



**India Meteorological Department  
Mausam Bhawan, Lodi Road  
New Delhi-110003**

**Notice Inviting Tender (NIT)**

**Tender Enquiry No. CPU/54/1119/68**

**Dated 10.12.2019**

1. Director General of Meteorology (DGM) of India Meteorological Department (IMD), Ministry of Earth Sciences (MoES), Government of India on behalf of President of India invites **ON LINE TENDER** in two bid systems i.e. (i) Technical bid & (ii) Price bid from eligible and qualified firms for supply of following Goods/Articles. **Manual bids shall not be accepted.**
2. Name of Goods/Article/Services: **Procurement of “ Automatic Weather Stations (AWS)-Qty.-400Nos.”**
3. **Quantity & Specification : Qty.-400Nos. Specifications as per tender enquiry document.**
4. **Tender schedule is as follows:**

1.	Cost of Tender Documents.	NIL
2.	PRE BID Conference (A) Date & Time (B) Venue	30-12-2019 / 1100 Hrs Office of CR & S, IMD, Shivaji Nagar, Pune – 411005. Contract No.020-25572430 , 020-25865047
3.	Closing date and time for submission of tender	22-01-2020 / 1500 Hrs
4.	Tender Opening date & time (Technical Bid)	24-01-2020 / 1500 Hrs
5.	Place of Tender opening	Central Purchase Unit O/o DGM, IMD Lodi Road ,New Delhi-110003

5. Earnest Money Deposit (EMD): **Rs.50,28,000/-** (Rupees fifty lakh twenty eight thousand Only) / **\$70,080.00** (USD Seventy thousand eighty only) with validity of **Eight (8) months** from the date of closing of tender. EMD shall be accepted from the participating firm only in the form of Bank Guarantee (BG)/Fixed Deposit Receipt (FDR). Bank Guarantee issued from foreign banks must be authenticated by State Bank of India or any nationalized bank of India. **Signed and scanned copy of EMD must be uploaded on eprocure.gov.in and original must be submitted on or before opening of bids.**

6. (a) Micro and small Enterprises registered **for stores and services** specified in this tender with any government bodies specified by Ministry of Micro, Small & Medium Enterprises (MoMSME) are exempted for submitting the **Earnest money deposit (EMD)** against appropriate certificate.  
(b) Firms other than SSI registered **for stores and services** with NSIC, are also exempted for submitting EMD.  
(c) The exemption and relaxation in EMD are subject to validity of their registration on the date of opening of tender.
7. All prospective tenderers are requested to attend the Pre Bid meeting as mentioned above. The venue, date and time are indicated in the Para 4 above.
8. Tenderer may download the **Tender Enquiry Document** from the web site <https://eprocure.gov.in/eprocure/app> and upload their tender ONLINE on the same web site <https://eprocure.gov.in/eprocure/app>.
9. In the event of the tender opening date being declared as holiday for the purchase organisation, the tender will be opened on the next working day; the venue and time of the tender opening remaining same.

10. Purchaser: **The President of India**  
**Through Director General of Meteorology**  
**India Meteorological Department**  
**Lodi Road, New Delhi-110003**

11. Consignee: Head, CR & S, IMD  
Shivaji nagar, PUNE-411005  
Maharashtra, INDIA

12. Testing & Acceptance Authority : Head, CR & S,IMD  
Shivaji nagar, PUNE-411005  
Maharashtra, INDIA

**Head , Central Purchase Unit (CPU)**  
O/o Director General of Meteorology,  
India Meteorological Department,  
Lodi Road, New Delhi-110003  
**Telefax No: 011-24698148**

## निविदा आमंत्रित करने की सूचना (एन आई टी)

निविदा जाँच सं. CPU/54/1119/68

Dated 10.12.2019

1. मौसम विज्ञान के महानिदेशक (मौविमनि) भारत मौसम विज्ञान विभाग (भा.मौ.वि.वि.) पृथ्वी विज्ञान मंत्रालय, भारत सरकार, भारत के राष्ट्रपति की ओर से नीचे लिखे सामान / वस्तुएँ / सेवाओं की आपूर्ति के लिए पात्र और अर्हक निविदाकारों से दो बिड प्रणाली अर्थात (एक) तकनीकी बिड और (दो) दर बिड में ऑनलाइन टेंडर पर आमंत्रित करते हैं –
2. सामान/ वस्तुएँ/ सेवाओं का नाम: **Procurement of “Automatic Weather Stations (AWS)-Qty.-400Nos.”**
3. विनिर्देशन और मात्रा: **मात्र चार सौ नग**, वितविनिर्देशन आर एफ पी के अनुसार
4. निविदा अनुसूची इस प्रकार है:

1.	निविदा कागजात की लागत	शून्य
2.	प्री बिड कांफ्रेंस (क) दिनांक व समय (ख) स्थान	30-12-2019 / 1100 बजे भारत मौसम विज्ञान विभाग शिवाजी नगर, पुणे -411004 फोन न0- 020-25572430 020-25865047
3.	निविदा जमा करने की अंतिम तिथि व समय	22-01-2020 / 1500 बजे
4.	निविदा खोलने की तिथि व समय (तकनीकी बिड)	24-01-2020 / 1500 बजे
5.	निविदा खोलने का स्थान	केंद्रीय क्रय एकक, कार्यालय महानिदेशक, भारत मौसम विज्ञान विभाग लोदी रोड, नई दिल्ली-110003

धरोहर राशि (ई एम डी): **₹. 50,28,000/-** (रुपये पचास लाख अठाएस हजार केवल) / \$70,080.00। बोली लगाने वाले को विदेशी बैंक द्वारा दी गई बैंक गारंटी भारतीय बैंक से भी प्रमाणित होनी चाहिए। ईएमडी केवल बैंक गारंटी बीजी / (सावधि जमा रसीद) एफडीआर (के रूप में भाग लेने वाली फर्म से स्वीकार किए जाएंगे।

2. (क) लघु उद्योग, कुटीर और छोटे पैमाने पर उद्यम जो किसी भी सरकारी निकायों के साथ इस निविदा में निर्दिष्ट समान और सेवाओं के लिए पंजीकृत हैं, उनको निविदा शुल्क और धरोहर राशि (ई एम डी) प्रस्तुत करने के लिए छूट दी गई है। ( उचित प्रमाणपत्र प्रस्तुत करने पर )  
(ख) एनएसआईसी के साथ इस निविदा में निर्दिष्ट समान और सेवाओं के लिए पंजीकृत अन्य कंपनियों को भी ईएमडी जमा करने के लिए छूट दी गई है।

(ग) निविदा शुल्क और ईएमडी में छूट और छूट निविदा खोलने की तारीख पर उनके पंजीकरण की वैधता के अधीन हैं.

3. ऐसे निविदाकार जो रुचि रखते हैं इस आवश्यकता के बारे में और जानकारी परेषिति से ले सकते हैं । सभी भावी निविदाकर्ता प्री बिड बैठक (समारोह स्थल, तारीख और समय) में भाग ले सकते हैं यदि ऊपर पैरा 4 में अनुरोध किया गया है। ऐसे निविदाकार जो रुचि रखते हैं इस आवश्यकता के बारे में और जानकारी परेषिति से ले सकते हैं ।
4. निविदाकर्ता [eprocure.gov.in](http://eprocure.gov.in) वेबसाइट से निविदा जांच कागजात डाउनलोड कर सकते हैं और डाउनलोड किए गए कागजात के अनुसार अपनी निविदा वेबसाइट <https://eprocure.gov.in/eprocure/app> पर आनलाइन अपलोड करे तथा अंतिम तिथि व समय तक निविदा जमा कर सकते हैं।
5. यदि निविदा खोलने की तारीख के दिन क्रय संग्रहण का अवकश घोषित होता है तो निविदा अगले कार्य दिवस को खोली जायेगी, निविदा खोलने का स्थान और समय वही रहेगा ।
6. क्रयकर्ता: भारत के महामहिम राष्ट्रपति  
भा.मौ.वि.वि.के माध्यम से  
भारत मौसम विज्ञान विभाग,  
लोदी रोड, नई दिल्ली-110003

12. परेषिति:

प्रधान, सी आर एंड एस

भारत मौसम विज्ञान विभाग  
शिवाजी नगर, पुणे-411005

13. जाँच प्राधिकारी:

प्रधान, सी आर एंड एस

भारत मौसम विज्ञान विभाग

शिवाजी नगर, पुणे-411005

प्रधान, केंद्रीय क्रय एकक (कें.क्र.ए),

मौसम विज्ञान के महानिदेशक का कार्यालय,

लोदी रोड, नई दिल्ली- 110003

टेलीफैक्स सं. : 011-24698148

# **REQUEST FOR PROPOSAL DOCUMENT**

## **Procurement of 400 Automatic Weather Stations**

**June, 2019**

### **IMPLEMENTING AGENCY:**

**Ministry of Earth Sciences  
Government of India  
India Meteorological Department,  
O/o the Director General of Meteorology  
Mausam Bhawan, Lodi Road,  
New Delhi-110 003**

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**List of abbreviations in RFP**

<b>S.No.</b>	<b>Abbreviations</b>	<b>Explanation</b>
1	GIT	General Instructions to Tenderers / Bidders
2	RFP	Request for Proposal
3	NIT	Notice Inviting Tender
4	IMD	India Meteorological Department
5	CPP	Central Public Procurement Portal
6	TE	Tender Enquiry
7	EMD	Earnest Money Deposit
8	DCS	Digital Signature Certificate
9	NIC	National Informatics Centre
10	OEM	Original Equipment Manufacturer
11	IGST	Integrated Goods and Service Tax
12	SGST	State Goods and Service Tax
13	CGST	Central Goods and Service Tax
14	CDEC	Custom Duty Exemption Certificate
15	CDMC	Comprehensive Annual Maintenance Contract
16	FOR	Freight on Road
17	FOB	Freight on Board
18	GCC	General Conditions of Contract
19	OSC	Original Software Company
20	MoMSME	Ministry of Micro, Small & Medium Enterprises



21	BG	Bank Guarantee
22	DDO	Drawing and Disbursing Office
23	DGM	Director General of Meteorology
24	NSIC	National Small Industries Corporation
25	LD	Liquidated Damages clause
26	NOC	No Objection Certificate
27	CPU	Central Purchase Unit
28	TDS	Tax Deducted at Source
29	PAN	Permanent Account Number
30	DTAA	Double Taxation Avoidance Agreement
31	LC	Letter of Credit
32	FAT	Factory Acceptance test
33	SAT	Site Acceptance test
34	IFSC	Indian Financial System Code
35	MICR	Magnetic Ink Character Recognition
36	PSU	Public Sector Unit
37	TBRG	Tipping Bucket Rain Guages
38	DATALOGGER	Data Acquisition System
39	GPRS	General Packet Radio Service
40	AWS	Automatic Weather Stations
41	DAMU	District Agro Met Units
42	OIDB	Oil Industry Development Board
43	CGWA	Central Ground Water Authority
44	IoT	Internet of Things
45	SMF	Sealed Maintenance Free
46	FRP	Fibre Reinforced Plastic
47	NIST	National Institute for Standards and Technology
48	RTC	Real Time Clock
50	TTL	Transistor Transistor logic
52	MC	Meteorological Centre
53	RMC	Regional Meteorological Centre



**India Meteorological Department  
Mausam Bhawan, Lodi Road  
New Delhi-110003**

**Tender Enquiry No.CPU/54/1119/68**

**Dated:10/12/2019**

**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 uploading 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 IMD 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 minutes shall be uploaded on e-procurement portal at <https://eprocure.gov.in/eprocure/app>. Pre-bid queries can be sent on email ID: [cpu.imd@imd.gov.in](mailto:cpu.imd@imd.gov.in) and [awspune@imd.gov.in](mailto:awspune@imd.gov.in).**

## 6. Regular visit of website:

Prospective bidders are advised to see CPP portal at <https://eprocure.gov.in/eprocure/app> & IMD website at <http://www.imd.gov.in/pages/tenders.php> 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 CPP portal [eprocure.gov.in/eprocure](https://eprocure.gov.in/eprocure) 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/see <https://eprocure.gov.in> as well as IMD website [www.imd.gov.in](http://www.imd.gov.in) 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 part containing Technical, Commercial and price bid should be submitted electronically through CPP Portal [www.eprocure.gov.in/app](http://www.eprocure.gov.in/app) . The responsibility to ensure the timely submission of bid lies with the bidder. Bids submitted through FAX or e-mail will not be considered. Bidders shall also attach scanned copies of all the requisite documents i.e Earnest Money and other certificates/documents specified in the tender documents. The bids are to be submitted (electronically) as per the bidding type indicated in the front page of tender. Bidders are advised to submit their bid in two Parts. No manual tender is acceptable.

Part-1 should contain Techno-Commercial Bid and duly signed blank price bid (without indicating the cost) and scanned copy of EMD.

Part-2 should contain only the price bid indicating the cost and applicable GST/Taxes.

The Part-1(technical bid) and Part-2(Price bid) should be uploaded separately indicating the Tender reference/details. Please note that to participate in the tender Digital Signature (DSC) has to be obtained. The bidders are advised to obtain DSC (Digital signature Certificate) from the authorized agent of NIC (the list provided in the NIC portal) and to register with NIC. In case the Price/Cost is revealed in the technical bid the tender will be treated as invalid or rejected.

### 8.1 Part-1 (Techno-Commercial bid)

The following documents are to be furnished by the bidder along with their **Technical Bid**. Bidder shall upload following documents on CPP PORTAL <https://eprocure.gov.in/eprocure/app> and shall also submit the originals on or before opening of tender.

- (i) Registration certificate of bidding firm with government body in their country. Credential/document shall be attached.
- (ii) Checklist section (Annexure-I) properly filled and signed.
- (iii) Scanned copy of Earnest Money Deposit (EMD) in the form of BG. Original EMD in physical form shall be submitted to Central Purchase Unit of IMD on or before opening of tender.
- (iv) Documentary evidence for fulfilment of Eligibility/Qualification criteria(s).
- (v) Copy of agreement between bidding firm in India and their foreign principal indicating precise relationship between them and their mutual interest in this tender must be furnished along with their technical bid.
- (vi) Tender terms & Conditions Acceptance Form (Annexure-II) duly signed. (i.e. bidder has agreed to all the terms & condition of tender enquiry document)

- (vii) **Along with technical bid, List of deliverables (un-priced/ without price) shall be submitted with detailed make, model & country of origin etc. as per Annexure-XI.**
- (viii) Pre-Integrity Pact as per format at Annexure-V duly signed on all the pages by the authorised signatory.

**Note:** The above documents (signed and scanned) shall be attached in the beginning of technical bid.

## **8.2 Part-2 (Price Bid):**

- (i) All pages of the price bid should be page numbered, indexed and signed with company/firm seal by authorized signatory.
- (ii) Price Bid shall be prepared as per price bid format (Annexure-IV).
- (iii) Costing, of each and every item, sub items offered in bidder's technical bid, shall be done with all breakup prices.
- (iv) The Bidder shall indicate on the Price Schedule specifying all components (main units and sub units etc. of each item) of prices shown therein including the unit prices and total tender prices of the **goods (H/w & S/w), services, packing, inland transportation/freight/insurance to the sites, GST etc.** against the requirement.
- (v) Wherever, the Purchaser's invitation to tender calls for installation and commissioning or supervision of installation and commissioning of the instrument/equipment by the bidder, the bidder must clearly and separately quote the prices for the supply of the stores and the charges and the terms for installation and commissioning or supervision of installation and commissioning as the case may be. The charges towards installation and commissioning should not be included in the price of the stores.
- (vi) **The Supplier shall bear all the** taxes (IGST/SGST/CGST/Income-tax/or any other taxes) levied by the state/central government, as per the rates prevailing at the time of undertaking the job in accordance with the Income-tax in India.
- (vii) IMD will provide the Custom Duty Exemption Certificate (CDEC) for imported items. In case the CDEC is not accepted the payment of custom duty will be reimbursed to the bidder by IMD on proof of actual payment.
- (viii) CAMC shall be only for the maintenance of stores (equipment and software only) therefore prospective bidders are advised to quote CAMC charges accordingly and specifically. **It should not be quoted in terms of** percentage of project cost as consumable, transportation, warranty; installations, training etc. are not covered under CAMC. **Price bids shall not be accepted if CAMC charge quoted in percentage.**
- (ix) In case any charges not mentioned in the price bid, it will be treated as all the charges are free of cost for that item.
- (x) Vendor shall quote prices on F.O.R destination (sites of consignee) basis and Payment shall be paid in Indian rupees only.
- (xi) The bidder supplying imported goods shall quote only in Indian Rupees if purchase order to be placed to them. It is the responsibility of Indian firm to pay custom duty etc. IMD shall not be responsible for custom clearance. Prices quoted by the bidder shall remain firm and fixed during the currency of the contract.
- (xii) Statutory levies, taxes and duties etc., if any, chargeable on the goods are on actual basis as applicable.
- (xiii) If there is a discrepancy between the amount expressed in words and figures, the amount in words shall prevail.

**Note:** Price bid shall prima-facia shall be rejected in case of any deviation from the technical bid of the bidder and found that any fact concealed or hided in price bid/technical bid.

## **9. Signing and uploading of Tender:**

Bidder shall upload their Properly signed and stamped tender on the company letterhead bid ONLINE through CPP Portal (**URL:[https:// eprocure.gov.in/ eprocure/ app](https://eprocure.gov.in/eprocure/app)**), as manual bids shall not be accepted. Only .pdf format of the tender shall be uploaded on CPP portal. 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 Section-I, para-8.

#### **10. Alteration and Withdrawal of Tender:**

The bidder, after uploading online bid through CPP Portal, is permitted to alter / modify its bid within the deadline for submission of bids.

#### **11. Opening of Tenders:**

The purchaser will open online bids through CPP Portal 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 online bids through CPP Portal 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.

#### **12. Scrutiny and Evaluation of Bids:**

##### **12.1 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 uploaded on e-procurement portal 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) Required EMD has not been provided unless exempted.
- (vii) Tender has not agreed to give the required performance security.
- (viii) Pre-Integrity Pact as per format at Annexure-V duly signed on all the pages by the authorised signatory.

##### **12.2 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.

### **12.3 Financial evaluation:**

Thereafter, in the second stage, the Price Bids of technically qualified bidders only shall be opened online through CPP Portal 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.

### **13. 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 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:**

- a. 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.
- b. 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 exempted for submitting of earnest money deposit (EMD) also known as security deposit. However Micro and small Enterprises are not exempted from performance security. Micro and small Enterprises shall have to furnish performance security 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 during each of the past three years** ending on 31.03.2019. The firm should not have incurred financial loss for more than one year in last three years.

7.4 **Pre-Contract Integrity Pact (Annexure-V) is to be duly filled and signed by each bidder and submitted along with the bid.**

## 8. Earnest Money Deposit (EMD):

The bidder shall furnish earnest money along with its tender, for an amount as shown in the tender notice. The earnest money is required to protect the purchaser against the risk of the bidder's unwarranted conduct.

The bidders who are registered on Tender submission date with National Small Industries Corporation, New Delhi, shall be eligible for exemption from EMD. Micro and small Enterprises specified by Ministry of Micro, Small & Medium Enterprises (MoMSME) **are exempted from Earnest Money Deposit (EMD)**, who produce goods or provide their own services and **not applicable for trading purpose. No entrepreneur or memorandum of application form is acceptable.**

The **EMD shall** be furnished in Bank Guarantee (BG) (**Annexure-III**) from any **Nationalised Commercial Bank** doing government business. BG may be issued in the favour of "DDO, O/o DGM, IMD, New Delhi". **Bank Guarantee issued from the foreign banks must be authenticated by STATE BANK OF INDIA or any other Nationalized Bank of India. Demand draft for EMD in INR submitted by foreign bidders shall not be accepted.**

**The clause "release of BG requires clearance certificate from Purchaser i.e. DGM, IMD" must be mentioned in issued BG by Bank.**

The earnest money shall be valid for period of sixty (60) days **beyond the validity** period of the tender.

**Refund of EMD:** Unsuccessful bidders' earnest money will be returned to them **without any interest**, after expiry of the tender validity period. For successful bidder the earnest money will be returned without any interest, after receipt of their performance security.

**Forfeiture of EMD:** Earnest money of a Bidder will be forfeited, if the bidder withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender or if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged without prejudice to other rights of the purchaser. The successful bidder's earnest money will be forfeited without prejudice to other rights of Purchaser if supplier fails to furnish the required performance security within the specified period.

Firm shall have to extend the validity of EMD accordingly if extension of tender validity is agreed on the request of purchaser in exceptional cases.

## 9. Performance Security:

9.1 Successful bidder shall submit performance security 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 not received in stipulated time



- 9.2 There is no relaxation/exemption in submitting of performance security.
- 9.3 The supplier shall furnish performance security 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.
- 9.4 **Performance Security has to be submitted irrespective of its registration NSIC etc. Performance security is not relaxed to any supplier/service provider. Submission of Performance Security is must for all suppliers/service providers.**
- 9.5 The CAMC service provider shall furnish performance security to the purchaser for an amount equal to Ten per cent (10%) 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.
- 9.6 Performance Security 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 (as necessary), rendering the same valid in all respects in terms of the contract, as amended. In case of foreign bidder, Bank Guarantee issued from the foreign banks must be authenticated by STATE BANK OF INDIA or any other Nationalized Bank of India.
- 9.7 The purchaser will release the Performance Security 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 for CAMC. The supplier shall submit pre-receipt for obtaining back their security.

## 10. 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 any thing (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.

## 11. 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.

## 12. 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.

### 13. Warranty:

The warranty shall be **Onsite warranty for Three years 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 IMD site(s), shall be borne by supplier itself.

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

### 14. 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.

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

- 15.1 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 equivalent to 1% (One percent) per week of delay subject to a maximum of 10% of the contract amount. 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 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.

15.2 (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.

15.3 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 (CPU) directly in writing about these delays on part of IMD.**

## **16. 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.

## **17. 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.

## **18. Taxes and Duties:**

**18.1** 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.

**18.2** 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.

### **18.3 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.

### **19. 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.

### **20. 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.

## **21. 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 terminates 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.

## **22. 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.

### **List of Deliverables:**

The Bidder shall submit the final list (List of Deliverables) of their proposal as per **Annexure-XIII** 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.

**Annexure-I**

**CHECKLIST**

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

<b>S.N.</b>	<b>Activity</b>	<b>Compliance Yes/ No/ NA</b>	<b>Page No. in Your document</b>
<b>1</b>	(i) Have you submitted EMD of required amount?		
	(ii) Validity of 240 days of EMD (Bank Guarantee) from Tender Opening date		
	(iii) Is registration certificate from NSIC /govt. bodies attached for relaxation of EMD?		
<b>2.</b>	Have you kept validity of tender for acceptance by the purchaser as per the TE document?		
<b>3.</b>	Have you submitted duly filled, signed & stamped all bidding documents, accepting all terms and conditions of the tender document.		
<b>4</b>	Have you enclosed clause-by-clause compliance statement for the "List of requirements/technical specifications "section?		
<b>5.</b>	Have you submitted copy of the last purchase order(s) and end user certificate*?		
<b>6.</b>	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?		
<b>7.</b>	(i) Permanent Account No. of bidding firm with proof.		
	(ii) Is Sales & Service tax number with registration certificate attached?		
<b>8.</b>	Name of the firm with complete address, who quoted the price.		

S.N.	Activity	Compliance Yes/ No/ NA	Page No. in Your document
9.	Name of currency in which work/supply order to be placed.		
10	Whether Bidder's bank details given?		
11	The bidder has to submit the Pre-Contract Integrity Pact duly signed by the authorized signatory of the firm/ company with the bid.		
12.	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  
The Director General of Meteorology,  
India Meteorological Department,  
Lodi Road, New Delhi-110003

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 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)

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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.**



**MODEL BANK GUARANTEE FORMAT FOR FURNISHING EMD  
(Format only)**

Whereas .....  
(hereinafter called the “bidder”)  
has submitted their offer dated.....  
for the supply of .....  
(hereinafter called the “tender”)  
against the purchaser’s tender enquiry No. ....  
KNOW ALL MEN by these presents that WE .....  
of ..... having our registered office at  
..... are bound unto .....  
(hereinafter called the “Purchaser”)  
in the sum of .....  
for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and  
assigns by these presents. Sealed with the Common Seal of the said Bank this..... day of  
.....20.....

**THE CONDITIONS OF THIS OBLIGATION ARE:**

- (1) If the bidder withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
- (2) If the bidder having been notified of the acceptance of his tender by the Purchaser during the period of its validity: -
  - a) If the bidder fails to furnish the Performance Security for the due performance of the contract.
  - b) Fails or refuses to accept/execute the contract.

WE undertake to pay the “Director General of Meteorology, India Meteorological Department”, up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition or conditions. This guarantee will remain in force up to and including 60 days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date.

Bank Guarantee issued with the tender enquiry reference No. CPU/..... Dated.....

.....  
(Signature of the authorized officer of the Bank)

.....  
Name and designation of the officer

.....  
Seal, name & address of the Bank and address of the Branch

**PRICE BID FORMAT**

S. No.	Item	Make & model Country of origin	Qty. Nos.	UNIT PRICE			TOTAL PRICE
				Unit Price	Applicable taxes and duties	Total Unit Price	
1	2	3	4	5	6	7 7=5+6	8 8=7x4
<b>Sensors and hardware for AWS sites</b>							
1.	Temperature Humidity Sensor with Radiation Shield with 5m Teflon cable with suitable MIL grade Amphenol connectors and mounting accessories (Calibration certificate of all sensors with validity certificate is required)		400				
2.	Wind sensors with mounting accessories and 10 m Teflon cable with suitable MIL grade Amphenol connectors (Calibration certificate of all sensors with validity certificate is required)		400				
3.	Rain Gauge Sensor (TBRG) with mounting accessories and with 5m Teflon cable with suitable MIL grade Amphenol connectors (Calibration certificate of all sensors with validity certificate is required)		400				
4.	Pressure sensors with 1m Teflon cable (Calibration certificate of all sensors with validity certificate is required)		400				
5.	Datalogger with IP-67 compliant Enclosure with mounting accessories and USB pen drive (16 GB or more) for data retrieval		400				
6.	GPRS modem with SIM facility with minimum 8 dB antenna gain with mounting accessories		400				
7.	FRP Enclosures for keeping electronics items- Datalogger, Pressure sensors, solar charge		400				

S. No.	Item	Make & model Country of origin	Qty. Nos.	UNIT PRICE			TOTAL PRICE
				Unit Price	Applicable taxes and duties	Total Unit Price	
1	2	3	4	5	6	7 7=5+6	8 8=7x4
	controller, ON/ OFF power supply switch with suitable fuses.						
8.	Application software for display of data at TFT screen , Desktop PC/ Workstation /Server with license version for all AWS sites		One item				
9.	10 meters Tilttable/foldable/Sliding up and down mast for weather parameters mounting accessories		400 sets				
10.	Electrical charger for charging 12V,65 AH SMF BATTERY		50 sets				
11.	Travelling standards kits for comparison of sensors at AWS sites (Temperature–Humidity, Pressure, Rainfall and Wind speed and wind direction)		50 sets				
12.	12V,65 AH SMF BATTERY with FRP Enclosures IP66		400				
13.	40 W Solar Panel with mounting accessories on the mast with solar charge controller.		400 sets				
14.	Installation of 10 m mast and accessories, integration of data logger, sensors and other accessories, solar panel, charge controller, lightning arrestor, earthing for protection of complete AWS, fencing of field AWS site (10 m X 10 m).		400 sites				
15.	Transportation of materials to AWS sites safely in good condition as per list enclosed in <b>Annexure –I.</b>		One item				
16.	Hard and soft copy of operation and maintenance manuals.		30				
17.	Training of 25 IMD officials for 3 working days at IMD Pune		One item				

S. No.	Item	Make & model Country of origin	Qty. Nos.	UNIT PRICE			TOTAL PRICE
				Unit Price	Applicable taxes and duties	Total Unit Price	
1	2	3	4	5	6	7 7=5+6	8 8=7x4
18.	Operational Training for each Nodal officers at all AWS sites		One item				
19.	<b>Recurring cost towards payment of GPRS service</b> (During one year warranty period )		One item				
20.	<b>CAMC charges for AWS also include recurring cost of GPRS service after expiry of Three years warranty.</b> First year Second year Third year Fourth year Fifth year		One item				
<b>Hardware and Software for Central Data Receiving and Processing System</b>							
21.	Servers with accessories, 21" LED Monitor, KVM switch, keyboard and mouse		04				
22.	Workstations with accessories, 21" LED Monitor, KVM switch, keyboard and mouse		04				
23.	On line UPS 5 KVA with battery bank for Eight hours battery backup on full load.		01				
24.	Application software for Central Server Pune and other MCs/RMCs with License version		One item				
25.	Design and Development of website for AWS and its maintenance during warranty period		One item				
26.	Training of 5 IMD officials for 5 working days at IMD Pune on CDRPS, Pune		One item				
27.	<b>CAMC charges for CDRPS, AWS website at Pune after expiry of Three years warranty.</b>		One item				

S. No.	Item	Make & model Country of origin	Qty. Nos.	UNIT PRICE			TOTAL PRICE
				Unit Price	Applicable taxes and duties	Total Unit Price	
1	2	3	4	5	6	7 7=5+6	8 8=7x4
	First year Second year Third year Fourth year Fifth year						
28.	<b>TOTAL</b>						
29.	Buy back rate of old 10 m mast and accessories, old data loggers, sensors, solar panels, batteries and old concrete platforms in existing AWS sites.		200 sites				
30.	Grand Total = S.No. 28 – S.No. 29						

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 quoted 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 unit price shall prevail. If there is any discrepancy in rates in figures and words, the rates, the rates in words 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 2019, between, on one hand, the President of India acting through **Director General of Meteorology, India Meteorological Department, Ministry of Earth Sciences**, Government of India, **Lodi Road, New Delhi** (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 400 at AWS Sites 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. Earnest Money (Security Deposit)**

- 5.1 While submitting commercial bid, the BIDDER shall deposit an amount ..... (to be specified in NIT ) as Earnest Money/Security Deposit, with the BUYER through any of the following instruments:
- (i) Bank Guarantee or FDR in favor of **“DDO, O/o DGM, IMD, New Delhi”**.
  - (ii) A confirmed guarantee by an Indian Nationalized Bank, promising payment of the guaranteed sum to the BUYER on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by the BUYER shall be treated as conclusive proof of payment.
  - (iii) Any other mode or through any other instrument (to be specified in the RFP).
- 5.2 The Earnest Money/Security Deposit shall be valid up to a period of five years or the complete conclusion of the contractual obligations to the complete satisfaction of both the BIDDER and the BUYER, including warranty period, whichever is later.
- 5.3 In case of the successful BIDDER a clause would also be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of Sanctions for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.
- 5.4 No interest shall be payable by the BUYER to the BIDDER on Earnest Money/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 Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.
- (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
- (iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
- (v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.
- (vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation/rescission and the BUYER shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.
- (vii) To debar the BIDDER from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the BUYER.
- (viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.
- (ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.
- (x) Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

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.

## **8. Independent Monitors**

8.1 The BUYER has appointed following two Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission;

- i. **Shri Arun Kumar, Secretary, Oil Industry Development Board (OIDB), B-38, Vrindavan Apartment, Plot No. 1, Sector 6, Dwarka, New Delhi-110075 (E-mail-[kumararun\\_53@rediffmail.com](mailto:kumararun_53@rediffmail.com) ; Mobile No. 9810621113).**
- ii. **Shri Sushil Gupta, Ex Chairman, Central Ground Water Board (CGWB) & Central Ground Water Authority (CGWA), No. B 702, Aravali Heights, Sector 21 C, Faridabad, Haryana, PIN 121001. (E-mail: [sushilanitagupta@yahoo.com](mailto:sushilanitagupta@yahoo.com), Mobile No. 09999744061).**

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

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

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

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

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

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

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

## **9. Facilitation of Investigation**

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

**10. Law and Place of Jurisdiction**

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the BUYER.

**11. Other Legal Actions**

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

**12. Validity**

12.1 The validity of this Integrity Pact shall be from date of its signing and extend upto 5 years or the complete execution of the contract to the satisfaction of both the BUYER and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

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

**13. The parties hereby sign this Integrity Pact at New Delhi on.....**

BUYER  
Name of the officer.  
Designation  
Deptt./MINISTRY

BIDDER  
CHIEF EXECUTIVE OFFICER

Witness

1. \_

2. \_

Witness

1. \_

2. \_

\* Provisions of these clauses would need to be amended/ deleted in line with the policy of the BUYER in regard to involvement of Indian agents of foreign suppliers.

**Section- III**  
**Technical Specification**

**Procurement of Automatic Weather Station and Central Data Receiving and Processing System**

**1. 1. INTRODUCTION**

India Meteorological Department owns and operates a network of 700 Satellite based AWS across the country. As part of augmentation of surface observation network, IMD proposes to install GPRS based AWS at 400 sites and Central Data Receiving and Processing Station at Pune.

No	Network type	No. of Stations	Area to be covered with the network
1	Automatic Weather Stations (AWS)	100	Replacement of exiting old 100 Sutron make AWS all over India
2	Automatic Weather Stations (AWS)	115	Replacement of exiting old 115 Astra make AWS all over India
3	Automatic Weather Stations (AWS)	85	Kerala State
4	Automatic Weather Stations (AWS)	100	North East India

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

**2. 2. SCOPE OF TENDER**

- 2.1 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 AWS equipment, new Central Data Receiving and Processing Station at the Surface Instrument Division and web design for AWS sites. All systems will have comprehensive annual maintenance contract of the system for Five years after expiry of Three years comprehensive Warranty.
- 2.2 Supply, transportation and delivery of all equipment consisting of sensors, Datalogger, SMF batteries, Solar panels, two FRP Enclosures ( One for 65 AH,12 V SMF battery and another for Datalogger, GPRS modem, Solar charge control with transmission systems incorporating GPRS modems and other related accessories/deliverables etc. at respective sites. **Provision should be made to communicate AWS data stream (1 minute to 60 minutes user selectable) to the Central Data Receiving and processing Server and also to Servers at MC / RMC.**
- 2.3 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.
- 2.4 Dismantle of old 10 m triangular tower mast and fencing materials and also clean the sites (such as grasses and bushes) at old AWS sites.
- 2.5 Details of Schematic diagram of AWS site as specified in **Annexure-VII**.
- 2.6 Block diagram of AWS and its communication is given in **Annexure-XIV**.
- 2.7 Installation, integration and commissioning of AWS at all field sites including civil work regarding site preparation as per IMD manual observatory Guidelines, cable laying and all such work required to be done at field site for functioning of the station.

- 2.8 **Data from AWS should be disseminated via FTP or TCP/IP to two static IP, one to IMD Pune Central Server and another to MC/RMC Server in .csv format. The details of data format for dissemination will be provided by IMD. The bidder has to configure Datalogger for data transmission as per user defined time interval (1 min to 60 minutes) as well as destinations and ensure the timely data reception at Central Receiving Station, Pune.**
- 2.9 The meteorological parameters is to be transmitted every minute by Datalogger to the Desktop computer through Ethernet port and are to be stored in the computer automatically as background operation.
- 2.10 **The Central Data Receiving and Processing Station (CDRPS) at Pune shall be able to operate the network of 10000 stations, download the data and perform the quality control, thus significantly improving the quality of the data (completeness, accuracy), disseminates to users and also to upload the website.**
- 2.11 **Development of website** (both in Hindi and English) as per GOI guidelines of the website, database driven approach, Linux based, use of latest software and also take up maintenance of website.
- 2.12 **Comprehensive Warranty for Three years followed by Comprehensive Annual maintenance contract (CAMC) for next Five years.**

### **3. OVERALL REQUIREMENTS**

- 3.1 The AWS equipment along with data communication system provide capability for unattended operation in all weather conditions. The system shall run using Sealed Maintenance Free (12V, 65 AH SMF) battery(s), rechargeable through a solar panel. The battery shall be capable to run the system for minimum period of **30 days** on full load during total cloudy or foggy conditions. The bidders shall provide power budget calculation in the technical bid.
- 3.2 All equipment should be qualified for MIL GRADE or better specifications and suitable for outdoor applications.
- 3.3 **All Datalogger and sensors quoted by the bidder should have been used in Meteorological purpose sites for three years or more. The performance report of Datalogger and sensors from users is to be submitted with technical bids.**
- 3.4 The Datalogger, GPRS modem, SMF battery and Solar Charge controller must be housed **in** FRP Enclosure (IP 66) .
- 3.5 There should be separate GPRS modem and should not in built in Datalogger.
- 3.6 A SMF Battery (12 V, 65 AH) may house in separate FRP Enclosure (IP 66)
- 3.7 All sensors should be interfaced with Datalogger as per IMD requirement. At all AWS sites, wind sensors should be installed at heights at 10 m.
- 3.8 There should be provision of storage for 10 years storage in the Datalogger and stored data shall be retrievable via serial port/ USB port/Ethernet port to a PC/laptop and a pen drive or any other compact and commercially available solid-state memory device in standard text file format without requirement of specific software to retrieve the data.
- 3.9 The system shall have facility to issue command for forced/manual transmission of data.
- 3.10 The system shall have time synchronization (time keeping) via GPRS modem/Internet.
- 3.11 The AWS data (.csv format) should be disseminated to **Two IP address** and one shall also be received at Central Server, Pune via FTP or TCP/IP service facility and also other at MC/RMC Server.
- 3.12 AWS data can also be made available to PC available to nearby Building at AWS site by OFC cable as per user defined time interval (1 min to 60 minutes).
- 3.13 **Provision of Ethernet port in Datalogger and Application software to see the Graphical Display of AWS data in a Desktop PC as per user defined time interval (1 min to 60 minutes).**
- 3.14 Bidder shall provide Application software with Open source for data reception at Central Server, processing with all quality control and dissemination to users as per IMD format. They should also develop a website for AWS, upload to the webserver and also maintain the website.
- 3.15 The warranty and comprehensive maintenance contract shall include the hardware and software maintenance of Central Data Receiving and Processing Station, network devices, UPS at AWS

LAB, Pune with the replacement of all defective parts/devices, software upgrades, updates as per WMO requirements, configurations on server and associated peripherals. All the hardware, software, UPS etc. of system as per shall be covered in the maintenance contract. The entire contract will be comprehensive in nature. Bidder shall provide 24x7x365 days support.

- 3.16 Bidder will provide Resident Engineers during Three years comprehensive Warranty and five years CAMC period. They should be available on all the days from 0000 HRS to 2300 HRS (Monday to Sunday including Holidays). They should be capable of handling the system including OS, application software, its backup and restoration, network configuration including router, firewall and switches etc. They should be equipped with mobile phones to ensure their availability.
- 3.17 Training of 25 IMD officials at Pune for Operation and Maintenance of AWS System , also filed training at all AWS sites to Nodal officers designated by IMD and also training for 5 IMD officers on Operation and Maintenance of Application software and hardware of CDRPS at Pune.
- 3.18 Ensure support for AWS sensors, Servers, Application software and spares for 10 years.
- 3.19 The firm has to dismantle the old mast, fencing and install new mast with fencing as per IMD specification.
- 3.20 The firm should have sub offices with Address and Telephone Nos. in six regions of India (East, West, North, South, Central and North East) who can carry out installation and maintenance of AWS at short notice.
- 3.21 **The firm shall provide presentation and demonstration of the complete AWS system including sensors, Datalogger, Communication equipment (GPRS) etc. as per RFP, offered in their bids at No cost and No commitment basis as a part of Technical Evaluation at IMD Pune. Failure and/or Non-compliance of any component during the above period will be liable to cancel the bid.**

#### 4. SPECIFICATIONS OF SENSORS

- a) For all sensors offered, valid certification from NIST (National Institute for Standards and Technology, USA) /IMD/WRC is to be submitted.
- b) User certificate for performance of sensors is to be submitted with the technical bids.
- c) All sensors should be used for Meteorological purpose and its performances at AWS sites for last three years and its details may be submitted in the technical bids.
- d) Cables used for sensors to connect Data logger should be Teflon insulated multi strand and silver coated.
- e) All sensors quoted in the technical bids will be tested in the IMD calibration Lab, Pune.
- f) **For sensors, valid Certification from reputed International/ Indian institute is to be submitted.**

<b>4.1</b>	<b>Temperature and Relative Humidity Sensor with Radiation Shield</b>		
<b>4.1.1</b>	<b>Air Temperature</b>		
	a. Sensor type		Pt 100 RTD
	b. Measurement Range		-40 °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 -40°C to +10 °C
	d. Resolution		0.1 °C
	e. Output		Analog/ Digital
<b>4.1.2</b>	<b>Relative Humidity</b>		
	a) Measurement Range		0% to 100%
	b) Accuracy (including non-linearity, hysteresis and repeatability)		± 3% RH or better with membrane filter (In the Range 10% to 100%)
	c) Output		Analog / Digital
	d) Resolution		1% or better

	e) Sensor type		Capacitive / solid state
<b>4.1.3</b>	<b>Radiation Shield</b>		
	a) Type		Thermoplastic
	b) Louvered		Minimum 9
	c) Ventilation		Natural
	d) Mounting Accessories		Aluminium Mounting bracket and Stainless-steel U Bolt clamp
<b>4.2</b>	<b>Wind Sensor (Ultrasonic 2 Dimensional)</b>		
<b>4.2.1</b>	<b>Wind Speed</b>		
	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) Threshold	:	0.5 m/s
	f) Response time	:	1 sec or better
	g) Output	:	Digital
<b>4.2.2</b>	<b>Wind Direction</b>		
	a) Range	:	0 to 359 Degrees
	b) Accuracy	:	±5 degrees or better
	c) Resolution	:	1 deg. or better
	d) Response time	:	1 sec or better
	e) Output	:	Analog/ Digital
<b>4.3</b>	<b>Tipping Bucket Rain Gauge sensor or with better technology</b>		
	a) Collector Area	:	Specified Collector Area should be between 200 cm <sup>2</sup> to 325 cm <sup>2</sup>
	b) Height above funnel	:	Height above funnel should be sufficient to accumulate rain during heavy rainfall as per WMO guidelines.
	c) Switch	:	Rugged Magnetic Proximity
	d) Resolution	:	0.5 mm per tip
	e) Output	:	0.1 sec switch closure
	f) 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
	g) Material of Outer Body/housing (Base/Collector)	:	Rust Proof Housing.
	h) Levelling	:	Suitable levelling adjustment screws and circular spirit level must be provided on the base of TBRG for levelling the Tipping bucket Mechanism.
	i) Debris protection filter	:	Suitable (Wire mesh) debris protection filter should be provided inside the collector.

<b>4.4</b>	<b>Pressure sensor</b>		
	a) Range	:	600 to 1100 hPa
	b) Accuracy	:	± 0.2 hPa or better for complete range ( 600 to 1100 hPa)
	c) Resolution	:	0.1 or better
	d) Output	:	Digital

## 5. POWER SUPPLY

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

- **Battery:** Single 12 V chargeable SMF battery 65 AH capacity or better.
- **The switch with fuse is required for power supply to the Data logger.**
- **Electrical charger:** There should be provision of charging the 12 V, 65 AH SMF batteries with 230 V AC Power supply.
- **Solar Charge controller:** It should charge the 12 V, 65 AH SMF battery through 40 W Solar panel and also Over-load protection, Short circuit protection, Protection from the lightning strike and Under-voltage protection.
- **Solar Panel:** Rated capacity 40 W or better, Open Circuit voltage: 21 V or better, Short circuit current: 2.5 A or better.

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 15 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 DATALOGGER, GPRS MODEM AND APPLICATION SOFTWARE FOR DISPLAY OF REAL TIME DATA

### 6.1 DATA LOGGER

I. General		
Datalogger quoted in tender bid should have been used for last two years in Meteorological purpose and should be well proven during severe weather conditions. Its performance certificate from users is to be submitted for last two years.		
S no.	Features	Requirements
i)	Power	Shall Operate with 12V Power from Solar panel / Battery. Data Logger should supply controlled Power to all sensors.
ii)	Sampling	Every one second Wind, Temperature, Humidity, Pressure and every one minute Rain Fall
iii)	Ports	Sensors: No of Ports to sample data from above sensors and

		<p>redundant ports in case of failure of current ports. All Ports used to sample data should be configurable to any digital wind, temperature, pressure sensor and Rainfall available in globe. Facility to connect new sensors to redundant ports (if required). Cables from sensors are directly connected to Ports of Data Logger without any Signal conditioner in between. Having facility to apply slope and Offset for all above sensors to maintain WMO accuracy. All ports are protected from surges due to lightning activities.</p> <p>RS232/USB/Ethernet Port to GPRS with SIM</p> <p>Compulsory Ethernet Port Data Output to local computer which can be configured to any Wireless Modem for communicating to Local Data Processing Computer and slave display computers (All Computers are not part of Tender). Data from Ethernet port to local computer shall be every one second. The data coming out of Ethernet port shall be in the CSV text format</p>
iv)	Quality Checks	Before processing Data Logger shall apply quality checks such as gross error check and time consistency check for sensors 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.
v)	Key pad	Inbuilt keypad and inbuilt backlit LCD/LED display with menu driven facility to display the command, data characters. Facility to Input station parameters such as Station ID (Alphanumeric), Station name (Alphanumeric), calibration constants offset and slope of sensors etc.
vi)	Processing & Data storage	Process & Stores data one string in every minute containing one min vector average of Wind direction, speed, Temperature, Humidity, Dew point, Pressure, Mean sea level pressure, Rainfall, Max Temp, Min Temp, 24hrs Rainfall, Battery Voltage, Health status etc. Internal memory of Data Logger is sufficient to store 10 years of 1min average and one min interval. Stored data should be transferred to a commercially available pen drive through a front panel keys. It shall compute & store Daily minimum Temperature at 03UTC, Daily maximum at 12UTC, 24 Hrs Rainfall at 03 UTC.
vii)	RTC	RTC clock should have internal battery for retention of time in absence of External Power supply. Stability Long-term is 1 ppm/year or better.
viii)	Communication to GPRS	<p>GPRS Modem should be external to Data Logger. Stored data every 1min should be communicated via GPRS Modem with single/dual SIM to Central Server. If Data logger unable to send data through GPRS modem for some due to absence of mobile data connectivity the all logged data to be communicated to central server as &amp; when communication link established. Provision to access Data logger from remote for retrieval of data or any purpose with password protection.</p> <p>GPRS Modem in built in the Data Logger is also acceptable provided SIM card slot is external.</p>
ix)	Software	Interface. Software in data Logger is upgradable by transferring



		upgraded software to Data logger through USB Pen drive
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## 6.2 GPRS Modem with SIM Facility

GPRS Modem with 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.

- a) Operating on standard SIM card.
- b) Suitable High gain GPRS Antenna for reliable communication and to connect to nearest mobile tower.
- c) Operate with 12V DC Power supply.
- d) Provision to configure to SIM Cards used and IP address and Port no of central Data receiving server.
- e) GPRS facility with fast and reliable wireless data communications.
- f) Remote dial-up facility.
- g) Shall support SMS, Email , FTP and TC/IP.
- h) Ethernet/RS 232/RS 485/USB interface with Datalogger.
- i) Indication of network availability (signal strength).

## 6.3 Application software for Display of Real time data

Application Software required for local display on a computer monitor should work on windows-based PC and application software should be up gradable without any cost on purchaser with new windows version. Details are given in **Annexure –VIII**.

## 7. WEATHER PROOF FRP ENCLOSURE FOR AWS

7.1 Two separate enclosures are required for AWS.

7.2 Weather proof Enclosure of AWS should be FRP Enclosure (IP 66) and for outdoor use to provide a degree of protection against falling dirt, rain, sleet, snow, windblown dust, splashing water, and hose-directed water.

7.3 **One enclosure** FRP Enclosure (IP 66) is suitable to keep Data logger, solar charge Controller, Pressure sensors, switch with suitable fuse for power supply to Data logger and GPRS modem.

7.4 **Another separate** FRP Enclosure (IP 66) for 12 V, 65 AH SMF batteries.

7.5 Silicone gasket is used for both Enclosures for harsh environments and extreme temperatures.

7.6 FRP Enclosure (IP 66) enclosures should be designed for outdoor applications that require corrosion protection against chemicals and water. From humble to harsh environments, it safeguards vital electrical and electronic components with enclosures, climate control and accessories to help keep operations up and running smoothly.

7.7 Enclosure with hinged door and locking facility.

7.8 Data Pockets provide convenient storage for wiring diagrams, operation manuals and other documentation inside an enclosure.

## 8. MAST FOR AWS (Tiltable type / Foldable/Sliding up and down)

8.1 Mast shall be 10-meter (**Tiltable type / Foldable/Sliding up and down**) mast. The mast is designed to withstand high wind conditions, up to 60 m/s of maximum wind speed, with a standard set of guy wires.

8.2 It shall be corrosion resistant and salt water resistant.

8.3 The Mast can be lowered down any time to remove for maintenance and reinstallation of the wind

sensors.

- 8.4 **Instrument booms suitable for mounting on the Mast need to be designed on the basis of the mounting requirements of the sensors.**
- 8.5 The bidder shall be responsible for installation of sensors at various levels, fixing and laying of the signal cables from all the sensors up to the ground level along with fixing the cable identification tags. The signal cables should be laid out properly on the mast and tied to the structure elements with cable ties of appropriate lengths.
- 8.6 Tension in the guy wires shall be adjusted by means of tension meters or any standard method for adjusting the tension in the guy wires may be followed and tension should be adjusted in the presence of IMD official.
- 8.7 The overall specifications of Mast are given in table below:

1.	Height	10 m
2.	Wind sustainability	60 m/s
3.	Guy levels	At 6 m
4.	Lightning Arrestor	A lightning arrestor with spiked copper rod of at least 10 meter height should be installed at the top of the mast and connected to an earth pit with copper bars and suitable copper cable. Separate maintenance free type earth pit conforming to the relevant IS specifications should be provided for this purpose.
5.	Cable routing	Provision for cable routing from instrument booms / junction boxes to the bottom of the mast will be provided. The cable bunch has to run in a flexible PVC pipe / with equivalent arrangement from top to the lower end of the tower and into the instrument enclosure

## 9. CENTRAL DATA RECEIVING AND PROCESSING SYSTEM

- 9.1 The supplier is required to establish the CDRPS at IMD, Pune in complete redundancy mode with hot stand by.
- 9.2 The CDRPS at IMD, Pune shall have all necessary communication hardware to receive the data from remote AWS sites in their respective region.
- 9.3 The CDRPS shall have processing Servers.
- 9.4 The CDRPS, Pune will monitor the performance of AWS through GUI based portal.
- 9.5 Each station shall be identified by its name and identification number assigned by IMD.
- 9.6 The CDRPS shall have the capability to provide an overall performance of better than 99% of error free data which shall be demonstrated by the bidder as part of the acceptance test.
- 9.7 The mains power shall be supplied out of a wall mounted Indian standard outlet at 230VAC  $\pm 10\%$ , 50Hz. The bidders shall include all necessary cables, connectors, the power supply will On-line UPS (5 KVA, 8 hours back-up) at Central Receiving Server, Pune.
- 9.8 The bidder shall offer complete redundancy of all critical components for a CDRPS indoor and outdoor electronics with facilities for automatic take over and appropriate alarms to commence maintenance of defective components.

9.9 The CDRPS to be linked to the main computer network of IMD through FTP service or any other protocol.

9.10 The receiving capabilities of the new Central receiving station shall include:

9.10.1 Receiving the data from existing systems (Satellite based TDMA)

9.10.2 Receiving of the CSV format data via GPRS

9.10.3 Receiving of the data from the stations from different producers in CSV (comma separated value).

9.10.4 Processing the 1000 raw data per minute (the Instrument Division plans to operate 10000 stations with 10-minute data collection interval)

9.11 The Central receiving station shall have three-tiered software architecture:

9.11.1 Database tier using industry standard SQL database

9.11.2 Application tier

9.11.3 Web client tier

9.12 The users shall be able to work with the Central receiving station using the standard web browser without the need of installation of additional plugins.

### 9.13 **SPECIFICATION OF HARDWARE AND SOFTWARE FOR CDRPS**

#### **A. Central Data Receiving and Processing Station (CDRPS) Hardware**

I. The Central receiving station hardware shall have as minimum following configuration:

II. High availability configuration for the database tier as well as application tier - two separate servers running in hot-failover configuration:

(a) Two database servers, rack mountable each of them shall include as minimum:

- (i) 2 x Intel Xeon 10 core CPU or highest version
- (ii) 2 x 600 GB SAS HDD, hot plug in RAID 0 configuration
- (iii) 64 GB RAM or more
- (iv) dual hot plug power supply
- (v) remote management module
- (vi) Linux operating system

(b) Two application servers, rack mountable , each of them shall include as minimum:

- (i) 2 x Intel Xeon 6 core CPU or higher version
- (ii) 2 x 1 TB SAS HDD, hot plug in RAID 0 configuration or better
- (iii) 32 GB RAM or more
- (iv) Dual hot plug power supply
- (v) Remote management module
- (vi) Linux operating system

(c) SAN storage with RAID 10 functionality, SAS hot plug disks, 14TB raw capacity

(d) Four Workstations rack mountable for monitoring the server ,each of them shall include as minimum

- (i) Intel Xeon® 5600 series processors or higher version
- (ii) 1 TB HDD or better
- (iii) 16 GB RAM or more
- (iv) Linux operating system

## **B. Central Data Receiving and Processing Station Software**

### **I. Metadata**

In order to meet the operational needs of continuously evolving, changing and expanding the station network with target count of 10000 stations, the Central receiving station database shall store the metadata of the stations and parameters. The server should store one minute interval data containing all weather parameters, Health status, error messages etc. for 10000 stations for seven years duration. Provision to be made to take data backup on separate storage devices for future archival.

The metadata module shall be compatible with WMO No. 1160 Manual on the WMO Integrated Global Observing System (WIGOS), 2015 Edition and shall be ready for future editions.

The metadata management shall be based on the concept of the properties of stations and parameters, the administrator of the Central receiving station shall have the possibility to define new properties.

The metadata module shall provide the web screens for the management of:

- a) Station Metadata, including, but not limited to the following properties.
- b) Station name.
- c) ID (WMO, IMD, etc.)
- d) Geographical coordinates.
- e) The administrator of the Central Receiving station shall have the possibility to:
  - i) Add new station
  - ii) Delete station
  - iii) Modify the properties of the existing station
- f) Parameter metadata, including, but not limited to the following properties
- g) Parameter name
- h) Unit of measurement
- i) Type chart
- j) Basic range
- k) The administrator of the Central receiving station shall have the possibility to:
  - i) Add new parameter
  - ii) Delete parameter
  - iii) Modify the properties of the existing parameter
- l) Parameters measured at the particular station.
- m) Beginning date of observation of particular meteorological element
- n) Ending date of observation.
- o) Observational schema: *Regular* or *Irregular*.
- p) Interval of observations in regular schema: 1 min, 10 min, 1hour, 3 hours, etc.
- q) The administrator of the Central receiving station shall have the Possibility to modify the list of parameters measured at the particular station to match the configuration of the sensors at the station.

### **II. Data Collection and Station Management**

The data collection module of the Central receiving station software shall be capable of:

- a) receiving the data from existing systems ( satellite based TDMA)
- b) receiving of the data via GPRS

- c) the central receiving station shall be able to download the data from the stations, which are TCP servers as well as shall be able to act as TCP server for the stations, which are TCP clients
- d) data format checks of the incoming data telegrams
- e) the malformed telegrams shall be stored in the database for later manual inspection
- f) adding the configuration for the new formats of the CSV telegrams without the need recompilation of the Central receiving station code by the administrator of the Central receiving station
- g) data completeness checks and calculation of the data collection statistics (percentage of the missing data, etc.) using the metadata of the parameters measured at the station
- h) Notification of the missing / abnormal data (see quality control below) via e-mail / SMS
- i) Collection of the status information from stations (if reported by the particular type of the stations) and status data processing (battery voltage, etc.)
- j) Notification in case the selected parameter (data or status value) crosses the value of the operational significance via e-mail / SMS (temperature out of range, battery voltage too low, etc.)

In case the design and configuration of the particular station allows that, the Central receiving station shall provide the remote TCP/IP access (tunnel) to the remote station for the purpose of the remote station maintenance and reconfiguration using the standard tools (HyperTerminal, Putty), or proprietary applications accessing the stations via TCP sockets.

### III. Quality Control and Data Processing

The Central receiving station shall perform in real-time the quality control of the received data. In addition to the data format checks and data completeness tests mentioned in section II following checks shall be implemented as minimum:

#### A. Tolerance checks:

- a) Interval checks (global, for particular station / region, for all year / seasonal / for selected months)
- b) related combination of parameters - when parameter A equals value specified, then parameter B should be within range specified (for example when cloud type is low, its altitude should be between 0 and 2200 m).

#### B. Consistency checks:

- a) *related parameter on same line* (for example maximum temperature should be higher than mean temperature, dew point less or equal to dry temperature);
- b) *related parameter difference* - the difference between values of two related variables should be less than the value specified;
- c) *related difference of variables* - difference between parameters A and B should be less (higher) than the parameter C.

#### C. Statistical checks:

- a. *Rate of change check*– the difference between two successive values of the parameter is higher or lower than set thresholds.
- b. *Standard deviation check* – the standard deviation of variable over selected interval should be higher than the value specified in order to warn when e.g. sensor is stuck at a constant value, but naturally the value should variate over time.

**D. Spatial quality control** - comparison of the measured station value to the value calculated by objective analyze from the neighboring stations data.

- a. To perform useful results, interpolated values shall be estimated by a Gaussian process governed by prior covariance.
  - b. The analysis shall take into account geospatial predictors like elevation, coastal distance, slope steepness/orientation and others.
  - c. The software shall use several spatial analysis methods (Barnes, Inverse distance, kriging).
  - d. For each station it shall be possible to define relevant surrounding stations, from which data are used to check suspected data at the station.
- E.** The Central receiving station software shall support multi-layer quality flags. Each data value shall have several flags, depending on:
- a. Validation stage (checked, not yet checked)
  - b. Basic QC result (correct, warning, erroneous)
  - c. Detailed QC result (reference to rule that was violated by the value)
  - d. Data source (manned observation, automated climatological station, etc. ...)
  - e. method (original value, manually corrected value, value calculated by system using physical equations, value manually forced)
  - f. special flags (e.g. levels surface, significant, standard, tropopause with upper air data)
- F.** The Central receiving station software shall have the tool for manual inspection of the values and their quality control flags, with possibility to edit the data and run quality control manually.
- G.** The data processing subsystem of the Central receiving station shall be able to calculate in real-time the derived parameters from the measured ones (for example dew point, QFE, QNH, interval minima, maxima, sums etc.).

## **H. Notification Module**

The Central receiving station software shall contain notification module, which can send alerts via **email and/or SMS**. The module shall be integrated with the quality control module in order to enable triggering of the notifications by **any** QC issues – erroneous/suspicious data, missing data. (It can be also configured to react on other system statuses).

Notification module shall generate and send system or data warnings to selected people. Notification module configuration shall enable to configure database of people to which some warnings should be sent, to specify warnings and conditions for their issuing as well as customize sending of warnings to people (in order to send specific warning to responsible person).

Several groups of features shall be configurable:

- a) People - database of people to whom warnings should be sent.
- b) System warnings – configuration of incidents and **threshold** when warning is invoked – for faulty communication (whole messages are missing) and faulty sensor (some individual parameters are missing).
- c) Data warnings - configuration of incidents and **threshold** when warning is invoked – for data reason like value is not within range, **value highest/lowest, value above 90<sup>th</sup> percentile**, other QC rules are broken, **more than x consecutive days of below y mm average rainfall over specified stations**, high/low variation of element, time change, **AND/OR combinations** of rules are possible. The user can attach own names to the rules, like “air temperature zero”

- d) Send to – which alerts to be sent to whom

It shall be possible to configure text of SMS and e-mail. In the message body shall be possible to address the data / metadata values from database (e.g. %STATION% might represent the name from selected stations for which the alert threshold was broken). Sent message shall contain particular value of the parameter. In addition it shall be possible to set the behavior of messages repetition, in case the cause of the error was not immediately solved.

### **I. Data Retrieval and Visualization**

The Central receiving station software shall provide the user interactive query tool for ad-hoc selection / export of the data for the selected station(s), parameter(s), time interval, with aggregation functions (sum, average, min, max) applied in the form of the table, chart, CSV, Excel format.

It shall be possible to view the SQL queries prepared by the interactive tool and copy/paste them for reuse.

It shall be possible to visualize the wind data over selected period in the form of wind roses with user configurable parameters.

### **J. Map Visualization**

- i) The Central receiving station software shall provide the Open Geospatial Consortium web services.
- ii) The web services shall provide the station data as well as georeferenced data from other sources: Web based maps
- iii) The station data shall be produced in KML, GML, JPEG, GIF, PNG, SVG formats on output. The 2D data sets interpolated from the station data shall be displayed in the forms of the colored fields, isolines, and wind barbs. The integrated web map client shall provide users with an easy-to-use interface to access browse and animate various data layers.
- iv) The system shall include the map server with the openly licensed maps of India (up to the street level). The map server and the database shall be fully incorporated into the Central receiving station in order to enable the full functionality without the need of the internet connection to the external map providers.
- v) The webserver at IMD shall be able to upload the updated map data into the map server to keep the maps up to date.

### **K. Product Generation**

- i) The central receiving stations shall generate automatically, using the data which have passed the quality control, following products:
  - a) FM-12 SYNOP code - single message and / or bulletins
  - b) FM-15 METAR code - single message and / or bulletins
  - c) FM-94 BUFR code - single message and / or bulletins
- ii) The administrator of the Central receiving station shall have the possibility to define:
  - a) the time schedule of the product generation,
  - b) bulletin configuration – which stations shall be included in which bulletin

#### **L. Data Dissemination**

The Central receiving station shall be able to disseminate the generated products / messages via multiple channels using various protocols:

- a) via FTP
- b) via E-mail

The message routing module shall enable user the friendly definition of the routing rules for disseminating of the generated codes via particular channels based on the WMO headers.

#### **M. User Management and Security**

The Central receiving station web interface shall be accessible only to the authorized users authenticated by the username and password. The access to the respective modules of the Central receiving station web interface shall be granted using the username / user role. The configuration of the users, passwords, roles, access rights shall be available to the authorized system administrator in the form of the web forms.

#### **N. Maintenance and Monitoring**

The Central receiving station hardware and software shall include the modules and functionality allowing remote monitoring and management of the Central receiving stations, which shall include:

- a) The remote maintenance modules built into the Central receiving station servers the monitoring agent built into the Central receiving station software and providing the software status data to the users:
  - i) in the dedicated web page updated in real time
  - ii) via SNMP to the standard SNMP based monitoring and management tools

### **10. INSTALLATION AND COMMISSIONING OF THE SYSTEM**

- a) The Supplier shall be responsible for implementation of the project on a **turnkey basis providing end to end solution.**
- b) The supplier shall be responsible for supply of all equipment and deliverables including transportation to the filed sites safely without any damage.
- c) Site preparation including all Civil and other related works such as construction of concrete foundation for mast and erection of 10-meter Tilttable Mast and Frangible mast for AWS at Airports, also installation and commissioning of AWS including installation of Datalogger, interfacing of sensors, installation and configuration of communication system, site levelling, installation of fencing shall be the responsibility of the Successful bidder. The details specification of AWS installation is given in **Annexure- IX.**
- d) The supplier shall undertake installation work in presence of Nodal officer designated by IMD office and IMD official deputed for the purpose. **The Nodal officer and IMD official will commission the AWS station after successful continuous verification of one-week uninterrupted data quality.**
- e) The Air Temperature & Relative Humidity sensor, Wind 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 wind sensor. TBRG sensor shall be installed at 3m distance from the mast. Pressure sensor should be mounted inside the IPC 66 Enclosure box of AWS.
- f) All cabling in the AWS site should be concealed/underground using suitable PVC pipe conduits.



- g) 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:

<p>Government of India India Meteorological Department Automatic Weather station (Name of the station)</p> <p><i>Contact: Head</i> Regional Meteorological Centre/Meteorological Centre INDIA METEOROLOGICAL DEPARTMENT .....</p> <p>Phone: Fax: Email ID: (Property of Govt. of India. Trespassers will be prosecuted)</p>
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The details on sign board will be made in consultation of nodal officer of respective RMCs/MCs.

- h) The supplier shall supply of 10 hard bound copies of operation and maintenance manuals and 10 softcopies in USB Drive.

## 11. GPRS NETWORK SERVICE

- a) 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.
- b) The supplier shall also be responsible for payment of recurring charges towards GPRS network service for Three year during Comprehensive warranty and also for Five years during CAMC period after installation and commissioning of the AWS network.
- c) There should be provision for SMS and IP based communication with Datalogger remotely to access and also configure the Datalogger through GPRS modem.
- d) 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.

## 12. DESIGN, DEVELOPMENT AND MAINTENANCE OF AWS WEBSITE

- a) Display of bilingual information in Hindi and English.
- b) Interactive multimedia oriented home page design.
- c) Multiple banner of inner page
- d) Design of the website as per the GIGW guideline of Govt. of India and to make it user friendly.
- e) Compatible to all the browser like Chrome, Mozilla firefox, Internet Explorer, Sa
- f) Web portal should be Responsive i.e. compatible to Mobile, Tabs, i-Pad 6. Database driven website with CMS (Content Management System) and
- g) User Management to manage the requirement from Admin Interface by the multiple users.
- h) Web portal should free from vulnerabilities.
- i) The website covers information for the following heads/subheads for public view About the IMD Organisation
- j) Real time AWS data with numerical format as well as graphical format.
- k) Design and Development of web site as per requirement

- l) User Acceptance Test Resolve all the Vulnerabilities found during security audit before Go-live of the website.
- m) Security audit will be done at least once in a year by any Cert-in empanelled firm/any other organisation assigned by IMD However, bidder has to resolve all the Vulnerabilities found during security audit.
- n) Installation of required software and hosting of website in a secured environment such as NIC etc. or any designated location identified by Optimization of website time to time for better performance
- o) It should have Admin section.
- p) Admin section will have the following options: 1. Users 2. Menus
- q) Users 1. User creation and Management for the web portal.
- r) User can be of three types that is Master Admin, General Operation Admin and Department User.
- s) Master Admin can be created more than one but always one will be active.
- t) Master Admin will create and manage general user who will manage the requirements as per authentication.
- u) General operation admin will create the departmental user to update their finance and physical progress on implementation of projects and schemes.
- v) Module wise access rights and authentication for functions as: Publish Add, Delete, Edit, View and Archival.
- w) Audit logs for the users to store for 30 days operation on page wise and after the periods the logs will be auto cleared.
- x) Menu: Creation of Menu as Global, Primary, Secondary and Sub Secondary Menu as up to 4th level with the option of edit, view, delete and publish.
- y) Creation and management of highlighted menus with banner and to display as menu with hyper link
- z) Link in client side will be hyper linked only on addition of information and published for public view.
- aa) Positioning and sequencing of menus in the appropriate section i.e. Top bar, Middle bar, Footer, Left side, right side in the home page and central panels in the home page.
- bb) It should have content management to add and delete as per user requirement.
- cc) It should have Maintenance admin with user name and password.
- dd) Support of Website during warranty period and also during Comprehensive AMC.

### **13. TRAVELLING STANDARDS FOR INTER-COMPARISON OF AWS DATA AT FIELD SITES**

- a) Laboratory calibration and testing, on-site inter-comparison, quality control (QC) procedures running at AWS compose the essential part of Quality Assurance (QA) system that has been implemented step by step in IMD. Automated real-time QC running in observer's PC as well as at the Central Data Receiving and Processing System (CDRPS) completes this QA system.
- b) IMD operates a full-time Calibration Laboratory and the field maintenance facility, staffed by instrument specialists and engineering technicians. The laboratory provides a facility where the institute can verify the manufacture's calibration of sensors and compare instrument performance to the other reference instrument as well as test the overall performance of the station. Every sensor installed in the surface-observing network must pass a calibration process.
- c) The field testing of sensors of AWS and inter-comparison with travelling standard has to done on yearly. The application software package is used for data collection, archiving and processing. Data can be viewed either in real-time or non-real time in different forms and formats, such as tables or graphs. The main emphasis has been put on data from the temperature and the humidity sensor. All sensors from both automatic stations are exposed in the non-ventilated wooden Stevenson screen, at 2 m height, next to each other.

- d) The aim of the inter-comparisons is to analyze the performance of the compared sensors as well as the whole measurement systems and estimate the accuracy, reliability and long-term stability.
- e) The technical specification details of travelling standards have given in **Annexure-VI**.

#### 14. 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 IMD 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	

#### 15. ONSITE COMPREHENSIVE WARRANTY AND CAMC FOR AWS AND CDRPS, PUNE

- a) The successful bidder shall provide onsite **comprehensive warranty for THREE YEARS** 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 by IMD during Comprehensive Warranty and CAMC period.
- b) The terms and conditions during on site Comprehensive Warranty Period/CAMC are given in detail as **Annexure – XI** and **Annexure – XII**.

#### 16. DELIVERY SCHEDULE

a)	Delivery	Delivery of all equipment and accessories shall be done at respective sites in four consignments within four months from
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		<p>the date of placement of supply order</p> <p><b>I<sup>st</sup> Consignment:</b> 100 AWS System within one month from the date of placement of supply order and installation of Central Receiving Sever with application software.</p> <p><b>II<sup>nd</sup> Consignment:</b> 100 System for installation within one month after delivery of first consignment of 100 AWS systems.</p> <p><b>III<sup>rd</sup> Consignment:</b> 100 AWS and within one months after delivery of second consignment of 100 AWS systems.</p> <p><b>IV<sup>th</sup> Consignment:</b> 100 AWS System and within one months after delivery of third consignment of 100 AWS systems</p>
b)	Installation and Commissioning	<p>Within Six months from the placement of supply order.</p> <p>The firm has to install and commission first 100 AWS system and Central receiving and processing system within two months. Remaining 300 AWS has to be installed and commissioned within subsequent 4 months. The firm has to plan in such a way that the project should be taken on highest priority and complete the project within twelve months.</p>

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

## 17. PAYMENT TERMS

### 17.1 Payment for supply, installation & Commissioning for AWS , Central Data Receiving and Processing Server and AWS website.

- a) 40% after successful supply of hardware/material.
- b) 30 % after SUCCESSFUL installation of **AWS, Central Data Receiving and Processing Server and AWS website** and training at site.
- c) 20 % after SUCCESSFUL commissioning of **AWS and Central Receiving and Processing Server and AWS website**.
- d) 10% after SUCCESSFUL completion of the project (successful commissioning of all 400 AWS and Central Receiving Server, AWS website).
- e) It is to be noted that the bidder may submit bills for payment after completion of supply/installation/commissioning for minimum 100 numbers of AWS stations and thereafter the next 100 and so on.
- 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 IMD for checking the installation and commissioning of AWS system.

### 17.2 Payment during 5 years CAMC period of AWS , CDRPS and AWS Website

- a) CAMC charges of AWS sites will be paid on half yearly basis.
- b) Payment for CAMC of AWS sites shall be made on the basis of certificate issued by the consignee authority/coordinating Nodal officer of IMD at MC/RMC/CRS, Pune subject to recoveries/adjustment, if any, by way of liquidated damages/penalty clause or any other charges as per terms and conditions of contract.
- c) CAMC charges for CDRPS and AWS website will be paid on half yearly basis.
- d) Payment for CAMC of CDRPS and AWS website shall be made on the basis of certificate issued by the consignee authority/coordinating Nodal officer of IMD, Pune subject to recoveries/adjustment, if any, by way of liquidated damages/penalty clause or any other charges as per terms and conditions of contract.

## 18.1 TRAINING ON AWS

The successful bidder shall provide comprehensive training in installation, integration, calibration, operation, maintenance, troubleshooting and replacement of defective modules of proposed Datalogger, GPRS communication system, sensors, Datalogger programming and system related topics to **25 (Twenty Five) IMD officers for a minimum period of Three Working Days at IMD Pune.** Training syllabus, material and documentation in English language shall be provided along with time table well before commencement of training for evaluation by IMD. 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 IMD for operation and routine maintenance of entire installed system at each AWS site.**

## 18.2 TRAINING ON CENTRAL DATA RECEIVING AND PROCESSING STATION

The successful bidder shall provide comprehensive training in installation, integration, operation, maintenance, troubleshooting and reinstallation of Application software, software and OS on servers, PC's, network equipment like switches, routers, firewall etc. with their configuration and system related topics to **5 (Five) IMD officers for a minimum period of Five Working Days at IMD Pune.**

## 18. 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 100 Nos. for any government/public sector/internationally or nationally recognized institutes or sectors. A certificate from end user in this regard about satisfactory and proven performance of the networks of the system must be enclosed with the technical bid.
- b) The bidder may be Original Equipment manufacturer (OEM) /Original Software Company (OSC), who developed the main Hardware / software.
- c) Authorized Supplier from Original Equipment manufacturer (OEM) /Developer of main application software company (OSC) etc. The bidder shall have to submit authorization certificate from OEM /OSC etc. that they will provide service support after sale.
- d) Integrators/ Authorized dealer/ Supplier/ subsidiary/ Distributors/ Stockiest having full back to back maintenance support agreement for hardware & software from OEM & OSC etc..
- e) The bidder should have minimum annual **turnover of INR 5 Crores for past three years** ending on 31.03.2019. 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

I. List of 85 sites in Kerala India

S.N.	Site name	District	Owner of site	Latitude	Longitude
1.	Kallar	Kasargod	Revenue	12.4344	75.2702
2.	Vellarikund	Kasargod	Revenue	12.363	75.2877
3.	Badoor	Kasargod	Irrigation	12.6452	75.0325
4.	Muliyar	Kasargod	Veterinary Hospital	12.5061	75.0908
5.	Hosdurg	Kasargod	Revenue	12.3133	75.0919
6.	Irikkur	Kannur	Revenue	11.9831	75.554
7.	Kannur	Kannur	IMD	11.8765	75.5712
8.	Kakkayam	Kozhikode	KSEB	11.55	75.9166
9.	Vilangad	Kozhikode	KSEB	11.75601 5	75.743528
10.	Chembukkadavu	Kozhikode	KSEB	11.4675	76.05
11.	Urumi	Kozhikode	KSEB	11.392	76.05833
12.	Quilandy	Kozhikode	Railway	11.4475	75.6914
13.	Vatakara	Kozhikode	Irrigation	11.5797	75.5994
14.	Thirunelly	Wayanad	Revenue	11.90722 2	76.032222
15.	Padichira	Wayanad	KWA	11.84472 2	76.188611
16.	Muttill	Wayanad	KWA	11.64666 7	76.177222
17.	Padinjarathara Dam site	Wayanad	KSEB	11.64916 7	75.941389
18.	Kuppadi	Wayanad	Forest	11.6892	76.2544
19.	Vettilapara	Mallappuram	Vettilapara Oakkayam G.U.P.S.	11.2713	76.125
20.	Paravvana	Mallappuram	Paravvana - TMG College	10.8838	75.8952
21.	Perumanna	Mallappuram	Revenue	11.0022	75.8952
22.	Angadipuram	Mallappuram	Railway	10.9827	76.2069
23.	Ponnani	Mallappuram	Revenue	10.78	75.9194
24.	Mangalam Dam site	Palakkad	KSEB	10.51706 7	76.535517
25.	State Forest Training Institute	Palakkad	Forest Department	10.94741 1	76.40861
26.	Karimpuzha	Palakkad	Govt. ALP School Karimpuzha	10.94741 1	76.408861
27.	Kollengode	Palakkad	Railway	10.62569 1	76.701601
28.	Mannarkkad	Palakkad	Forest	10.9952	76.4669
29.	Parambikulam	Palakkad	Irrigation	10.3922 82	76.776565
30.	Pattambi	Palakkad	KAU	10.8088	76.1894
31.	Pooringalikuthu	Thrissur	KSEB	10.3121 75	76.6347
32.	Kodakara	Thrissur	Revenue	10.3722 45	76.308186

33.	Kaddappuram	Thrissur	Fisheries department	10.5752 57	75.995961
34.	Munnakkal Beach	Thrissur	Port Trust	10.2622 35	76.147893
35.	Thrissur	Thrissur	Thrissur Corporation	10.5258 63	76.218211
36.	Wadakkanchery	Thrissur	Irrigation	10.6555 78	76.24896
37.	Kunnamkulam	Thrissur	Irrigation	10.6785 8	76.128695
38.	Chalaky	Thrissur	Irrigation	10.4091 08	76.179062
39.	Irinjallakkuda	Thrissur	Revenue	10.3568 93	76.205154
40.	Idamalayar Dam site	Ernakulam	KSEB	10.2064 63	76.709969
41.	Pindimedu	Ernakulam	KSEB	10.129444	76.808055
42.	Vellorkunnam	Ernakulam	Revenue	10.0015 07	76.567278
43.	Ayyampuzha	Ernakulam	Revenue	10.2485 11	76.473387
44.	Mulanthuruthy	Ernakulam	Revenue	9.90095	76.3899
45.	Paravur	Ernakulam	Water Authority	10.1364 59	76.220378
46.	Kalamassery IB	Ernakulam	KSEB	10.0582 26	76.329966
47.	Perumbavur	Ernakulam	Revenue	10.1176	76.480149
48.	Devikulam	Idukki	Revenue	10.066	77.1
49.	Peerumedu	Idukki	Revenue	9.5731	76.9908
50.	Vaikom	Kottayam	Mini Civil Station Revenue	9.7490348	76.389296
51.	Erumeli	Kottayam	MES College	9.45575 9	76.868663
52.	Poonjar	Kottayam	Poonjar Engg. College	9.67673 42	76.8394716
53.	Kacheri Road	Kottayam	Govt. Model HSS	9.44795	76.537586
54.	Kanjirappally	Kottayam	Hydrology	9.55	76.7833
55.	Kottayam	Kottayam	RRII	9.6	76.6
56.	Kanjikkuzhy	Alappuzha	Revenue	9.62032	76.33155
57.	Leprosy Sanitorium Noornad	Alappuzha	Revenue	9.17357 52	76.6227636
58.	CPCRI	Alappuzha	CPCRI	9.15191 8	76.513854
59.	Kunnamthanam PHC	Pathanamthitta	Kunnamthanam Gram Panchayat	9.44127 2	76.612098
60.	Poothankara	Pathanamthitta	KIP	9.13885 6	76.813383
61.	Seethathode	Pathanamthitta	KSEB	9.1675	76.767778
62.	Kochu Pampa	Pathanamthitta	KSEB	9.38805 6	77.156667

63.	Thiruvalla	Pathanamthitta	Revenue	9.38051 3	76.56919
64.	Karunagapally	Kollam	Revenue	8.99511 1	76.5335
65.	Pathanapuram	Kollam	LP School Punnala	9.0815	76.915306
66.	Kollam	Kollam	Revenue	8.81219 4	76.740528
67.	Kunnathur	Kollam	Revenue	9.02869 4	76.628861
68.	Punalur	Kollam	Punalur Municipality	9	76.9333
69.	Aryankavu	Kollam	Forest	8.9756	77.1494
70.	Thennoor	Thiruvananthapuram	Ponmudi police stn.	8.7615	77.110028
71.	Vazhichal	Thiruvananthapuram	Govt. UP School Koottama	8.49961 1	77.170917
72.	Varkkala	Thiruvananthapuram	Ayurveda Hospital	8.73307	76.73132
73.	Neyyatinkara	Thiruvananthapuram	PWD	8.40762	77.08244
74.	Vellarikkund	Kasaragod	Revenue	12.363	75.2877
75.	Irikkur	Kannur	Revenue	11.9831	75.554
76.	Kakkayam	Kozhikode	KSEB	11.55	75.9166
77.	Padinjaraathara Dam site	Wayanad	KSEB	11.6491 67	75.941389
78.	Vettilapara	Malappuram	Vettilappara Oakkayam G.U.P.S.	11.2713	76.125
79.	Mannarkkad	Palakkad	Forest	10.9952	76.4669
80.	Chalakydy	Thrissur	Irrigation	10.4091 08	76.179062
81.	Poringalkuthu	Thrissur	KSEB	10.3121 75	76.6347
82.	Pindimedu	Ernakulam	KSEB	10.1294 44	76.808055
83.	Peerumedu	Idukki	Revenue	9.5731	76.9908
84.	Poonjar	Kottayam	Poonjar Engineering College	9.67673 42	76.8394716
85.	Kanjikkuzhy	Alappuzha	Revenue	9.62032	76.33155
86.	Andaman and Nicobar Island	Nicobar	Car Nicobar		
87.	Andaman and Nicobar Island	South Andaman	Port Blair		
88.	Andaman and Nicobar Island	North and Middle Andaman	Diglipur		
89.	Andhra Pradesh	East Godavari	Peddapuram		
90.	Andhra Pradesh	Guntur	Bapatla		
91.	Andhra Pradesh	Krishna	Vuyyuru		
92.	Andhra Pradesh	Nellore	Nellore		
93.	Andhra Pradesh	Prakasam	Darsi		



94.	Andhra Pradesh	Srikakulam	Amadalavasla		
95.	Andhra Pradesh	Visakhapatnam	Yemmanchali		
96.	Andhra Pradesh	Vizianagram	Vizianagram		
97.	Andhra Pradesh	West Godavari	Maruteru		
98.	Andhra Pradesh	Papum Pare	Itanagar		
99.	Andhra Pradesh	Chittoor	Tirumula		
100.	Andhra Pradesh	Vishakhapatnam	Bhumipattinam		
101.	Andhra Pradesh	Nellore	Kavali		
102.	Andhra Pradesh	Nellore	SHAR		
103.	Andhra Pradesh	West Godavari	Narsapur		
104.	Auranachal Pradesh	Changlang	Changlang		
105.	Auranachal Pradesh	East_siang	Passighat		
106.	Auranachal Pradesh	Tawang	Tawang		
107.	Auranachal Pradesh	West_kameng	Bomdila		
108.	Assam	Kamrup Metropolitan	Guwahati		
109.	Bihar	Purunia	Purunia		
110.	Bihar	Buxar	Buxar		
111.	Bihar	Gopalganj	Gopalganj		
112.	Bihar	Munger	Munger		
113.	Bihar	Darbhanga	Darbhanga		
114.	Bihar	Patna	Patna		
115.	Chandigarh	Chandigarh	Chandigarh		
116.	Chhattisgarh	Sukma	Sukma		
117.	Chhattisgarh	Gariaband	Gariaband		
118.	Chhattisgarh	Raipur	Raipur		
119.	Daman and Diu	Daman	Daman		
120.	Daman and Diu	Diu	Diu		
121.	Dadra and Nagar Haveli	Dadra and Nagar Haveli	Dadra and Nagar Haveli		
122.	Delhi	South West Delhi	Aayanagar		
123.	Delhi	New Delhi	Sports_complex		
124.	Delhi	North Delhi	Delhi_university		
125.	Delhi	North West Delhi	Mungeshpur		
126.	Delhi	North West Delhi	Narela		
127.	Delhi	South West Delhi	Jafarpur		
128.	Delhi	South West	Najafgarh		

		Delhi			
129.	Delhi	New Delhi	Lodi Road		
130.	Goa	North Goa	Panji		
131.	Goa	South Goa	Marmagoa		
132.	Gujarat	Ahmedabad	Ahmedabad		
133.	Gujarat	Amreli	Amreli		
134.	Gujarat	Anand	Khambhat		
135.	Gujarat	Bharuch	Dahej		
136.	Gujarat	Bhavnagar	Mahuva		
137.	Gujarat	Jamnagar	Jamnagar		
138.	Gujarat	Junagarh	Kodinar		
139.	Gujarat	Kachchh	Mundra		
140.	Gujarat	Navasari	Navasari		
141.	Gujarat	Devbhumi Dwarka	Dwarka		
142.	Gujarat	Surat	Surat		
143.	Gujarat	Girsomanth	Veraval		
144.	Gujarat	Valsad	Dharampur		
145.	Gujarat	Porbandar	Ranavav		
146.	Gujarat	Gandhinagar	Gandhinagar		
147.	Gujarat	Kachchh	Jakaua		
148.	Gujarat	Kachchh	Kutch mandavi		
149.	Gujarat	Kachchh	Kandla		
150.	Gujarat	Kachchh	Bhuj		
151.	Gujarat	Rajkot	Rajkot		
152.	Gujarat	Mahisagar	Mahisagar		
153.	Gujarat	Morbi	Morbi		
154.	Haryana	Panchkula	Panchkula		
155.	Haryana	Faridabad	Bopani		
156.	Haryana	Faridabad	Faridabad		
157.	Haryana	Jhajjar	Jhajjar		
158.	Haryana	Karnal	Karnal		
159.	Haryana	Gurugram	Gurugram		
160.	Himachal Pradesh	Shimla	Shimla		
161.	Himachal Pradesh	Shimla	Masobra		
162.	Jammu and Kashmir	Srinagar	Rambagh		
163.	Jharkhand	Ranchi	Ranchi		
164.	Karnataka	Bengaluru	Bengaluru		
165.	Karnataka	Bellary	Bellary		
166.	Karnataka	Bidar	Bidar		
167.	Karnataka	Simoga	Simoga		
168.	Karnataka	Dakshin Kannada	Mangalore		
169.	Karnataka	Udupi	Brahamavar		
170.	Karnataka	Uttar	Honavar		

		Kannada			
171.	Lakshadweep Island	Lakshadweep Islands	Minicoy		
172.	Madhya Pradesh	Gwalior	Gwalior		
173.	Madhya Pradesh	Bhopal	Bhopal		
174.	Madhya Pradesh	Shahdol	Shahdol		
175.	Madhya Pradesh	Barwani	Barwani		
176.	Madhya Pradesh	Satna	Satna		
177.	Maharashtra	Pune	Pashan		
178.	Maharashtra	Raigarh	Murud		
179.	Maharashtra	Nasik	Nasik		
180.	Maharashtra	Satara	Mahabaleshwar		
181.	Maharashtra	Raigarh	Murud		
182.	Maharashtra	Sangli	Sangli		
183.	Maharashtra	Palghar	Palghar		
184.	Maharashtra	Mumbai Sub-urban	Santacruz		
185.	Maharashtra	Mumbai	Colaba		
186.	Maharashtra	Ratnagiri	Ratnagiri		
187.	Maharashtra	Sindhudurg	Devgad		
188.	Maharashtra	Thane	Thane		
189.	Maharashtra	Karjat	Karjat		
190.	Maharashtra	Raigarh	Karjat		
191.	Manipur	Imphal West	Imphal		
192.	Meghalaya	East Khasi Hills	Shillong		
193.	Mizoram	Aizawl	Aizawl		
194.	Nagaland	Dimapur	Dimapur		
195.	Nagaland	Kohima	Sechu		
196.	Nagaland	Kohima	Kohima		
197.	Odisha	Baleshwar	Baleshwar		
198.	Odisha	Bhadrak	Bhadrak		
199.	Odisha	Kendarapara	Kendarapara		
200.	Odisha	Jagatsinghpur	Jagatsinghpur		
201.	Odisha	Puri	Puri		
202.	Odisha	Ganjam	Behrampur		
203.	Odisha	Khordha	Bhubaneswar		
204.	Odisha	Baragarh	Baragarh		
205.	Odisha	Rayagada	Rayagdha		
206.	Odisha	Gajapati	Paralakhemundi		
207.	Odisha	Boudh	Boudhgarh		
208.	Odisha	Deogarh	Deogarh		
209.	Odisha	Balasore	Chandipur		
210.	Odisha	Ganjam	Rambha		

211.	Odisha	Bhadrak	Basudevpur		
212.	Odisha	Nuapada	Nuapada		
213.	Puducherry	Karaikal	Karaikal		
214.	Puducherry	Yanam	Yanam		
215.	Puducherry	Puducherry	Puducherry		
216.	Puducherry	Mahe	Mahe		
217.	Punjab	Patiala	Patiala		
218.	Punjab	Kapurthala	Kapurthala_ Science city		
219.	Rajasthan	Udaipur	Udaipur		
220.	Rajasthan	Kota	Kota		
221.	Rajasthan	Ajmer	Ajmer		
222.	Rajasthan	Jaipur	Jaipur		
223.	Rajasthan	Jaisalmer	Jaisalmer		
224.	Rajasthan	Hanumangarh	Hanumangarh		
225.	Sikkim	East Sikkim	Gangtok		
226.	Sikkim	East Sikkim	Tadong		
227.	Tamil Nadu	Thoothukudi	Thiruchendur		
228.	Tamil Nadu	Dindigul	Vedasandur		
229.	Tamil Nadu	Chennai	Nunambakkam		
230.	Tamil Nadu	Cuddalore	Chidambaram		
231.	Tamil Nadu	Kancheepura m	Kalavai		
232.	Tamil Nadu	Kanniyakuma ri	Neyyoor		
233.	Tamil Nadu	Nagapattinam	Nagapattinam		
234.	Tamil Nadu	Pudukkottai	Pudukkottai		
235.	Tamil Nadu	Ramanathapur am	Ramanathapuram		
236.	Tamil Nadu	Thanjavur	Adhirapattinam		
237.	Tamil Nadu	Thiruvallur	Tirutanni		
238.	Tamil Nadu	Thoothukudi	Tuticorin_ port		
239.	Tamil Nadu	Tirunelveli Kattabo	Tirunelveli		
240.	Tamil Nadu	Villipuram	Mailam		
241.	Telangana	Hyderabad	Hyderabad		
242.	Uttarakhand	Chamoli	Chamoli		
243.	Uttarakhand	Chamoli	Joshimath		
244.	Uttarakhand	Nainital	Mukteshwar		
245.	Uttarakhand	Rudra-Prayag	Rudra_ prayag		
246.	Uttarakhand	Uttarkashi	Purola		
247.	Uttarakhand	Uttarkashi	Uttar_ kashi		
248.	Uttar Pradesh	Agra	Agra		
249.	Uttar Pradesh	Mathura	Mathura		
250.	Uttar Pradesh	Lakhimpuri- Kheri	Paliakalan		
251.	Uttar Pradesh	Sultanpur	Sultanpur		
252.	Uttar Pradesh	Varanasi	Varanasi		

253.	Uttar Pradesh	Gautam Buddha Nagar	NCMRWF		
254.	Uttar Pradesh	Ghaziabad	CDO Ghaziabad		
255.	Uttar Pradesh	Jaunpur	Jaunpur		
256.	Uttar Pradesh	Gorakhpur	Gorakhpur		
257.	Uttar Pradesh	Ballia	Ballia		
258.	Uttar Pradesh	Amethi	Amethi		
259.	Uttar Pradesh	Jhansi	Jhansi		
260.	Uttar Pradesh	Chitrakoot	Chitrakoot		
261.	Uttar Pradesh	Sant Ravidas Nagar	Bhadohi		
262.	Uttar Pradesh	Aligarh	Aligarh		
263.	Uttar Pradesh	Bareilly	Bareilly		
264.	Uttar Pradesh	Basti	Basti		
265.	Uttar Pradesh	Bahraich	Bharaich		
266.	Uttar Pradesh	Rampur	Rampur		
267.	Uttar Pradesh	Saharanpur	Saharanpur		
268.	Uttar Pradesh	Lucknow	Lucknow		
269.	West Bengal	North 24 Parganas	Dumdum		
270.	West Bengal	Purulia	Purulia		
271.	West Bengal	Howrah	Uluberia		
272.	West Bengal	Malda	Malda		
273.	West Bengal	Jalpaiguri	Jalpaiguri		
274.	West Bengal	Purba Medinipur	Tamluk		
275.	West Bengal	South 24 Parganas	Sagar_island		
276.	West Bengal	North 24 Parganas	Basirhat		
277.	Assam	—	Balipara		
278.	Assam	—	Biswanath Chariali		
279.	Assam	—	Bongaigaon		
280.	Assam	—	Misa		
281.	Assam	—	Silchar		
282.	Manipur	—	Imphal		
283.	Nagaland	—	Dimapur		
284.	Nagaland	—	Mokokchung		
285.	Assam	—	Mariani (PG)		
286.		—	Salakali		
287.	Mizoram	—	Aizawl		
288.	Assam	—	Badarpur		
289.	Assam	—	Haflong		
290.	Meghalaya	—	Khlielariat		
291.	Tripura	—	Kumarghat		
292.	Manipur	—	Jiribam		
293.	Mizoram	—	Melriat		
294.	Arunachal	—	Namsai		

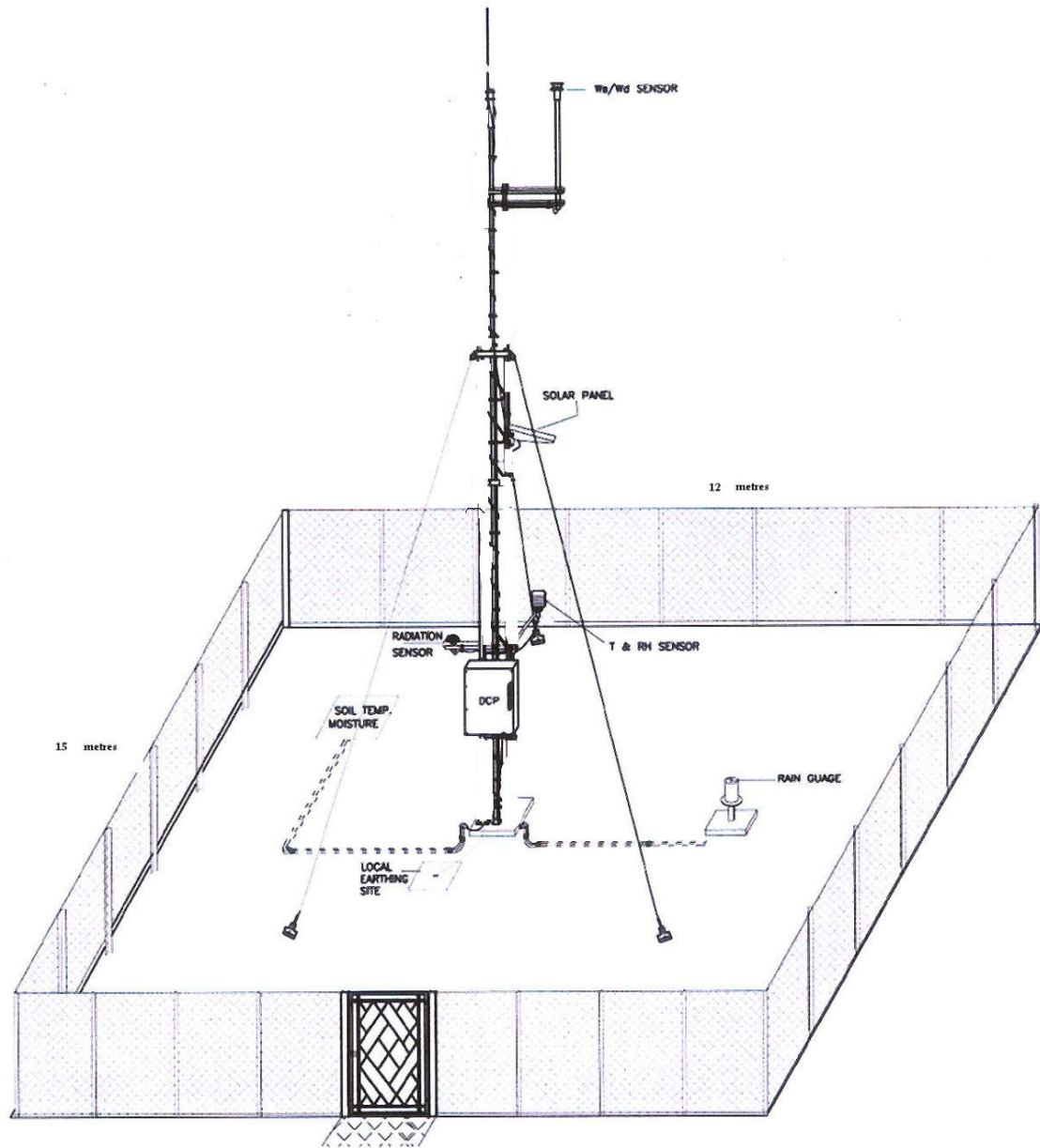
	Pradesh				
295.	Arunachal Pradesh	—	Nirjuli		
296.	Arunachal Pradesh	—	Roing		
297.	Arunachal Pradesh	—	Tezu		
298.	Arunachal Pradesh	—	Ziro		
299.	Arunachal Pradesh	—	Ranganadi		
300.	Assam	—	AGBPP		
301.	Assam	—	Kopili		
302.	Assam	—	AGTCCPP		
303.	Nagaland	—	Doyang		
304.	Assam	—	Khandong		
305.	Assam	—	Kopili Stg II		
306.	Arunachal Pradesh	—	Khupi		
307.	Tripura	—	Monarchak		
308.	Mizoram	—	Turial		
309.	Arunachal Pradesh	—	Pare		
310.	Manipur	—	Loktak		
311.	Tripura	—	Palatana		
312.	Assam	—	BgTPP		
313.	Arunachal Pradesh	—	Along		
314.	Arunachal Pradesh	—	Bhalukphong		
315.	Arunachal Pradesh	—	Chimpu(Itanagar)		
316.	Arunachal Pradesh	—	Daporizo		
317.	Assam	—	Deomali		
318.	Arunachal Pradesh	—	Lekhi		
319.	Arunachal Pradesh	—	Pasighat		
320.	Assam	—	Azara		
321.	Assam	—	Agia		
322.	Assam	—	Boko		
323.	Assam	—	BTPS		
324.	Assam	—	Mariani		
325.	Assam	—	Samaguri		
326.	Assam	—	Jawhar Nagar		
327.	Assam	—	Sarusajai		
328.	Meghalaya	—	Sonabil		
329.	Assam	—	Sonapur		
330.	Assam	—	Tinsukia		
331.	Assam	—	APM (Jogighopa)		

332.	Assam	—	Behiating		
333.	Assam	—	Baghjap		
334.	Assam	—	Bilasipara		
335.	Assam	—	Bokakhat		
336.	Assam	—	Bokajan		
337.	Assam	—	Bordubi		
338.		—	Bomagar		
339.	Arunachal Pradesh	—	Depota (Tezpur)		
340.	Assam	—	Dhaligaon		
341.	Assam	—	Dhekiajuli		
342.	Assam	—	Dhemaji		
343.	Assam	—	Dibrugarh		
344.	Assam	—	Diphu		
345.	Assam	—	Dispur		
346.	Assam	—	Dullavcherra		
347.	Assam	—	Gauripur		
348.	Assam	—	Ghoramari		
349.	Assam	—	Gohpur		
350.	Assam	—	Golaghat		
351.	Assam	—	Gossaigaon		
352.	Assam	—	Haflong		
353.	Assam	—	Hailakandi		
354.	Assam	—	Jorhat (West)		
355.	Assam	—	Jorhat (Garmur)		
356.	Tripura	—	kamalpur		
357.	Assam	—	Kamakhya		
358.	Assam	—	Kahilipara		
359.	Assam	—	Khaloigaon		
360.	Assam	—	Khumtai		
361.	Assam	—	Kokrajhar		
362.	Assam	—	Lanka (Sankardev Nagar)		
363.	Assam	—	Majuli		
364.	Assam	—	Margherita		
365.	Assam	—	Moran		
366.	Assam	—	Nalbari		
367.	Assam	—	Narengi		
368.	Assam	—	Nazira (Gargaon)		
369.	Assam	—	North Lakhimpur		
370.	Assam	—	Panchgram		
371.	Assam	—	Pailapool		
372.	Assam	—	Pavoi		
373.	Assam	—	Rangia		
374.	Assam	—	Rowta		
375.	Assam	—	Rupai(Doorndoo ma)		
376.	Assam	—	Sibsagar		

377.	Assam	—	Sipajhar		
378.	Assam	—	Sisugram(Aminga on)		
379.	Assam	—	Sonari		
380.	Assam	—	Srikona		
381.	Assam	—	Umrangshu		
382.	Assam	—	Langpi HEP		
383.	Assam	—	NamrupTPS		
384.	Assam	—	Lakwa TPS		
385.	Assam	—	BRPL		
386.	Assam	—	HPC-Jagiroad		
387.	Assam	—	HPC-Panchgram		
388.		—	TELCOM		
389.	Assam	—	Prag Basumi		
390.	Manipur	—	Churachandpur (Kheljang)		
391.		—	Chandel		
392.		—	Elangkanpokpi		
393.	Manipur	—	Imphal(Yuremba m)		
394.		—	Hunding		
395.	Manipur	—	Jiribam		
396.	Manipur	—	Kakching		
397.	Manipur	—	Karong		
398.	Manipur	—	Kongba		
399.	Manipur	—	Ningthoukhong		
400.	Manipur	—	New Moreh		



**SCHEMATIC VIEW OF AWS SITE**



**APPLICATION SOFTWARE FOR DESKTOP COMPUTER AT LOCAL AWS SITE****Features of Application Software for AWS**

- a) The meteorological parameters is to be transmitted every minute by Data logger to the Desktop computer through Ethernet port and are to be stored in the computer automatically as background operation.
- b) Software required for local display on a computer monitor should work on windows based PC and application software should be up gradable without any cost on purchaser with new windows version.
- c) Real time quality and quality assurance of the AWS Data shall be applied to ensure the quality of the data being coded into WMO format for transmission to the forecasters. Quality control procedures for gross error check for each parameter, time consistency for each time of observation, range check, internal consistency check and climatologically check etc. shall be implemented. Doubtful data shall not be considered for further processing and for coding the data into WMO format.
- d) Daily maximum and minimum of all meteorological parameters are to be generated in Daily report. Maximum wind gust is to be also generated in Daily report.
- e) Daily Minimum temperature should be generated at 0300 UTC.
- f) Daily Maximum temperature should be generated at 1200 UTC.
- g) It should display daily maximum and minimum RH value.
- h) Display of value of Wind speed, wind gust, wind direction, variable wind direction, temperature, dew point, QFE and QNH.
- i) It should have display the value and also in graphical format also.
- j) Archival of every minute data and above mentioned computed values with quality flags in suitable database.
- k) The software shall have options to retrieve data of desired duration from database display data in engineering units as well as in graphical format, export to Excel or similar application for graphical representation of meteorological data.
- l) AWS data received at the computer shall be further coded into a format recommended by WMO for transmission of meteorological data at user defined interval. WMO No. 306 Manual on codes is required to be followed to convert the AWS data into coded format. The software should have a provision to generate coded message in FM12 and FM 14-XII Ext SYNOP MOBILE. The details of the codes are available at <http://www.wmo.ch/pages/prog/www/WMOcodes.html>. Format in which the data is to be coded into shall be user selectable. The coding of data shall therefore strictly adhere to WMO norms for Alphanumeric code.
- m) Automatic generation of METAR every half an hour. The FORMAT of code defined at the technical regulation level in WMO Technical Regulation No. 49, Vol II, which is copied over to the WMO Manual No. 306 and to ICAO Annex III.
- n) Facility in application software to send AWS Synop messages to concerned email IDs (minimum three) at 1 minute to 60 minutes/ user selectable interval.
- o) Facility in application software to upload automatically from 1 minute to 60 minutes AWS Data to the website through an Internet.
- p) Capability to generate suitable reports and may be exported in Excel format.
  - i) Hourly AWS data reception and quality control report for monitoring.
  - ii) Daily AWS data reception and quality control report for monitoring.

- iii) Monthly AWS data reception and quality control report for monitoring.
- q) Application software with license is to be provided to IMD.
- r) The bidder should also be able to modify the application Software as per user requirement during warranty period and also during CAMC period.
- s) User shall be able to enter the title for data display screen on a PC.

**DETAILS OF AWS SITE PREPARATION AND DISMANTLE OF OLD MAST AND FENCING AT AWS SITES**

**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. A provision of concrete path 2 feet wide from Gate to Mast on AWS site.

**3. Fencing for the AWS site with Gate**

- a) The height of the fencing for the AWS site (10 m X 10 m) must be 5 feet should be done on a 1 feet concrete wall. There should be provision of water flow outside the AWS sites.
- b) Industrial grade fences of high-strength aluminum alloy with corrosive resistance and fastened with FRP screws.

4. **Gate:** Entry Gate of Dimensions: 2 m x 1 m x 6 mm (Length x Width x Thickness) of high-strength aluminum alloy with corrosive resistance.

**5. Mast Specification for AWS site**

- a) The mast shall be 10 m height and tiltable which is made of high-strength aluminum alloy with corrosive resistance and suitable for coastal stations.
- b) Three FRP 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).

**6. 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).

**7. 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 DATALOGGER enclosure should be grounded with local earthing.

- (d) **Material required:**

Salt: 20 Kg; Charcoal: 20 Kg; Sand: 100 kg

- (e) **Procedure:**

- i) A Pit of 4-5 feet depth, 2 feet X 2 feet wide at bottom (like a cone shaped) has to be dug.
- ii) 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.

**8. Sensor Installation**

- i) 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.
- ii) One Wind sensor will be installed at a height of 10 m.
- iii) Pressure sensor will be installed inside the Enclosure of AWS.
- iv) Rain gauge sensor will be installed at distance of 3 meters from the tower.

**TECHNICAL SPECIFICATION OF TRAVELLING STANDARDS KIT**

- a) Separate or combined sensors for all parameters meeting the technical specification should be provided.
- b) The kit shall consist of portable digital barometer with a display unit functioning as a transfer standard. The air temperature and relative humidity probe shall be provided for accurate air temperature and relative humidity measurement with a combined or separate display.
- c) Wind speed traveling standards should also be provided in the kit.
- d) Rainfall calibrator kit for TBRG sensors should also be provided in the kit.
- e) The required cable and connectors shall be provided with each travelling standard kit.
- f) The equipment should be delivered in a durable and weatherproof transport case that can be easily carried and shipped. The carry case should be light weight, corrosion free, non-rusting and impact resistant, suitable for field use.
- g) The components should be placed in a proofing foam interior, with accessories and user's guide placed in the lid organizer.
- h) Shoulder strap should be included for convenience to carry the system in the field.
- i) Battery duration should be 8 hours of continuous use.
- j) The system shall have facility to log the data transfer it to a PC.
- k) Each set shall be provided with an operation manual in English language duly bind in a book format.
- l) Values of parameters Pressure (P), Temperature (T), QNH, QFE, RH, Dew Point Temperature ( $T_d$ ), Wet Bulb Temperature ( $T_w$ ), Mixing Ratio (w) shall be available through the system.
- m) The supplier shall provide an end to end solution.
  
- n) Detailed specifications of standards are given below.

**i) General**

<b>No</b>	<b>Sensor description/characteristics</b>	<b>Specifications</b>
a)	Operating temperature range	-10 ... +40 °C
b)	Operating humidity range	0 -99 % non-condensing
c)	Power supply	Rechargeable battery pack with AC-adaptor or better. The battery shall be available for purchase in open market.
d)	Display	LCD with backlight, graphic trend display of any parameter, character height up to 16 mm
e)	Data logging use	Up to 30 days
f)	Alarm	audible alarm function

No	Sensor description/characteristics	Specifications
g)	Cables	Necessary cables as per the requirement shall be provided.

ii) **Pressure Sensor**

No	Sensor Description /characteristics	Specifications
a)	Measurement range	500 hPa to 1100 hPa
b)	Linearity	±0.05 hPa or better
c)	Calibration Uncertainty	±0.07 hPa or better
d)	Repeatability	±0.03 hPa or better
e)	Accuracy at +20 °C	±0.10 hPa or better
f)	Total accuracy	±0.15 hPa or better over full temperature Range -40 °C + 60 °C.
g)	Long-term stability	±0.1 hPa/year
h)	Response time	2s
i)	Display of Pressure parameters (the values need to be calculated automatically by the equipment and the final result need to be shown )	P, QFE & QNH

iii) **Relative Humidity**

No	Sensor description/characteristics	Specifications
a)	Measurement range	0 ... 100 %RH
b)	Type of sensor	Solid State Capacitive
c)	Accuracy	± 2%RH (0 ... 90 %RH) or better ± 3%RH (90 ... 100 %RH) or better
d)	Response time	<60 seconds

iv) **Temperature**

No	Sensor description/characteristics	Specifications
a)	Sensor range	-40 °C to +60 °C
b)	Measurement range (for calibration)	-10 °C to +40 °C
c)	Accuracy	at +20 °C shall be ± 0.15 °C or better Over temperature range of -10 °C to +20 °C shall be ± 0.2 °C or better Over temperature range of +20 °C to +40 °C shall be ± 0.18 °C or better
d)	Type of sensor	Pt100 RTD
e)	Response time	< 40 seconds

v) **Wind speed**

No	Sensor description/characteristics	Specifications
a)	Measurement range (for calibration)	0 to 60 mps
b)	Accuracy	2 % of full range
c)	Type of sensor	Moving type or ultrasonic
d)	Response time	< 1 second

vi) **Rainfall**

The TBRG Calibrator should be used to perform the calibration. It works with the tipping bucket rain gauge with the superiority on reliable calibration and easy field check.

Specifications: Bottle 114 mm (H) x Diameter 102mm

Cylinder: 120mm (L) with dispenser and shutter

Support: 210cm (L) x 60cm (W)

Material: PP for bottle and cylinder Stainless for handle and support plate

Flow rate: Around 50mm/hr, 150mm/hr and 300mm/hr handle switch

Volume: 785ml water for 200mm diameter gauge with 0.5mm/tip, yield desired tips

vii) **Calibration**

No	Feature	Requirement
a)	Calibration traceability	The calibration of the barometer, Relative Humidity and Temperature, wind speed and rainfall shall be traceable to NIST or any other World recognized Institute.
b)	Post calibration of the kit through secondary standard.	<ul style="list-style-type: none"> <li>• The travelling standards after the use in the field need to be recalibrated/ checked and adjusted with secondary standards available in IMD.</li> <li>• The supplied equipment shall have facility to recalibrate them and add/ store the adjustments, if required.</li> <li>• The pressure sensor shall have the capability for Linear and multi-point adjustments whereas temperature and humidity sensor shall have the facility for linear adjustments.</li> <li>• The successful bidder needs to demonstrate the calibration procedure during the acceptance of the equipment.</li> <li>• <b>The calibration procedure complying with the above requirement shall be submitted along with the technical bid. This is a mandatory requirement for the calibration kit.</b></li> </ul>

viii) **Display Requirements:** The equipment display / displays should provide the following facilities

No	Feature	Description
a)	Display	LCD with backlit display with graphic trend display of parameters Quantities and units
		Graphic history
b)	Function	Alarm
		Analog output display
c)	Recording / Viewing	Record data
		View recorded data
		Memory status
		Clear data memory
		Date and time
D	Ports	Shall have ports to interface Atmospheric Pressure sensor, Air



<b>No</b>	<b>Feature</b>	<b>Description</b>
		Temperature sensor and Relative Humidity sensor.
E	Power	Rechargeable battery pack with AC adapter. The power to the sensors shall be provided through display unit.
F	Data interface	Atmospheric Pressure sensor: RS232 Air Temperature and Relative Humidity Sensor: RS485

**TERMS AND CONDITIONS DURING THREE YEARS COMPREHENSIVE WARRANTY  
AND FIVE YEARS COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT  
FOR  
AUTOMATIC WEATHER STATION**

1. The successful bidder shall provide onsite Comprehensive Warranty for Three Years 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 Three years Warranty, IMD 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 Three years 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 IMD's Terms and Conditions then the IMD shall be free to terminate the CAMC with one-month notice and the firm may be blacklisted to participate in any IMD's tender for next FIVE years.
3. IMD will appoint a nodal officer at AWS sites of respective MCs and RMCs. 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. 5000/- 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 at AWS sites/MC/RMC/CRS, Pune.
6. **The quality AWS data is monitored by respective MCs/RMCs and also check the performance of sensors whenever required. If any sensors accuracy is not as per WMO criteria, the firm has to replace with new sensors. If replacement time is more than Three days, (after reporting complaint), penalty at the rate of 0.5% (of CAMC value) per day per sensor of AWS station shall be imposed on the bidder.** This penalty will start from fourth day and shall be deducted from their Performance Security deposit/CAMC Charges. The maximum penalty shall be limited to 10% of CAMC per site.
7. 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. **In case the output of any sensor is not upto WMO accuracy.**
  - iv. **If data reception of any AWS at receiving station is less than 90 % on daily basis.**
8. In case AWS system lies in Plain Areas if down time is more than **Three 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.
9. If the AWS system in Jammu & Kashmir, 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.
  10. **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.**
  11. 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 MCs/RMCs /CRS, Pune.**
  12. If the bidder does not rectify the fault for more than 15 days then IMD reserves the right to get the system rectified from any outside agency. The charges incurred shall be deducted from CAMC charges of the firm.
  13. It is the responsibility of the bidder to ensure that all AWS are in working condition during comprehensive warranty/CAMC periods.

**TERMS AND CONDITIONS DURING THREE YEARS ONSITE COMPREHENSIVE  
WARRANTY AND FIVE YEARS COMPREHENSIVE ANNUAL MAINTENANCE  
CONTRACT  
FOR  
CENTRAL DATA RECEIVING AND PROCESSING SYSTEM ,AWS WEBSITE AT PUNE**

1. The successful bidder shall provide onsite Comprehensive Warranty for Three Years 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 Three years Warranty, IMD will sign an agreement with the firm for Comprehensive CAMC of entire AWS for Five years.
2. The Bidder shall maintain all the system on 24x7x365 basis.
3. The bidder should be ready to accommodate required changes/upgrades/updates etc. in software in order to fulfill the requirement of WMO during Warranty and CAMC period free of charge. Such modifications should be done within stipulated period to meet the WMO objective and time line.
4. Bidder should provide the details of its call center/ helpdesk/ web portal meant for booking the complaints round the clock along with the contact numbers like mobile nos., phone nos., e-mail address and names etc. of its service Engineers available on 24 hrs service. Escalation matrix containing such information should also be submitted for the purpose to be used in case the fault is not rectified within stipulated period.
5. If there is complete failure of **Central Data Receiving and Processing System and AWS website** for more than 6 hours due to failure of any of the hardware/networking equipment/ interconnecting links then the penalty shall be recovered from their unserviceable period at the rate of 0.25% per day from the amount of the Performance Security deposit/CAMC Charges of the CDRPS and AWS website (unserviceable) subject to ceiling of 10% of the CAMC charges per quarter till the restoration of the system and operation.
6. If any of the standby machines fails without affecting the operation of the Central Receiving Station, then they should be repaired within 2 days. If it fails to rectify the fault within the above mentioned period, a penalty shall be recovered from the amount of Performance Security deposit/CAMC for the unserviceable period at the rate of 0.25% per day of the amount of the Performance Security deposit/CAMC of the device failed till its repair subject to ceiling of 10% of Performance Security deposit/CAMC charges per quarter till the rectification of the device.
7. If the Bidder is not able to rectify the fault within 48 hrs. In case of complete failure and 7 days in case of failure of standby systems/machines then IMD may get the system rectified from any external agency and whole replacement/repair cost will be borne by the bidder only and shall be deducted from CAMC charges.
8. External factors and severe natural calamity beyond human control shall be exempted from the penalty clause.
9. DGM, IMD, New Delhi reserves the right to terminate the maintenance contract any time with prior notice of one month to the firm in the event of not fulfilling the terms and conditions, unsatisfactory performance etc.
10. **Response Time:**
  - a) To keep the response time minimum, the maintenance engineer should be available within 6 hours of reporting of fault beyond office hours.

- b) In case of complete failure of CDRPS operation and AWS website, the fault shall be rectified within 6 hours after reporting.
- c) Bidder will provide Resident Engineers by 24 X 7 X 365 days during Three years comprehensive Warranty period and CAMC period. They should have SW background and should be available on all the days from 0000 HRS to 2300 HRS (Monday to Sunday including Holidays). They should be capable of handling the system including OS, application software, its backup and restoration, network configuration including router, firewall and switches etc. The engineers should be equipped with mobile phones to ensure their availability.
- d) The firm has to submit the list of engineers to **be deployed at IMD Pune with** their qualification, experience and contact details. The firm has to update the same immediately on change so that fresh entry pass can be issued by IMD on return of the existing pass.
- e) If a Service Engineer remains absent or on leave without providing substitute, the penalty will be imposed at the rate of 0.25% per day from the amount of the Performance Security deposit/CAMC Charges of the Central Receiving Station and AWS website (unserviceable) subject to ceiling of 10% of the CAMC charges.

#### 11. Service Window

The Service Window for onsite warranty and AMC support at IMD is required as under:

Location	Days	Service Timings	Mode of Delivery
IMD Pune	Monday to Saturday including Holidays	Office hours (0000 to 2300 hrs)	Resident Engineer

**LIST OF DELIVERABLES**

<b>S. No.</b>	<b>Item</b>	<b>Make &amp; model Country of origin*</b>	<b>Qty. Nos.</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	<b>Sensors and hardware for AWS sites</b>		
<b>1.</b>	Temperature Humidity Sensor with Radiation Shield with 5m Teflon cable with suitable MIL grade Amphenol connectors and mounting accessories (Calibration certificate of all sensors with validity certificate is required)		400
<b>2.</b>	Wind sensors with mounting accessories and 10 m Teflon cable with suitable MIL grade Amphenol connectors (Calibration certificate of all sensors with validity certificate is required)		400
<b>3.</b>	Rain Gauge Sensor (TBRG) with mounting accessories and with 5m Teflon cable with suitable MIL grade Amphenol connectors (Calibration certificate of all sensors with validity certificate is required)		400
<b>4.</b>	Pressure sensors with 1m Teflon cable (Calibration certificate of all sensors with validity certificate is required)		400
<b>5.</b>	Datalogger with IP-67 compliant Enclosure with mounting accessories and USB pen drive (16 GB or more) for data retrieval		400
<b>6.</b>	GPRS modem with single SIM (4G) (compatible with 3G) facility with minimum 8 dB antenna gain with mounting accessories		400
<b>7.</b>	FRP Enclosures NEMA 4 X for keeping electronics items- Datalogger, Pressure sensors, solar charge controller, ON/ OFF power supply switch with suitable fuses.		400
<b>8.</b>	Application software for display of data at TFT screen , Desktop PC/ Workstation /Server with license version for all AWS sites		One item
<b>9.</b>	10 meters Tilttable mast for weather parameters mounting accessories		400 sets
<b>10.</b>	Electrical charger for charging 12V,65 AH SMF BATTERY		50 sets
<b>11.</b>	Travelling standards kits for comparison of sensors at AWS sites (Temperature–Humidity, Pressure, Rainfall and Wind speed and wind direction)		50 sets
<b>12.</b>	12V,65 AH SMF BATTERY with FRP Enclosures NEMA 4 X.		400

S. No.	Item	Make & model Country of origin*	Qty. Nos.
1	2	3	4
13.	40 W Solar Panel with mounting accessories on the mast with solar charge controller.		400 sets
14.	Installation of 10 m mast and accessories, integration of data logger, sensors and other accessories, solar panel, charge controller, lightning arrestor, earthing for protection of complete AWS, fencing of field AWS site (10 m X 10 m).		400 sites
15.	Transportation of materials to AWS sites safely in good condition as per list enclosed in <b>Annexure –I.</b>		One item
16.	Hard and soft copy of operation and maintenance manuals.		30
17.	Training of 25 IMD officials for 3 working days at IMD Pune		One item
18.	Operational Training for each Nodal officers at all AWS sites		One item
19.	<b>Recurring cost towards payment of GPRS service</b> (During one year warranty period )		One item
20.	<b>CAMC charges for AWS also include recurring cost of GPRS service after expiry of Three years warranty.</b> <b>First year</b> <b>Second year</b> <b>Third year</b> <b>Fourth year</b> <b>Fifth year</b>		One item
	<b>Hardware and Software for Central Data Receiving and Processing System</b>		
21.	Servers with accessories, 21” LED Monitor, KVM switch, keyboard and mouse		04
22.	Workstations with accessories, 21” LED Monitor, KVM switch, keyboard and mouse		04
23.	On line UPS 5 KVA with battery bank for Eight hours battery backup on full load.		01
24.	Application software for Central Server Pune and other MCs/RMCs with License version		One item
25.	Design and Development of website for AWS and its maintenance during warranty period.		One item
26.	Training of 5 IMD officials for 5 working days at IMD Pune on CDRPS, Pune		One item

<b>S. No.</b>	<b>Item</b>	<b>Make &amp; model Country of origin*</b>	<b>Qty. Nos.</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>27.</b>	<b>CAMC charges for CDRPS and AWS website, Pune after expiry of Three years warranty. First year Second year Third year Fourth year Fifth year</b>		One item
<b>28.</b>	<b>TOTAL</b>		
<b>29.</b>	(i) Buy back rate of old 10 m mast and accessories, old data loggers, sensors, solar panels, batteries and old concrete platforms in existing AWS sites.		200 sites
<b>30.</b>	Grand Total = S.No. 28 – S. No. 29		



**Basic Block Diagram of Field site AWS and its Communication**

