **5:00 PM, 24 May 2021.**

8.1 Part-1 (Technical bid)

The **Technical Bid** must include all the details of the technical specifications of the instrument along with terms and conditions masking only the price component. Bill of materials, brochures, technical data sheets, and any other document may be enclosed to help the evaluation of the technical bid.

8.2 Part-2 (Commercial Bid):

- 1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.**
- 2. The quotations should be on FOR-IISc Bangalore basis in INR only.**

The commercial bid must include the price of the instrument in Indian currency (INR), indicating break-up as follows:

- (i) Price of the goods quoted Ex-works inclusive of all taxes.
- (ii) Charges for inland transportation, insurance, and other services may be indicated separately.
- (iii) Installation, Commissioning and Training charges etc., if any.

9. Signing and submitting Tender:

Bidder shall submit their properly signed and stamped tender on the company letterhead to **LTEO Chair, TE-13, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru, 560012**. The tender shall not contain any eraser or overwriting, except as necessary to correct any error made by the bidder and, if there is any such correction; the same shall be initialled by the person(s) signing the tender as per the two-bid system mentioned in para-8.

10. Opening of Tenders:

The purchaser will open sealed bids at the specified date and time and at the specified place as indicated in the NIT. In case the specified date of tender opening falls on/ is subsequently declared a holiday or closed day for the purchaser, the bids will be opened at the appointed time and place on the next working day. Authorized representatives of the bidders, who have submitted sealed bids may attend the tender opening, provided they bring with them letters of authority from the corresponding bidders. Since this is a two-bid system, the **Technical Bids** are to be opened in the first instance, at the prescribed date and time schedule. These bids shall be scrutinized, evaluated and approved by the competent committee/ authority with reference to parameters prescribed in the TE document. Thereafter, in the second stage, the Price Bids of technically qualified bidders only shall be opened for further scrutiny and evaluation on a date notified after evaluation of the techno commercial tender.

11. Scrutiny and Evaluation of Bids:

11.1 Unresponsive bids:

(Scrutiny separately carried out by a Bid acceptance mechanism prior to technical evaluation). The bids will be scrutinized to determine whether they are complete and meet the essential and important requirements, conditions etc. as prescribed in the TE document. The bids are liable to be treated as non-responsive and will be summarily ignored if followings are not provided along with technical bids.

- (i) Registration certificate of bidding firm with any state or central government body in India or respective country. Credential/document not attached.
- (ii) Tender is unsigned or is incomplete, is not submitted due to any reason with in stipulated period.
- (iii) Properly signed and stamped Checklist (**Annexure-I**) is not properly filled and fully furnished compliance statement is not enclosed.

- (iv) Tender Acceptance Form (**Annexure-II**) not duly signed and stamped. (**i.e., all the terms & conditions of tender document are acceptable.** Original Letter shall be enclosed in technical bid.
- (v) Tender validity is shorter than the required period.
- (vi) Tender has not agreed to give the required Performance Security Deposit.
- (vii) Pre-Integrity Pact as per format at Annexure-IV duly signed on all the pages by the authorised signatory.

11.2 Technical Evaluation:

After the tender acceptance, Bids shall be scrutinized and technically evaluated by the committee constituted by competent authority with reference to parameters prescribed in the RFP/Tender document.

Minor Informality/Irregularity/Non-Conformity:

If during the preliminary examination, the purchaser finds any minor informality and/or irregularity and/or non-conformity in a tender, **the purchaser may waive the same provided it does not constitute any material deviation and financial impact and, also, does not prejudice or affect the ranking order of the bidders.** Wherever necessary, the purchaser will convey its observation on such ‘minor’ issues to the bidder asking the bidder to respond by a specified date. If the bidder does not reply by the specified date or gives evasive reply without clarifying the point at issue in clear terms, that tender will be liable to be treated as non-responsive.

11.3 Financial evaluation:

Thereafter, in the second stage, the Price Bids of technically qualified bidders only shall be opened manually for further scrutiny and evaluation on a date and time notified after evaluation of the techno commercial tender.

The purchaser shall evaluate the technically qualified financial bids for **deciding lowest bidder (L-1) on the basis of ultimate landing cost.** Charges towards Insurance, Freight and transportation of goods up to sites etc. applicable from time to time for taking purchase decision shall also be added. These should be clearly indicated by the bidder.

IF ANY CHARGES ARE NOT INDICATED SPECIFICALLY AND SEPARATELY IN THE BID, SAME WILL BE TREATED AS INCLUSIVE.

12. Packing and Marking:

The packing for the goods provided by the supplier should be strong and durable enough to withstand, without limitation, the entire journey during transit including transshipment (if any), rough handling, open storage etc. without any damage, deterioration etc.

SECTION – II

GENERAL CONDITIONS OF CONTRACT (GCC)

1. **General – I: Bidders shall have to agree/accept all the terms and conditions of the tender document including payment terms etc. Acceptance shall be unconditional and bidders shall have no claim and right in future on their terms if any.**
2. General – II: Whenever there is any conflict between the provisions in the GCC **regards to specific Para under this section and that in the “RFP” “List of requirements/Technical Specifications”**, the provision contained in the RFP (Technical Specifications) shall prevail and have an over-riding effect. Any Special instructions as per “RFP-List of requirements/technical specifications” section will also apply for this services/purchase. The conditions (like qualification criteria, delivery schedule, mode of delivery & sites of delivery etc.) mentioned in “RFP-List of requirements/ technical specifications section” will also apply for this purchase.

3. **Tender Validity:**

The bids shall remain valid for acceptance for a period of 180 days (one hundred and eighty days) after the date of tender opening prescribed in the TE document.

4. **Purchaser’s Right to accept any tender and to reject any or all bids:**

The purchaser reserves the right to accept in part or in full any tender or reject any tender without assigning any reason or to cancel the tendering process and reject all bids at any time prior to award of contract, without incurring any liability, whatsoever to the affected bidder or bidders.

5. **Tender Fee:** No tender fee is charged on the downloaded and e-tenders.

6. **Purchase /Price preference:**

- 6.1 Purchase preference shall be given to **Make in India**, as per the policy of Government of India to encourage Make in India and promote manufacturing and production of goods and services in India circulated Vide Order No. P-45021/2/2017-B.E.-II, Ministry of Commerce and Industry, Department of Industrial Policy and Promotion dated. 15.06.2017.
- 6.2 Price preference shall be given to **Micro and Small Industries** registered for stores and services specified in this tender enquiry document with **National Small Industries Corporation** or any other government agencies as per the latest guidelines/orders from Government of India as on date of submission of bids. Purchase preference and quantity etc. shall be decided as per the Government of India orders. The bidders shall have to attach valid registration certificate. Micro and small Enterprises are not exempted from Performance Security Deposit. Micro and small Enterprises shall have to furnish Performance Security Deposit if purchase order is placed to them. There is no relaxation in this regard.

7. Eligibility & Qualification criterion for Bidders:

Indian Firms in given below category are eligible to participate in tender **subject to registration of the firm with government bodies as per act /rules and also fulfilment of other specific qualification criteria, terms and conditions mentioned in technical requirement section and tender enquiry document also.**

- 7.1 Integrators/Authorized dealer/ Supplier/ subsidiary/ Distributors/ Stockist having full back to back maintenance support agreement for hardware/software from OEM & OSC etc. In this case the bidder shall have to submit authorization certificate from OEM that they will provide inventory of all requisite spares, accessories and service support for at least 10 years after commissioning of the entire project. An undertaking from OEM in this regard should be submitted along with the tender.
- 7.2 The complete name and address of the bidding firm and its Permanent Account Number (PAN) as allotted by the Indian Income Tax authority must be submitted. Supplier /Integrator /Distributors /stockiest etc. for imported stores shall quote in INR only & no payment shall be made to their foreign principal.
- 7.3 The bidder should have minimum annual **turnover of INR 5 Crores or equivalent value for past three years** ending on 31.03.2021. The firm should not have incurred financial loss for more than one year in last three years.
- 7.4 **Pre-Contract Integrity Pact (Annexure-IV) is to be duly filled and signed by each bidder and submitted along with the bid.**

8. Performance Security Deposit:

- 8.1 Successful bidder shall submit Performance Security Deposit within twenty-one (21) days from date of dispatch of supply order/award of contract. The purchaser may consider annulment/cancellation of supply order/award of contract if Performance Security Deposit not received in stipulated time
- 8.2 There is no relaxation/exemption in submitting of Performance Security Deposit.
- 8.3 The supplier, shall furnish Performance Security Deposit to the purchaser for an amount equal to ten percent (10%) of the total value of the contract, valid up to sixty (60) days beyond the warranty period.
- 8.4 **Performance Security Deposit has to be submitted irrespective of its registration NSIC etc. Performance Security Deposit is not relaxed to any supplier/service provider. Submission of Performance Security Deposit is must for all suppliers/service providers.**
- 8.5 The CAMC service provider shall furnish Performance Security Deposit to the purchaser for an amount equal to five per cent (5%) of the total value of the CAMC, valid up to sixty (60) days after the date of completion of all contractual obligations by the supplier/service provider.
- 8.6 Performance Security Deposit shall be in the form of Bank Guarantee issued by a National Commercial Bank doing government business in the prescribed form in favour of the purchaser. **In the event of any amendment issued to the contract, the supplier shall, within twenty-one (21) days of issue of the amendment, furnish the**

corresponding amendment to the Performance Security Deposit (as necessary), rendering the same valid in all respects in terms of the contract, as amended.

- 8.7 The purchaser will release the Performance Security Deposit without any interest to the supplier/service provider on completion of the supplier's all contractual obligations including the warranty obligations & after receipt of Performance Security Deposit for CAMC. The supplier shall submit pre-receipt for obtaining back their security.

9. Terms of Delivery:

Goods shall be delivered by the supplier in accordance with the terms of delivery specified in the contract. Generally, it is **F.O.R destination**. Suppliers should not deliver the goods without any valid delivery period. Purchaser shall not be held responsible for anything (payment and loss of stores etc.) if stores supplied without any valid delivery period as purchaser reserve the right to reject the delivery and terminate the supply order.

10. Delivery schedule: As per section under RFP ('**Technical specification**').

Date on which all the stores as per supply order have been delivered to the consignee shall be treated as final date of delivery of stores.

11. Force Majeure:

Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable. Such events may include, but are not restricted to, acts of the purchaser either in its sovereign or contractual capacity, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes, lockouts, and freight embargoes. If there is delay in performance or other failures by the supplier to perform its obligation under its contract due to event of a Force Majeure, the supplier shall not be held responsible for such delays/failures. **If a Force Majeure situation arises, the supplier shall promptly notify the purchaser in writing of such conditions along with supporting documents** and the cause thereof within twenty-one days of occurrence of such event. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side. There may be a Force Majeure situation affecting the purchase organization only. In such a situation the purchase organization shall take up with the supplier on similar lines as above for further necessary action.

12. Warranty:

The warranty shall be **Onsite warranty for one year after successful commissioning of AWS site.** All stores to be supplied should be free from all defects and faults in material workmanship and manufacture. They should be of the highest grade and consistent with the established and generally accepted standards for material of the type used and in full conformity with the specifications, drawings, or samples and shall, if operable, operate properly. **The Seller shall be bound to furnish a clear written warranty regarding the same.** The Seller will be required to replace them free of cost inclusive of all freight and handling charges. The supplier shall provide warranty certificate from the OEM for the goods along with date of manufacturing of stores/products.

The supplier shall take over the replaced parts/goods after providing their replacements and no claim, whatsoever shall lie on the purchaser for such replaced parts/goods thereafter. Custom charges if any, for Re-export/re-import of defective parts/repairs or replaced parts to the foreign supplier country for repairs etc shall be borne by supplier only. Transportation cost and Octroi etc, for sending defective parts for repairs and sending back repaired or replaced one to designated site(s), shall be borne by supplier itself.

Other condition under warranty clause of “List of requirements/ technical specifications” section shall also be applicable.

13. Comprehensive Annual Maintenance Contract (CAMC):

The Purchaser/Consignee reserves the rights to enter into Comprehensive Maintenance Contract between Consignee and the Supplier after the completion of warranty period. CAMC shall be only for the maintenance of stores (equipment and software only). Prospective bidders are advised to quote accordingly and specifically. **It should not be quoted in terms of percentage of project** as consumable, transportation, warranty; installations, training etc are not covered.

The cost components towards CAMC are to mentioned and added in bid by bidders for its evaluation on overall basis to decide the ranking of tender. Generally, payment for maintenance contract is made on quarterly basis unless it is specified in technical section. The supplier shall enter into agreement with consignee, if required.

14. Penalty clause/Liquidated damages clause (LD) for delayed stores & Services:

- 14.1 The supplier shall deliver the goods and perform the services (like installation & commissioning etc) under the contract within the time schedule specified by the purchaser in the “List of requirements/ technical specifications” section and as incorporated in the contract. **The delivery date, unless delivery is divided, on which all the items/stores/materials/services etc as per supply/purchase order are delivered shall be taken into account for penalty/LD purpose.**

The purchaser shall, without prejudice to other rights and remedies available to the purchaser under the contract, deduct as penalty/liquidate damage from the contract price a sum equivalent to 0.5% (half percent) per week of delay or part thereof on delayed supply

of goods and/or delayed services subject to a maximum of 10% of the contract price of delayed items. LD shall not be imposed under force majeure conditions. Once the maximum is reached purchaser may also consider followings:

- (i) Forfeiture of its Performance Security Deposit and
- (ii) Termination of the contract for default.

Note: The supplier shall not be held responsible for delay in delivery of stores and their installation for the following reasons:

- (i) Delay in providing Entry permits/Road Permits (if required) to the supplier by the consignee.
- (ii) Delay in providing proper site(s) by the consignee to the supplier. Site is not ready in all respect (i.e. all civil & electrical at site completed) for installation of stores.
- (iii) Delay in providing No Objection Certificate (NOC) required from any other government agency/agencies.
- (iv) Communication facility required for project to be provided to the supplier by the consignee if it is not the responsibility of supplier.
- (v) Any other reason for which supplier is not responsible.

14.2 (i) Penalty/Liquidated damages shall be calculated on the purchase/contract price including the element of sales tax, excise duty, service tax etc mentioned in the price bids

- (ii) Custom duty shall not be taken for the purpose of Penalty/LD calculations.

14.3 The supplier shall not be held responsible for any delay in custom clearance by purchaser, handing over proper site by consignee and any other delay in part of consignee/purchaser, if responsible. These periods shall not be counted in LD. The supplier shall not dispatch the goods after expiry of the delivery period. The supplier is required to apply to the purchaser for extension of delivery period and obtain the same before despatch. In case the supplier dispatches the goods without obtaining an extension, it would be doing so at its own risk and no claim for payment for such supply and/or any other expense related to such supply shall be against the purchaser.

The supplier shall inform to the purchaser (LTEO Chair, TE-13, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru, 560012) in writing about these delays on part of IISc, Bangalore

15. Award Criteria and Tolerance Clause:

The purchase order /supply order shall be awarded to the eligible responsive tender evaluated as the most economical, technically qualified and suitable to the requirements subject to the availability of funds. The purchaser reserves the right to increase or decrease the quantity of required goods up to plus minus fifteen percent ($\pm 15\%$) till the placement of supply/purchase order or contract without any change in the terms & conditions and prices quoted by the bidders. Based on the purchaser's requirement a repeat order may also be placed as per GFR rule.

16. Modification of contract

If necessary, the purchaser may issue an order to the supplier at any time for amendment of the contract by making alterations and modifications within the general scope of contract during the period of the contract. If the supplier doesn't agree to the adjustment made by the purchaser, the firm shall convey its views to the purchaser within fifteen (15) days from the date of the supplier's receipt of the purchaser's amendment/modification of the contract.

17. Taxes and Duties:

17.1 Duty and Taxes: Integrator / Supplier shall pay IGST/SGST and other taxes where applicable as per existing rules at that time. Normally materials to be supplied to Govt. Department against Govt. contracts are exempted from levy of town duty, Octroi duty, terminal tax and other levies of local bodies. The local Town/Municipal Body regulations at times, however, provide for such exemption only on production of such exemption certificate from any authorized officer. Contractors should ensure that stores ordered against contracts placed by this office are exempted from levy of town duty/Octroi duty, Terminal tax or other local taxes and duties. Wherever required, they should obtain the exemption certificate from the indenter /consignee concerned, to avoid payment of such local taxes or duties. The supplier shall pay the Octroi, entry tax etc. if exemption certificate not agreed by local authorities and same may be got reimbursed from purchaser on proof of payments.

17.2 Supply of Road Permits by the indenter /consignees: In all such cases where the requirement of Road Permit for entry of goods into a particular State is mandatory, the following provisions shall be strictly followed: -

- (i) The supplier shall request the indenter /consignee for providing Road permit/ Way bill within 10 days of the receipt of the Supply order. The supplier shall furnish all the necessary information and documents in this regard to Indenter/consignee.
- (ii) On receipt of the above request from the supplier, the indenter/consignee concerned shall arrange to provide the Road permit/Way Bill in the prescribed form to the supplier within a maximum period of two weeks so that the same reaches the supplier before the dispatch of the stores. However, in cases where the Road permit/Way Bill is issued on proof of actual invoice of the material, the consignee shall arrange to provide the Road permit/Way Bill from appropriate authorities within a maximum period of 10 days from the receipt of invoice.
- (iii) The supplier shall pay the local charges/taxes (Octroi etc.) if exemption certificate not agreed by local authority and same will be reimbursed by purchaser on submission of receipt.

The supplier shall not be held responsible for any delay in supply due to non-supply/delayed supply of Road permit.

17.3 Income Tax and GST etc.

Tax deducted at source (TDS) shall be done before making payment to the suppliers as per existing law in force. The bidders may visit website of Income Tax Department of India for details of Tax Liabilities, Rules, and Procedures etc. The bidders

shall have to provide their Permanent Income Tax Number (PAN) and GST registration number. All the applicable taxes such as GST etc. shall be borne by the vender.

18. Terms and Mode of Payment

Payment Terms: Payment, as per term mentioned in RFP Technical Specifications at Para 12, shall be made subject to recoveries, if any, by way of liquidated damages /penalty clause /TDS or any other charges as per terms & conditions of contract if not specified elsewhere in the document.

19.1 Payment towards Comprehensive Annual Maintenance Contract Charges (CAMC): Payment shall be made as per “RFP-List of requirements/technical specifications” section. The consignee will enter into CAMC if required for selective items with the supplier at the rates as stipulated in the contract after warranty period. The payment of CAMC will be made after satisfactory completion of said period and duly certified by the consignee. The consignee shall deal this issue separately and directly. The supplier shall deal CAMC agreement and payment etc. directly with the consignee.

19.2 The supplier shall send its claim for payment in writing, when contractually due, along with relevant documents etc., duly signed with date, to respective consignees.

19.3 Bills/invoices must be submitted separately for stores and services.

19.4 The supplier shall send its claim for payment in writing, when contractually due, along with relevant documents etc., duly signed with date, to consignee.

19.5 The bidder shall submit particulars of his bank account required for making payments.

(i) Account Number (ii) Bank Name (iii) Branch Name (iv) Address

(v) IFSC code (vi) MICR No. (vii) Telephone No. (viii) SWIFT code etc.

19. Fall Clause

The bidder undertakes that it has not supplied/is not supplying similar products/systems or subsystems at a price lower than that offered in the present bid in respect of Ministry/Department of the Government of India or Public Sector Unit (PSU) and if it is found at any stage that similar products/systems or subsystems was supplied by the BIDDER.

To any Ministry/Department of the Government of India or Public Sector Unit (PSU) at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and difference in the cost would be refunded by the BIDDER to the BUYER (India Meteorological Department) or it will be adjusted from their bills, if the contract has already been concluded.

20. Termination of tender by the Purchaser:

From the time of submission of tender to the time of awarding the contract, if a bidder needs to contact the purchaser for any reason relating to this tender enquiry and/or its tender, it should do so only in writing.

In case a bidder attempts to influence the purchaser in the purchaser's decision on scrutiny, comparison & evaluation of bidders and awarding the contract, the tender of the bidder shall be liable for rejection in addition to appropriate administrative actions being taken against that bidder, as deemed fit by the purchaser.

The purchaser, without prejudice to any other contractual rights and remedies available to it (the purchaser), may, by written notice of default sent to the supplier, terminate the contract in whole or in part, if the supplier fails to deliver any or all of the goods or fails to perform any other contractual obligation(s) within the time period specified in the contract, or within any extension thereof granted by the purchaser. In the event of the purchaser terminating the contract in whole or in part, the purchaser may procure goods and/or services similar to those cancelled, with such terms and conditions and in such manner as it deems fit and the supplier shall be liable to the purchaser for the extra expenditure, if any, incurred by the purchaser for arranging such procurement. If the supplier becomes bankrupt or otherwise insolvent, the purchaser reserves the right to terminate the contract at any time, by serving written notice to the supplier without any compensation, whatsoever, to the supplier, subject to further condition that such termination will not prejudice or affect the rights and remedies which have accrued and / or will accrue thereafter to the purchaser.

21. Arbitration clause:

If dispute or difference of any kind shall arise between the purchaser and the supplier in connection with or relating to the extension of contract, the parties shall make every effort to resolve the same amicably by mutual consultations. If the parties fail to resolve their dispute or difference by such mutual consultation within twenty-one days of its occurrence, then, unless otherwise provided in the "List of requirements/ technical specifications" section either the purchaser or the supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided the applicable arbitration procedure will be as per Indian Arbitration and Conciliation Act, 1996. In the case of a dispute or difference arising between the Purchaser/ Consignee and all suppliers relating to any matter arising out of or connected with the contract, such dispute or difference shall be referred to the sole arbitration of an officer, appointed to be the arbitrator by the Director General of Meteorology. The award of the arbitrator shall be final and binding on the parties to the contract. Each party shall bear its own cost.

Venue of Arbitration: The venue of arbitration shall be the place from where the contract has been issued, i.e., New Delhi. The contract shall be interpreted in accordance with the laws of India.

22. List of Deliverables:

The Bidder shall submit the final list (List of Deliverables) of their proposal as per **Annexure-X** for all the stores, H/w, S/w, items, subunits etc and all other services which bidder is going to offer in their technical proposal to meet the requirement under “**List of requirement & Technical specifications**” of this tender document. The list of deliverables shall be same as submitted in the price bid. **The price bid shall not be considered if it is not matching with the list of deliverables submitted with technical bids.**

CHECKLIST

(Checklist shall be attached in the beginning of the tender)

S.N.	Activity	Compliance Yes/ No/ NA	Page No. in Your document
1.	Have you kept validity of tender for acceptance by the purchaser as per the TE document?		
2.	Have you submitted duly filled, signed & stamped all bidding documents, accepting all terms and conditions of the tender document.		
3.	Have you enclosed clause-by-clause compliance statement for the "List of requirements/technical specifications "section?		
4.	Have you submitted copy of the last purchase order(s) and end user certificate*?		
5.	Is tender submitted as an OEM?		
	Is tender submitted by authorized Agent/Dealer/ supplier/ distributor/ subsidiary/ integrator etc of OEM?		
	If Not OEM, Is Authorization letter and back to back service support from OEMs (equipment manufacturer and software developer company) is attached?		
6.	(i) Permanent Account No. of bidding firm with proof.		
	(ii) Is Sales & Service tax number with registration certificate attached?		
7.	Name of the firm with complete address, who quoted the price.		
8.	Name of currency in which work/supply order to be placed.		
9.	Whether Bidder's bank details given?		

S.N.	Activity	Compliance Yes/ No/ NA	Page No. in Your document
10.	The bidder has to submit the Pre-Contract Integrity Pact duly signed by the authorized signatory of the firm/ company with the bid.		
11.	Whether Un price bid duly signed by the authorized signatory of the firm/ company with the bid submitted.		

*** User certificate should be from any government organization/PSU/public sector/internationally or nationally recognized institutes or sectors.**

(Name & Signature with date and firm/company seal)

Tender Terms & Conditions Acceptance Form

(For all the terms & conditions of tender document are acceptable to bidder)

To
LTEO Chair,
Centre for Ecological Sciences,
3rd Floor, Biological Sciences Building,
Indian Institute of Science,
Bangalore 560012, Karnataka,
India,

Ref: TE document No. CPU/_____ dated _____

I/We, the undersigned have examined the above mentioned TE document, including amendment/corrigendum No. _____, dated _____ (*if any*), the receipt of which is hereby confirmed. We now offer to supply and deliver *the goods and services in* conformity with your above referred document.

If our tender is accepted, we undertake to supply the goods and perform the services (Installation & commissioning etc.) as mentioned in tender document with the delivery schedule specified in the “RFP- List of requirements/ technical specifications”.

I/We further confirm that, if supply/purchase order is placed to firm, we shall provide Performance Security Deposit of required amount in an acceptable form for due performance of the contract.

I/We agree to keep our tender valid for acceptance as required in tender document or for subsequently extended period, if any, agreed to by us. I/We also accordingly confirm to abide by this tender up to the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. I/We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

I/We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

We confirm that we do not stand deregistered/banned/blacklisted by any Govt. Authorities.

I/We confirm that we fully accept and agree to all the terms and conditions specified in above mentioned TE document, including amendment/ corrigendum etc. if any.

(Signature with date and seal of the company)

(Name and designation)

Duly authorised to sign tender for and on behalf of bidder

**Note*: 1. Firm/company shall use their own printed letter head for issuing this certificate.
2. Acceptance shall be unconditional.**

PRICE BID FORMAT

S. No.	Item	Make & model Country of origin	Qty. Nos.	UNIT PRICE			Total price
				Base price	Applicable taxes and duties	Total price	
1	2	3	4	5	6	7=5+6	8=7x4
Sensors and hardware for AWS site							
1.	Temperature Humidity Sensor with Radiation Shield and mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30				
2.	Ultrasonic Wind sensors with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30				
3.	Rain Gauge Sensor (TBRG) with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30				
4.	DAS with IP-67 compliant Enclosure with mounting accessories and USB pen drive (16 GB or more) for data retrieval		30				
5.	GPRS modem with dual SIM (4G) (compatible with 3G) facility with minimum 8 dbi antenna gain with mounting accessories or IoT Communication module		30				
6.	Solar radiation/Sunshine Duration sensors with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30				
7.	10 meters Tilttable mast for weather parameters mounting accessories & FRP Enclosure for housing batteries charge controller and other accessories)		30 sets				
8.	SMF BATTERY as per system operational requirement		30				

S. No.	Item	Make & model Country of origin	Qty. Nos.	UNIT PRICE			Total price
				Base price	Applicable taxes and duties	Total price	
1	2	3	4	5	6	7=5+6	8=7x4
9.	Solar Panel with mounting accessories on the mast.		30 sets				
10.	Installation, integration of sensors of field AWS, masts erecting, Earthing for signal ground and lightning arrestor, display board as per specification, Site levelling and Fencing with gate with civil work.		30 sites				
11.	Transportation of materials to AWS sites safely in good condition as per list enclosed in Annexure –I.		One item				
12.	Hard and soft copy of operation and maintenance manuals		10				
13.	Training of 10 LTEO officials for 3 working days at IISc Bangalore		One item				
14.	Operational Training for each Nodal officers at all AWS sites		One item				
15.	Recurring cost towards payment of GPRS service (During one-year warranty period)		One item				
16.	CAMC charges also include recurring cost of GPRS service after expiry of one-year warranty. First year Second year Third year Fourth year Fifth year		One item				

Total Tender price in figure:

And in words:

Note/instruction:

1. The bidder shall use their own letter head for quoting the prices.
2. Price shall be preferred in above format.
3. The names of each stores/items offered in technical proposal must be mentioned with make & Model including services etc if any. The deliverables list attached with financial bid must be exactly same as per the technical bids.
4. Charges, if any, for inland (within the India) Transportation /freight/insurance of stores shall be mentioned. In case not mentioned, it is treated as free of cost.
5. If there is a discrepancy between the unit price and total price THE UNIT PRICE shall prevail.
6. All applicable taxes must be mentioned against each item. Rate of each applicable tax must be mentioned in price bid. If taxes not mentioned, then it is treated that price quoted is inclusive of taxes.
7. Costing for each and every items and sub items which is offered in technical bid shall be done with all breakups. Charges for FAT, Trainings, installation, SAT and other services etc. are to be mentioned clearly in price bid.
8. Price Bid (in .pdf format excluding note/instruction) shall be uploaded on eprocure.gov.in

Signature of Bidder

Seal of the Bidder

PRE-CONTRACT INTEGRITY PACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on day of the ----- month of 2021, between, on one hand, the President of India acting through **LTEO Chair, CES, IISc, Government of India** (hereinafter called the “BUYER”, which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s represented by Shri Chief Executive Officer (hereinafter called the “BIDDER/Seller” which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

1. WHEREAS the BUYER proposes to Procure **AWS (Automatic Weather Stations) for 30 AWS as per details in RFP of tender Document**

and the BIDDER/Seller is willing to offer the stores and

WHEREAS the BIDDER is a private company/public company/Government undertaking/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the BUYER is a Ministry/Department of the Government of India performing its functions on behalf of the President of India.

NOW, THEREFORE,

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

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

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the BUYER

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

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

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

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

Commitments of BIDDERS

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following: -
 - 3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
 - 3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favor, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favor or disfavor to any person in relation to the contract or any other contract with the Government.
 - 3.3* BIDDERS shall disclose the name and address of agents and representatives and Indian BIDDERS shall disclose their foreign principals or associates.
 - 3.4* BIDDERS shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/contract.
 - 3.5* The BIDDER further confirms and declares to the BUYER that the BIDDER is the original manufacturer/integrator/authorized government sponsored export entity of the defense stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the BUYER or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
 - 3.6 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.

- 3.7 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.8 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.10 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12 If the BIDDER or any employee of the BIDDER or any person acting on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the BUYER, or alternatively, if any relative of an officer of the BUYER has financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filing of tender.
The term 'relative' for this purpose would be as defined in Section 6 of the Companies Act 1956.
- 3.13 The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the BUYER.

4. Previous Transgression

- 4.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDER's exclusion from the tender process.
- 4.2 The BIDDER agrees that if it makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Performance Security Deposit

- 5.1 In case of the successful BIDDER a clause would also be incorporated in the Article pertaining to Performance Security Deposit in the Purchase Contract that the provisions of Sanctions for Violation shall be applicable for forfeiture of Performance Security Deposit in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.
- 5.4 No interest shall be payable by the BUYER to the BIDDER on Performance Security Deposit for the period of its currency.

6. Sanctions for Violations

- 6.1 Actions are as follows:
- (i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.
- (ii) The Performance Security Deposit (after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.

- (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
- (iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
- (v) To encash the advance bank guarantee and Performance Security Deposit, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.
- (vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation/rescission and the BUYER shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.
- (vii) To debar the BIDDER from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the BUYER.
- (viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.
- (ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.
- (x) Forfeiture of Performance Security Deposit in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

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

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

7. Fall Clause

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

Section- III
Technical Specification

Procurement of AWS
(Automatic Weather Station)

1. INTRODUCTION

LTEO, CES, IISc Bangalore

The Ministry of Environment, Forest and Climate Change, Government of India, has launched the Long-Term Ecological Observatories (LTEO) programme as a constituent activity of the Climate Change Action Programme of the country. LTEO is a multi-institutional, multi-disciplinary, all India coordinated project, being led by the Centre for Ecological Sciences (CES), Indian Institute of Science (IISc), Bengaluru. The fundamental research premise of the Long-Term Ecological Observatories (LTEO) programme is to understand the biophysical and anthropogenic drivers of ecosystem change and their effects on social-ecological responses. In its first phase, the LTEO programme will monitor a range of themes and taxa across the Indian subcontinent including soil, forests, grasslands, invertebrates, fish, herpetofauna, birds, animal movement and marine ecosystems. The work will be initiated at 6 index sites representing different biomes including the Northwestern Arid Zone, Western Himalaya, Eastern Himalaya, Central India, Western Ghats and Andaman and Nicobar Islands. The entire project is managed by a Coordination Cell at the Indian Institute of Science.

The tentative list of AWS sites is given in **Annexure-V**.

2. SCOPE OF TENDER

The supplier shall have full responsibility to execute the project on a **TURN-KEY BASIS** by taking up the supply, installation, integration and commissioning of all equipment and reception of data at LTEO Central server as given below:

- 2.1 Supply, transportation and delivery of all equipment consisting of sensors, **Data Acquisition System (DAS)**, batteries, solar panels, FRP Enclosures, transmission systems incorporating Dual SIM 4G GPRS modems (3G Compatible) and other related accessories/deliverables etc., at respective sites **or through Internet of Things (IoT) based communication system. Provision should be made to communicate AWS data stream to the cloud/central server/any other locations at Bangalore in .csv format via FTP, EMAIL and SMS. The details of data format for dissemination will be provided. The bidder has to configure DAS for data transmission as per user defined time interval (1 min to 1 hour) as well as destinations and ensure the timely data reception at Central Receiving Station, Bangalore.**
- **Data acquisition and management software is to be provided.**
 - **SIM card will be provided by us.**

- **Windows server having an internet connection that is used to receive data will be provided by us.**

Details of requirements are given in Annexure-VI.

- 2.2 Supply of masts, fencing material and all required sensor mounting accessories such as cables, mounting arms/booms connectors, conduits, switches, transient protectors etc. for field installation at respective AWS sites.
- 2.3 Details of site preparation as specified in **Annexure-VII**.
- 2.4 Installation, integration and commissioning of AWS at all field sites including civil work regarding site preparation, cable laying and all such work required to be done at field site for functioning of the station.
- 2.5 **Comprehensive Warranty for One year followed by Comprehensive Annual maintenance contract (CAMC) for next Five years.**

3. OVERALL REQUIREMENTS

- 3.1 The AWS equipment along with data communication system should incorporate the state-of-the-art technology and provide capability for unattended operation in all weather conditions. The system shall run using Sealed Maintenance Free (SMF) battery(s), rechargeable through a solar panel. The battery shall be capable to run the system for minimum period of **20 days** on full load during total cloudy or foggy conditions. The bidders shall provide power budget calculation in the technical bid.
- 3.2 The AWS data (.csv format) shall also be received at IISc, Bangalore Central Server via FTP service facility, via email to Lteo.ces@iisc.ac.in as well as other designated offices as per user defined time interval (10 min to 1 hour).
- 3.3 All equipment should be qualified for high quality specifications and suitable for outdoor applications.
- 3.4 The DAS, GPRS modem, SMF battery and Solar Charge controller must be housed in a **FRP Enclosure**.
- 3.5 All sensors should be interfaced with DAS as per the requirement. At selected sites, it should be possible to install additional sensors to be interfaced with DAS, without any major changes in the hardware.
- 3.6 Software with provision for real time quality control of AWS data (to be applied at DAS in the field site).
- 3.7 The system shall have facility to issue command for forced/manual transmission of data.
- 3.8 The system shall have time synchronization (time keeping) via GPS or GPRS modem/Internet.
- 3.9 Training of 10 local officials at Bangalore & at each site for Operation and Maintenance of System and also filed training at all AWS sites to Nodal officers designated by LTEO.
- 3.10 Ensure support for AWS sensors and spares for 10 years.
- 3.11 Details of network block diagram and Schematic diagram of AWS site with 10 meter Tilttable mast is given in **Annexure- VIII**.
- 3.12 The firm shall provide demonstration of the complete AWS system including sensors, DAS, Communication equipment (GPRS) etc. as per RFP, offered in their bids, for a period of 15 days at No cost and No commitment basis as a part of Technical Evaluation at LETO designated site, Bangalore. Failure and/or Non-

compliance of any component during the above period will be liable to cancel the bid.

4. SPECIFICATIONS OF SENSORS

For all sensors offered, valid certification from NIST (National Institute for Standards and Technology, USA) /IMD/WRC is to be submitted.

4.1	Temperature and Relative Humidity Sensor with Radiation Shield		
4.1.1	Air Temperature		
	a. Sensor type		Pt 100 RTD
	b. Measurement Range		-20 °C to +60 °C
	c. Accuracy (with radiation shield)		± 0.20 °C or better for +10°C to +60 °C ± 0.35 °C or better for -20°C to +10 °C
	d. Resolution		0.1 °C
	e. Response Time		20 sec or better
	f. Output		Analogue/Digital/IoT compatible
4.1.2	Relative Humidity		
	a) Measurement Range		10% to 100%
	b) Accuracy (including non-linearity, hysteresis and repeatability)		± 2% RH or better with membrane filter
	c) Response time		20 sec or better
	d) Resolution		1% or better
	e) Sensor type		Capacitive / solid state
	g. Output		Analogue/Digital/IoT compatible
4.1.3	Radiation Shield		
	a) Type		Thermoplastic
	b) Louvred		Minimum 9
	c) Ventilation		Natural
	d) Mounting Accessories		Weatherproof and corrosion-resistant mounting bracket and U Bolt clamp
4.2	Wind Sensor (2D Ultrasonic)		
4.2.1	Wind Speed		
	a) Range (Operation)	:	0 to 60m/s or better
	b) Sustainability	:	Up to 60 m/sec

	c) Accuracy	:	± 0.5 m/s or better
	d) Resolution	:	0.1 m/s
	e) Response time	:	2sec or better
	f) Output	:	Digital/IoT compatible
4.2.2	Wind Direction		
	a) Range	:	0 to 359 Degrees
	b) Accuracy	:	±5 degrees or better
	c) Resolution	:	1 deg. or better
	d) Response time	:	2sec or better
	e) Output	:	Digital/ IoT compatible
4.3	Tipping Bucket Rain Gauge		
	a) Orifice Size/ collector diameter		Specified Diameter of the collector rim should be between 159.6 mm to 203.4 mm
	b) Collector Area		Specified Collector Area should be between 200 cm ² to 325 cm ²
	c) Switch		Rugged Magnetic Proximity
	d) Resolution		0.5 mm per tip
	e) Output		0.1 sec switch closure
	f) Rainfall capacity		Unlimited
	g) Accuracy		±2% or better, for rain rate up to 25 mm/hr ±3% or better, for rain rate between 25mm/hr to 50 mm/hr ±4% or better, for rain rate between 50mm/hr to 100 mm/hr ±5% or better, for rain rate>100 mm/hr
	h) Material of Outer Body/housing (Base/Collector)		The outer body should be with marine grade stainless steel or Fibre glass Reinforced Plastic (FRP) or UV resistant ABS plastic or anodized Aluminium alloy (Al 99.5 grade) suitable for coastal environment.
	i) Levelling		Suitable levelling adjustment screws and circular spirit level must be provided on the base of TBRG for levelling the Tipping bucket Mechanism.
	j) Debris protection		Suitable (Wire mesh) debris

	filter		protection filter should be provided inside the collector.
4.4	Radiation sensor		
	(a) Sensor		Thermopile Pyranometer
	(b) Threshold at normal incidence		Spectral range measurement from 350 nm to 3000 nm for thermopile.
	(c) Resolution		5 Wm ⁻² for irradiance, 1 MJm ⁻² d ⁻¹
	(d) Methodology		Should differentiate between diffuse & direct radiation
	(e) Spectral range		0 to 3000 W/m-2
	(f) Response time		Approximately 60 s for 99% response. Spectral response, 0.3 to 3µm for a thermopile type sensor.
	(g) Threshold Stability/year		±0.5% or better
	(h) Latitude for use		All Locations in India
	(i) Error due to changing declination		±5% of daily total over entire range and entire spectrum
	(j) Output		Digital/IoT compatible
	(k) Operating voltage		12V DC ± 2V
	(l) Operating Temperature & humidity		-20 ° C to +60° C 0 to 100% RH
	(m)Shielded Cable length		As per actual (Approx. 5 meters)
	(n) Mounting bracket		Weather proof and corrosion resistant
	(o) Mounting Assembly		It accommodates all mounting accessories, includes U-bolt and nuts for fixing the sensor on 10 m tiltable mast and also made of stainless steel.

5. POWER SUPPLY

5.1 The complete AWS station shall have capability for unattended operation at remote place using Sealed Maintenance Free (SMF) battery, Solar charge controller and rechargeable through a Solar panel.

- (i) **Battery:** Suitable battery/batteries to work the complete system on full load under inclement weather condition
 - (ii) **Solar Charge controller:** It should be able to charge SMF battery/batteries through Solar panel and also Over-load protection, Short circuit protection, Protection from the lightning strike and Under-voltage protection.
 - (iii) **Solar Panel [Mono crystalline]:** The capacity as demand for the making the operational on full load under inclement weather condition for 20 days.
- 5.2 The Supplier must attach a detailed **POWER BUDGET CALCULATION** taking care of solar panel and battery efficiency and sufficient safety factor of the system supported with documentary proof in technical bid for power consumption of the AWS station so that AWS should run for minimum of 20 days during cloudy day or without charging the battery. The detailed power consumption of each component of the AWS system must be clearly mentioned in the technical brochures to support Successful bidder's statement.

6. SPECIFICATIONS OF DAS AND GPRS MODEM

- 6.1 The DAS shall have facility to sample the output of the attached sensors with user selectable sampling interval (1-minute interval from Temperature and Humidity sensor and 1 sec for wind sensor). The process of the samples collected is to obtain instantaneous, average (including 3 minutes vector average for wind), maximum and minimum values for the selected measurement interval for transmission.
- 6.2 All DAS should have suitable port to interface with any external display unit. The protocol details of data transmission (every minute logged data) through this port have to be documented properly by the bidder in its technical bid so that any authorized user can interface their device/ display unit.
- 6.3 The sampling and measurement interval for individual parameters shall also be user selectable.
- 6.4 The DAS should have capability to store the data for specified parameter at user defined intervals in distinct multiple log files for each sensor and other related parameters (data volume 500 MB or more).
- 6.5 The stored data shall be retrievable via serial port/ USB port/Ethernet port/wireless communication to a PC/laptop and a pen drive or any other compact and commercially available solid-state memory device in standard text file format (.csv format)without requirement of specific software to retrieve the data.
- 6.6 DAS should have keypad and backlit LCD/LED display (internal/external unit) with menu driven facility to display the command, data characters.
- 6.7 All the Analog, Digital and SDI-12 channels in the DAS must be compatible to the sensors supplied and integrated with the system.
- 6.8 The DAS should have adequate and optimum number of high-performance two analog channels, built-in digital channels to accommodate digital output of all the sensors with two RS-232 ports in the form of standard DB9 connector, one RS-485, one SDI -12, one counter channel. DAS should be easily configurable for any additional sensors in future.
- 6.9 The DAS shall have suitable interface for 4G dual SIM GPRS modem (3G Compatible). Or should be IoT compatible communication system, with a provision

of wireless system, and having suitable App for making IoT fully functional & operational.

- 6.10 It shall be possible to configure, transfer the DAS setup, customize programs etc. or software up-gradation by interfacing DAS with a laptop or PC through RS232 port/Ethernet port/USB port/ etc, with proper user authentication.
- 6.11 If data logger does not have a USB port then appropriate USB converters (e.g., RS-232 to USB) are to be provided (2 nos.).
- 6.12 The datalogger on the tower should be accessible from ground using a laptop.[Laptop is not a part of this tender] Sensor cable lengths should be sufficient to wire them to datalogger.
- 6.13 The DAS shall be able to accept all sensor inputs without external signal conditioning.
- 6.14 Provision to access to the DAS through GPRS modem shall also be made with password protection.
- 6.15 In order to facilitate data processing, the DAS shall have a provision for 24-hour Real-Time Clock (RTC) powered by a battery (with min. one-year lifetime) to ensure that time is maintained even during power outages. The DAS shall have provision to easily include and change the “Unique station identification code”, “Station Name”, “Time of observation and transmission”, “Measurement schedule” and “Sensor identification information”, for all parameters, as mandatory requirements. Any change in the DAS should be properly logged along with user, date and time details.
- 6.16 DAS should have facility to calculate and disseminate Daily Maximum Temperature at 12 UTC; Daily Minimum Temperature at 03 UTC; from every minute logged data in the DAS to the Central Server. Provision of generating Daily Maximum and Minimum Relative Humidity and Daily Maximum and Daily Minimum Wind speed in DAS should be also disseminated at 0300 UTC from every minute logged data.
- 6.17 **Features of DAS**

(a) ADC Resolution	:	16 bit or better
(b) Conversion Accuracy	:	± 1 LSB
(c) System clock		
(i) Stability Long-term	:	1 ppm/year or better
(ii) Stability (Temperature)	:	3 ppm or better from -20°C to +60°C
(d) Internal Memory	:	1 GB or more
(e) Battery Backup (internal)	:	Lithium Battery, Storage: minimum 1 year
(f) Watchdog Timer	:	In case of interrupt the system reset automatically and keep track.
(g) Sampling Rate	:	1 sec (minimum)
(h) Measurement Intervals	:	1 sec to 60 sec in 1 sec interval 1 Min to 60 min in 1 min increments (All above should be user selectable Separately and distinctly for individual sensors.)

(i) Operating Temperature range	:	-20°C to + 60°C
(j) Operating Humidity	:	10% -100% non-condensing.

6.18 The DAS should have a facility to apply Quality Control procedures such as gross error check and time consistency check for sensors interfaced. Detailed QC procedures and algorithms proposed to be implemented at field sites shall be in accordance with WMO No.8 “Guide to Meteorological Instruments and Methods of Observation” Part-III Chapter 1 and Part-II Chapter 1, Seventh Edition, 2008.

Plausible value check (The gross error check on measured value): Each sample should be examined to check if its value lies within the measurement range of a particular station. If the value fails the check, it is rejected and not used in the further computation of the relevant parameter.

Check on Plausible rate of change (The time consistency check on measured values): This check is to verify the rate of change (unrealistic jumps in the values). After each signal measurement, the current sample shall be compared to the proceeding one. If the difference of these two samples is more than specified limit then the current sample is identified as suspect and not used for the computation of average. However, it is still used for checking temporal consistency of sample.

6.19 **GPRS Modem (4G with dual SIM Facility)-Compatible with 3G or e-sim):**

4G based GPRS Modem (compatible with 3G) with dual SIM facility and also have provision of fast and reliable wireless data communications along with support for IP based access to the central server IP. The following technical specifications are indicative.

- (i) GPRS facility with fast and reliable wireless data communications.
- (ii) Remote dial-up facility.
- (iii) Shall support SMS, Email and FTP.
- (iv) Accept dual standard SIM card.
- (v) Ethernet/RS 232/485/USB interface with DAS.
- (vi) Indication of network availability (signal strength).
- (vii) Suitable High gain GPRS Antenna for reliable communication.

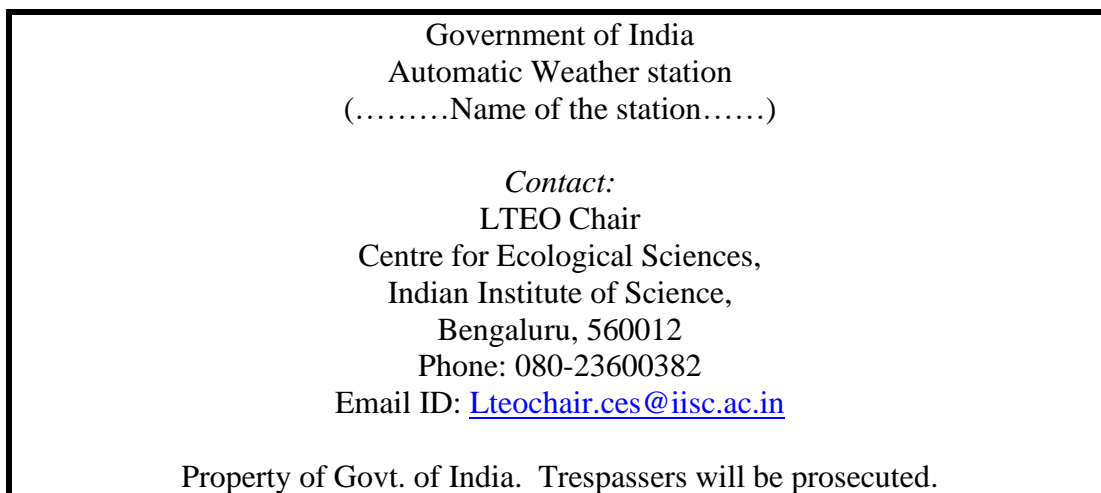
7. INSTALLATION AND COMMISSIONING OF THE SYSTEM

7.1 The Supplier shall be responsible for implementation of the project on a **turnkey basis providing end to end solution.**

7.2 The supplier shall be responsible for supply of all equipment and deliverables including transportation to the field sites safely without any damage.

7.3 Site preparation including all Civil and other related works such as construction of concrete foundation for mast and erection of 10-meter Tilttable Mast for AWS, installation and commissioning of AWS including installation of DAS, interfacing of sensors, installation and configuration of communication system, site levelling, installation of fencing shall be the responsibility of the Successful bidder.

- 7.4 The supplier shall undertake installation work in presence of Nodal officer designated by LETO, Bangalore. The Nodal officer will commission the station after successful continuous verification of one-week uninterrupted data quality.
- 7.5 The Air Temperature & Relative Humidity sensor, Wind sensors, Radiation/sunshine duration sensor shall be mounted on separate booms/arms of at least 1.5 m length. The booms/arms shall be fixed horizontally on the mast at 2 m height for AT/RH sensor, and 10 m height for second wind sensor. TBRG sensor shall be installed at 3m distance from the mast. Radiation/Sunshine duration sensors shall be installed at 2 m height. All cabling in the AWS site should be concealed/underground using suitable PVC pipe conduits.
- 7.6 Each site should have a good quality metal sign board (Size: Length 1.2 m x Width 0.9 m) (well protected and rust proof) as depicted suggestive format below, which is painted in English, Hindi and Regional Languages, with the following information:



The details on sign board will be made in consultation of nodal officer of respective RMCs/MCs.

- 7.7 The supplier shall supply of 15 hard bound copies of operation and maintenance manuals and 5 softcopies in USB Drive.

8. GPRS NETWORK SERVICE

- 8.1 The supplier shall arrange to provide reliable 4G GPRS (3G Compatible) network with very good signal strength for all AWS across India from two different reputed commercial network service providers on its company name. The supplier should ensure 90% data reception on daily basis from each AWS site at central server.
- 8.2 The supplier shall also be responsible for payment of recurring charges towards GPRS network service for One year during Comprehensive warranty and also for Five years during CAMC period after installation and commissioning of the AWS network.
- 8.3 There should be provision for SMS and IP based communication with DAS remotely to access and configure the DAS through GPRS modem.

- 8.4 Overall requirements for compatibility to a GPRS cellular network shall be ensured by the supplier. Technical specifications in this aspect are broadly indicative. Complete end-to-end solution shall be the responsibility of the successful bidder.

9. COMPLIANCE STATEMENT

The tenderer shall submit a detailed item-wise compliance/ non-compliance statement referring para-wise/sub-para wise to the requirements given in the document, for quick evaluation of tender and for any future reference. The compliance statement shall be supported by original brochure(s) of the equipment or sub component from the manufacturer. In case the original brochure is silent on any part of tender specification, it shall be supported by an undertaking by the manufacturer along with user certificate* for that particular equipment/ sub-component, if claimed complied. The technical specifications and other requirements contained in this document are essentially required by the indenter. However, reasons for non-compliance, if any, for certain limited paras, or even sub-paras of the document may also be given by the tenderer. **Silence or inadequate information on any part of the technical specification, any conditional compliance or failure / omission to provide any such details will be treated as non-compliance.** All non-compliance of specifications, even of small nature, should be clearly brought out.

Sample format for Compliance (C)/ Non- Compliance (NC) statement:

Clause/Para/ Sub-para no.	Item description as per specification	Compliance (C)/ Non- Compliance (NC)	Remarks (if any)/ Supporting Documents (wherever required)
Section-I			
...			
Section-II			
...			
Section-III			
1	Introduction	Understood	
2	Scope of tender	C	
2.1		C	

10. ONSITE COMPREHENSIVE WARRANTY AND CAMC FOR AWS

- 10.1 The successful bidder shall provide onsite **comprehensive warranty for ONE YEAR** followed by **FIVE YEARS CAMC** of the entire system including site maintenance, consumables like Batteries, cells etc. after successful installation and commissioning. The firm has to enter into agreement as per terms and conditions laid down during Comprehensive Warranty and CAMC period.

10.2 The terms and conditions during on site Comprehensive Warranty Period/CAMC are given in detail as **Annexure –IX**.

11. DELIVERY SCHEDULE

a)	Delivery	Delivery of all equipment and accessories shall be done at respective sites in three consignments within six months from the date of placement of supply order Ist Consignment: 10 AWS System within two months from the date of placement of supply order. IInd Consignment: 10 AWS System and within two months after delivery of first consignment of 10 AWS systems. IIIrd Consignment: 10 AWS System and within two months after delivery of second consignment of 10 AWS systems.
b)	Installation and Commissioning	Within Six months from the placement of supply order. The firm has to install and commission first 10 AWS system within two months. The firm has to plan in such a way that the project should be taken on highest priority and complete the project within six months.

Delivery of one set equipments shall be done at each respective AWS field site. The list of deliverables is given as **Annexure-X**

12. PAYMENT TERMS

12.1 Payment for supply, installation & Commissioning

- a. 40% after successful supply of hardware/material.
- b. 30 % after SUCCESSFUL installation of AWS and training at site.
- c. 20 % after SUCCESSFUL commissioning of AWS.
- d. 10% after SUCCESSFUL completion of the project (successful commissioning of all 30 AWS).
- e. It is to be noted that the bidder may submit bills for payment after completion of supply/installation/commissioning for minimum 10 numbers of AWS stations.
- f. Payment shall be made subject to recoveries/adjustment, if any, by way of liquidated damages/penalty clause or any other charges as per terms and conditions of contract.
- g. Nodal officer shall be nominated by LTEO for checking the installation and commissioning of AWS system.

12.2 Payment during 5 years CAMC period of AWS

- a) CAMC charges of every 5 AWS or more will be paid on half yearly basis.
- b) Payment shall be made on the basis of certificate issued by the consignee authority/coordinating Nodal officer of LTEO, at Bangalore subject to recoveries/adjustment, if any, by way of liquidated damages/penalty clause or any other charges as per terms and conditions of contract.

13. TRAINING

The successful bidder shall provide comprehensive training in installation, integration, calibration, operation, maintenance, troubleshooting and replacement of defective modules of proposed DAS, GPRS communication system, sensors, DAS programming and system related topics to **10 (Ten) officers for a minimum period of Three Working Days at LTEO, CES, IISc, Bengaluru.** Training syllabus, material and documentation in English language shall be provided along with time table well before commencement of training for evaluation by LTEO. Soft copy of finalized training material should be provided to all the trainees. **The bidder shall also provide One day onsite training to nodal officers designated by LTEO for operation and routine maintenance of entire installed system at each AWS site.**

14. BIDDER QUALIFICATION CRITERIA

- a) The bidder/manufacturer should have minimum **two years'** experience in successful installation, maintenance, calibration of GSM/GPRS/Satellite based AWS network of 50 Nos. for any government/public sector/internationally or nationally recognized institutes or sectors. A certificate in this regard from the minimum **five users** about satisfactory and proven performance of the networks of the system must be enclosed with the technical bid. In case of offering new technology solution (complete IoT based solution) minimum experience and number of installations shall be considered by the competent authorities/Technical committee.
- b) The bidder should have minimum annual **turnover of INR 5 Crores for past three years** ending on 31.03.2021. Necessary documentary **evidence** in support of turnover shall be submitted with technical bid. Annual financial performance for past three years **should** be submitted. Out of three years the company must have made profit at least for two years.



TENTATIVE LIST OF AWS SITES

S.No	Shipment	State	No.	District (AWS Site)
1.	1	Gujarat	3	Rajkot (Hindolgarh), Surendranagar (Bajana), Junagadh (Gir)
2.	1	Uttarakhand	2	Nainital (Ramnagar), Chamoli (Mandal)
3.	1	Kerala	1	Wayanad (Periya)
4.	1	Tamil Nadu	2	Nilgiris (Benne), Nilgiris (Kargudi)
5.	1	Arunachal Pradesh	1	West Kameng (Lama Camp)
6.	1	Andaman & Nicobar Islands	1	South Andaman (Mt. Harriet)
7.	2	Andaman & Nicobar Islands	1	South Andaman (Manjeri)
8.	2	Gujarat	2	Banas Kantha (Jessore) Kachchh (Rann)
9.	2	Uttarakhand	3	Garhwal (Thalisain), Almora (Durga Devi), Chamoli (Chopta)
10.	2	Kerala	1	Wayanad (Thavinjal)
11.	2	Tamil Nadu	1	Nilgiris (Masinagudi)
12.	2	Arunachal Pradesh	2	West Kameng (Khellong), West Kameng (Sissni)
13.	3	Arunachal Pradesh	2	East Kameng (Khari), West Kameng (Bomphu)
14.	3	Uttarakhand	2	Chamoli (Dugalbitta), Rudraprayag (Tungnath)
15.	3	Madhya Pradesh	5	Balaghat (Balaghat) Balaghat (Kanha), Mandla (Kanha), Dindori (Phen), Dindori (Amarkantak)
16.	3	Tamil Nadu	1	Nilgiris (Thaishola)

Annexure – VI

Technical Specification of (IOT) Communication module for AWS

- a) It is the interface between Sensors and cloud/ Server. Cloud/ Server shall have facility to configure sensors.
- b) It should be able to:
 - i. Configure analog output of Temperature and humidity Sensors.
 - ii. Configure sensors having SDI, RS485, RS 232 output.
 - iii. Configure pulse counter sensors such as rain gauge.
 - iv. Configure Sunshine duration sensors with TTL / Analog output.
- c) Measurement, logging and reporting should be from 1 minute to 60 minutes user selectable.
- d) Power supply with reverse polarity protection shall be provided through suitable SMF batteries, which will be able to charged through solar panel.
- e) Its environmental conditions
 - (i) Temperature: -20° C to + 60 ° C
 - (ii) Relative Humidity: 0 % to 100%
 - (iii) Lightning protection: AC Transient voltage suppressor on each sensor.
- f) It should have flash memory capacity up to 1 GB and all data should be stored in .csv format.
- g) Provision should be made for the data retrieval through USB.
- h) **Have provision of WI-FI, IP enable Port (Ethernet port), GPRS Cellular Modem (4G/Compatible with 3G).**
- i) It should verify the connection with cell network and cloud/ server connection before data is being sent. If no connection is available or the data reception is not confirmed, data will be saved in flash memory for the next transmission.

(A) DETAILS OF AWS SITE PREPARATION

1. AWS SITE

Area of the AWS site should be 10 m x 10 m. The site should be leveled and made free of obstacles like bushes and trees. Herbicide should be sprayed and sites should be cleaned.

2. Fencing for the AWS site with Gate

- (a) The height of the fencing for the AWS site (10 m X 10 m) must be 1.5 meters from the ground level.
- (b) Fencing angle should be of size 50mm x 50mm x 6mm and pre-coated with red-oxide. Length of the angle shall be 2.5 meters i.e. (0.5 m below ground level). Each angle shall be grouted in concrete blocks of size (0.5 m X 0.5 m X 0.5 m).
- (c) Two MS angles must be used diagonally at each of the four corner angles of the site.
- (d) Distance between each fencing angle should be not more than 2 m.

(e) Chain-link Fencing

- (i) Dimensions of GI Chain link: 10 cm x 10 cm and of Gauge: 10 (3 mm diameter).
- (ii) GI chain-link mesh must be stretched on the fencing angles.
- (f) Gate: Entry Gate of Dimensions: 2 m X 1 m x 6 mm (Length x Width x Thickness) of MS angle with locking facility and painted with white/ silver color.

3. Mast Specification for AWS site

- a) The mast shall be 10 m height and tiltable which is made of anodized Aluminum alloy suitable for coastal stations.
- b) Three stainless steel guy wires support is to be provided for the mast.
- c) The mast shall be painted in red and white color scheme.
- d) It should be possible to easily tilt down the mast by one person for equipment installation and maintenance.
- e) The mast shall survive high wind speed of 60 m/s and test certificate shall be provided along with the technical bid.
- f) Concrete Platform for the mast should be 2.0 ft x 2 ft (length x width) and 4 ft height (3.0 ft below ground level and 1.0 ft. above the ground level).

4. Rain Gauge foundation

The Rain gauge foundation must be of dimensions 1 ft x 1ft (length x width) and 2ft height (1.0 ft below ground level and 1.0 ft above the ground level).

5. Earthing for signal ground and Lightning Arrestor

- (a) All AWS stations shall be provided with 2 earth pits - one for signal earth, another for lightning arrestor.
- (b) The earth pits shall ensure 100 % protection for all sensors and systems from severe lightning.
- (c) The lightning arrestor rod shall be made of copper which mounted on the top most of the AWS tower. It should be of thickness 12 mm and of one-meter length with a connected copper wire of dimension 15-meter length and 6 mm thickness (gauge). At other end of the copper wire is earthing rod of dimensions 15 mm thickness and 1.8m

length, which is buried into the ground. On the bottom of earthing rod, one copper plate of dimension (1 feet X 1 feet) should be connected.

AWS DAS enclosure should be grounded with local earthing.

(d) **Material required:**

Salt, Charcoal & Sand in an appropriate proportion as per electrical standards.

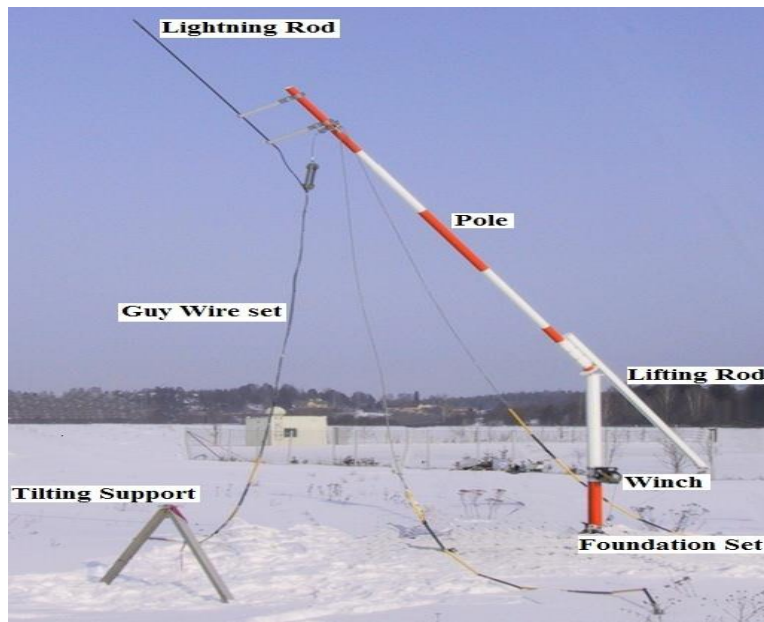
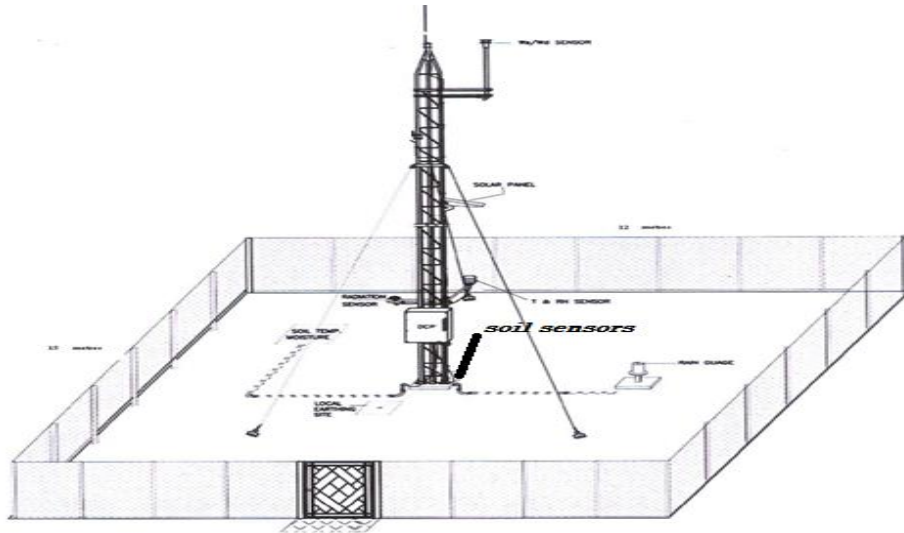
(e) **Procedure:**

1. A Pit of 4-5 feet depth, 2 feet X 2 feet wide at bottom (like a cone shaped) has to be dug.
2. After levelling the bottom pit, uniform layer of sequence of 6 inches of salt + 6 inches charcoal + 6 inches sand is filled. Such sequence is repeated 3 times till the earth pit is filled at the top. The copper earthing rod is placed in the centre of the pit. The pit is closed and levelled.

6. Sensor Installation

- (a) Temperature and Humidity sensor will be installed at a height of 1.5 m and sensor is kept at North Direction and should be kept at distance of tower by 1m.
- (b) One Wind sensor will be installed at a height of 10 m and another wind sensor will be installed at 3 m height.
- (c) Rain gauge sensor will be installed at distance of 3 meters from the tower.
- (d) Solar radiation / Sunshine duration sensor will be installed at 2m height in north direction.

BLOCK DIAGRAM OF AWS SITE



TERMS AND CONDITIONS DURING ONE YEAR ONSITE COMPREHENSIVE WARRANTY AND FIVE YEARS COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT

1. The successful bidder shall provide onsite Comprehensive Warranty for one Year followed by Comprehensive CAMC for Five Years of all AWS. The warranty period shall start from date of successful commissioning of the system. After expiry of one-year Warranty, LTEO will sign an agreement with the firm for Comprehensive CAMC of entire AWS for Five years.
2. The CAMC shall be awarded to the firm on the basis of satisfactory maintenance during One-year warranty period. The CAMC will be reviewed every year on the basis of the firm performance regarding maintenance of AWS. If the firm was unable to carry out the maintenance work during warranty and CAMC as per LTEO Terms and Conditions then the LTEO shall be free to terminate the CAMC with one-month notice and the firm may be blacklisted to participate in any tender for next FIVE years.
3. LTEO will appoint a nodal officer at AWS sites of respective. During comprehensive warranty/CAMC period, the Nodal Officer at AWS will authenticate the preventive maintenance /maintenance and data quality done by the Successful Bidder. The bidder's engineer/representative must associate the respective nodal officer during any visit/maintenance etc. at each site who shall verify all the inventory of installed items before starting the maintenance work and while leaving Engineer/representative from site after its completion during each visit. A separate register/logbook should be maintained with the respective nodal officers.
4. The bidder shall undertake work of servicing and routine Preventive Maintenance (PM) of AWS sites once in **every three months**. The PM shall include grass cutting, spraying of herbicide, cleaning of solar panel, rain gauge and general upkeep of site, **ensure the data quality** and retrieval of logged data from the system. However, painting of mast, fencing and gate shall be done on yearly basis. A penalty of Rs 2,000/= per site per three months will be imposed in case of failure to do the routine preventive maintenance and other related works mentioned above. This penalty will be deducted from their Performance Security Deposit/CAMC Charges.
5. Reports of PM visits should be submitted on a quarterly basis certified by the respective Nodal officer to coordinating offices at LTEO, Bangalore.
6. AWS will be considered as non-functional during onsite Comprehensive Warranty/CAMC periods:
 - i. **Even if a single sensor or any component/unit becomes faulty.**
 - ii. **In case of non-receipt of data even from a single sensor.**
 - iii. **If data reception of any AWS at receiving station is less than 90 % on daily basis.**
7. In case AWS system lies in Plain Areas if down time is more than **Two days, (after reporting complaint),** penalty at the rate of 0.5% (of CAMC value) per day **per AWS station shall be imposed on the bidder.** This penalty will start from third day

and shall be deducted from their Performance Security Deposit/CAMC Charges. The maximum penalty shall be limited to 10% of CAMC per site.

8. If the AWS system in Himalaya region and North East India; down time is more than **Five days,** penalty at the rate of 0.5% (of CAMC value) per day **per AWS station shall be imposed on the successful bidder.** This penalty will start from sixth day and shall be deducted from their Performance Security Deposit/CAMC Charges. The maximum penalty shall be limited to 10% of CAMC per site.
9. It is mandatory to replace SMF battery (65 AH, 12V) every two years or earlier if required at each AWS site after commissioning of the system.
10. Reports of maintenance visits along with data retrieved from field AWS and date and time stamped photographs from at least four different angles of site, pre- and post-maintenance, shall be submitted to respective Nodal officers immediately. **The bidder shall also provide the details, reasons and remedial actions for defects to Nodal officers of AWS site and with coordinating offices at Bangalore.**
11. If the bidder does not rectify the fault for more than 15 days then LTEO reserves the right to get the system rectified from any outside agency. The charges incurred shall be deducted from CAMC charges of the firm.
12. It is the responsibility of the successful bidder to ensure that all AWS are in working condition during comprehensive warranty/CAMC periods.

LIST OF DELIVERABLES

S. No.	Item	Make & model Country of origin*	Qty. Nos.
1	2	3	4
	Sensors and hardware for AWS site		
1.	Temperature Humidity Sensor with Radiation Shield and mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30
2.	Ultrasonic Wind sensors with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30
3.	Rain Gauge Sensor (TBRG) with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30
4.	DAS with IP-67 compliant Enclosure with mounting accessories and USB pen drive (16 GB or more) for data retrieval		30
5.	GPRS modem with dual SIM (4G) (compatible with 3G) facility with minimum 8 dB antenna gain with mounting accessories. Or IoT based Communication module		30
7.	Radiation sensor/Sunshine Duration sensors with mounting accessories (Calibration certificate of all sensors with validity certificate is required)		30
8.	10 meters Tiltable mast for weather parameters mounting accessories & FRP Enclosure for housing SMF batteries, charge controller and other accessories)		30 sets
9.	SMF BATTERY as referred in the RFP		30
10.	Solar Panel [Mono crystalline] with mounting accessories on the mast, as referred in RFP.		30 sets
11.	Installation, integration of sensors of field AWS, masts erecting, Earthing for signal ground and lightning arrestor, display board as per specification, Site leveling and Fencing with gate with civil work.		30 sites
12.	Transportation of materials to AWS sites safely in good condition as per list enclosed in Annexure –I.		One item

S. No.	Item	Make & model Country of origin*	Qty. Nos.
1	2	3	4
13.	Hard and soft copy of operation and maintenance manuals		15
14.	Training of 10 LTEO officials for 3 working days at CES, IISc, Bangalore		One item
15.	Operational Training for each Nodal officers at all given sites		One item
16.	Recurring cost towards payment of GPRS service (During one year warranty period)		One item
17.	CAMC charges also include recurring cost of GPRS service after expiry of one year warranty. First year Second year Third year Fourth year Fifth year		One item

Note*: It is mandatory to mention the make and model of each offered Stores/ Items.