

EXPERESSION OF INTEREST

Expression of Interest is Invited From eligible agencies for Supply Installation, Integration, Commissioning, Operation and Maintenance of Automatic Weather Station on Turn Key basis .

March, 2017

IMPLEMENTING AGENCY:

**Planning and Development Department
(Directorate of Economics & Statistics),
Bihar, Patna.**

EXPERESSION OF INTEREST

1. INTRODUCTION :

Directorate of Economics & statistics, Bihar is planning to establish AWS network project for the purpose of rainfall, wind, temperature, (hourly/ minute as per user requirement), radiation Shield for various applications of Agriculture, Hydrology, crop insurance, crop yield forecast, etc.

No	Network type	No. of Stations	Area to be covered with the network	Project	Total
1	Automatic Weather Stations	150(minimum)	Bihar state		

2. SCOPE OF TENDER

The supplier shall have full responsibility to execute the project on a **TURN-KEY BASIS** by taking up the supply, installation, integration ,commissioning, operation & maintenance as given below:

- 2.1 Supply and transportation and delivery of all equipments consisting of sensors, data loggers, batteries, solar panels, NEMA 4X FRP Enclosures (HOFFMAN), transmission systems incorporating GSM and GPRS modems, and other related accessories/deliverables etc.
- 2.2 Supply of masts, fencing material and all required sensor mounting accessories such as cables, mounting arms/booms connectors, conduits, switches, transient protectors etc for field installation of AWS.
- 2.3 Installation, integration and commissioning of 150 AWS at all field sites including civil work, cable laying and all such work required to be done at field site for functioning of the station.
- 2.5 Supply of CDRPS at Patna along with application software.

- 2.6 Supply of all required mounting accessories such as racks for mounting of Servers, cables, conduits, connectors, switches, UPS, elements of power for installation of CDRPS .
- 2.7 Provision of SMS facility at CDRPS, Patna for daily rainfall /3 hourly rainfall data to configured mobile numbers (10 Nos.)
- 2.8 Operation and Maintenance of the ALW for 4 years subject to satisfactory performance by providing suitable manpower and other logistic support at the ALW level.
- 2.8 Comprehensive Warranty for ONE year and Comprehensive Annual Maintenance Contract for FOUR years. **The warranty/AMC, however, apply for accidents, theft and natural hazards and vandalism by miscreants and for this the firm should watch and ward all commissioned AWS sites. (Watch & Ward: Watch & ward of each station shall be responsibility of successful bidder).**

3. OVERALL REQUIREMENTS

- 3.1 The AWS equipment should incorporate the state-of-the-art technology and provide capability for unattended operation in all weather conditions. The system shall run using Sealed Maintenance Free (SMF) battery(s), rechargeable through a solar panel. The battery shall be capable to run the system for minimum period of **20 days** on full load during total cloudy or foggy conditions. The bidders shall provide power budget calculation in the technical bid.
- 3.2 The data shall also be received at CDRPS, processed, quality checked and archived. The data shall be encoded into WMO (SYNOP MOBILE and BUFR code and XML) FORMAT for further dissemination to a server as per user requirement via ftp and/or VPN connectivity/internet.
- 3.3 All equipment should be qualified for MIL GRADE or better specifications and suitable for outdoor applications.
- 3.4 The data logger, GSM and GPRS modem, SMF battery, pressure sensor, charge controller must be housed in a **NEMA-4X (HOFFMAN)** FRP enclosure.
- 3.5 Software with provision for real time quality control of AWS data (to be applied at Datalogger in the field site and Servers at CDRPS and DRPS .
- 3.6 The system shall have facility to issue command for forced/manual transmission of data.
- 3.7 The system shall have time synchronization (time keeping) via GPRS and GSM server.

- 3.8 Training of 10 BIHAR GOVERNMENT officials in India
- 3.9 Support for customization of CDRPS's application software and DRPS's application software.
- 3.10 The firm shall provide demonstration of the complete AWS system including sensors, Datalogger, Communication equipment (GPRS & GSM), software etc. as per RFP for a period of 15 days at **No cost and No commitment basis** as a part of Technical Evaluation at BIHAR GOVERNMENT designated site.

4. SPECIFICATIONS OF DATA LOGGER

- 4.1 The data logger shall have facility to sample the output of the attached sensors with user selected sampling frequency and sampling time, process the samples so collected to obtain instantaneous, average (including vector average for wind), integrated, maximum and minimum values for the selected measurement interval for transmission to the CDRPS.
- 4.2 **All Datalogger should have Ethernet port dedicated to interface with any external display. The protocol of data transmission (every 10 minutes logged data) through this port has to be documented so that any user can interface their display.**
- 4.3 **The sampling and measurement interval for individual parameters shall also be user selectable. The measurement shall be stored into data logger memory.**
- 4.4 The data logger should have capability to log the data for specified parameter at user defined intervals in distinct multiple log files.
- 4.5 The stored data shall be retrievable via serial port/USB 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.
- 4.6 The data logger shall have facility to store measurement of parameters along with time in internal RAM which shall be sufficient to store the data of about **12** parameters for at least One year with measurement interval of 1 min. Data shall be available even if the power supply to the system has failed. RAM Backup battery shall be provided. It should be possible to upgrade the memory size at a later date without any hardware replacements.

- 4.7 Data logger shall be provided with a keypad and 2 line backlit LCD display in the front panel with facility to display least 16 characters per line.
- 4.8 The number of analog/digital/ SDI-12 channels in the data logger must be compatible to the sensors being supplied.
- 4.9 The data logger should have at least **ten** built-in high performance analog channels, **eight** built-in digital channels (four RS-232 ports in the form of standard DB9 connector, two RS-485, one SDI -12, 2 counter channels) must be available to interface different types of sensors.
- 4.10 The data logger shall have 1 USB 2.0 port, one Ethernet for interfacing display/laptop/ GSM and GPRS modems.
- 4.11 It shall be possible for the user to interact with the data logger for changing setup, customized programs etc by interfacing data logger with a laptop or PC through RS232 port/Ethernet port/USB port etc.
- 4.12 For sensors that need to be measured in a bridge configuration for accurate readings and stable performance, the data logger should be able to provide analog output for excitation. It should be possible to do the Ratiometric measurements of full and half bridges.
- 4.13 The data logger shall be able to accept all sensor inputs without external signal conditioning. The data logger should provision for built-in signal conditioning. External signal conditioning shall not be applied.
- 4.14 Data, setup and program files shall be transferable from the system via a serial port to PC /Laptop and pen drive or other suitable memory device. The access to the data logger through GSM and GPRS modem shall be password protected.
- 4.15 In addition, as and when the AWSis queried by the CDRPS/DRPS the current observation data shall be transmitted to the server.
- 4.16 In order to facilitate data processing, the data logger shall have a provision for 24 hour Real Time Clock (RTC) powered by a battery to ensure that time is kept even during power outages. The system shall have provision to easily include and change the “Unique station identification code”, “Station Name”, “Time of observation and transmission”, “Measurement schedule” and “Sensor identification information” as mandatory requirements.

4.17 Setup shall be organized in a tree of menus and sub-menus. Protection of setup parameters and data through password should be supported by the system.

4.18 Data logger shall have open architecture system to configure any standard commercially available sensor. The system shall be modular in design so as to enable future hardware & software upgrades without requiring removal of the system from the site.

4.19 Features of data logger

- ADC Resolution : 16 bit or better
- Conversion Accuracy : ± 1 LSB
- System clock
 - Stability Long-term : 1 ppm/year or better
 - Stability (Temperature) : 3 ppm or better from -10°C to 55°C
- Internal Memory : To meet the requirement stated above
- Battery Backup (internal) : Lithium Battery, storage: 3 years
- Real-Time Clock : CDRPS synchronized
- Watchdog Timer : System Reset upon microprocessor failure

- Sampling Rate : 1 sec (minimum)
- Measurement Intervals : 1 sec to 60 sec in 1 sec interval
1 Min to 60 min in 1 min increments
(All above should be user selectable separately and distinctly for individual sensors.)

- Operating Temperature range : -10°C to $+55^{\circ}\text{C}$
- Operating Humidity : 0-100% non condensing.

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

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

Check on Plausible rate of change (The time consistency check on measured values): This check is to verify the rate of change (unrealistic jumps in the values). After each signal

measurement, the current sample shall be compared to the proceeding one. If the difference of these two samples is more than specified limit then the current sample is identified as suspect and not used for the computation of average. However it is still used for checking temporal consistency of sample.

5. SPECIFICATIONS OF SENSORS

All sensors offered should be traceable to NIST (National Institute for Standards and Technology, USA) traceable or any other reputed internationally recognised Institute.

5.1	Temperature and Relative Humidity Sensor with Radiation Shield		
5.1.1	Air Temperature		
	a) Sensor type	:	Pt 100 RTD
	b) Measurement Range	:	-10 °C to +55°C
	c) Accuracy	:	± 0.20 °C for +10°C to +55 °C ± 0.35 °C for -10°C to +10 °C (with radiation shield)
	d) Resolution	:	0.1 °C
	e) Response Time	:	20 sec or better
5.1.2	Relative Humidity		
	a) Measurement Range	:	10% to 100%
	b) Accuracy (including non-linearity, hysteresis and repeatability)	:	± 2% RH with membrane filter
	c) Response time	:	20 sec or better
	d) Resolution	:	1%
	e) Sensor type	:	Capacitive / solid state
5.1.3	Radiation Shield		
	a) Type		Thermoplastic
	b) lover		Minimum 9
	c) Ventilation		Natural
5.4	Wind Sensor(Ultrasonic)		
	Wind Speed		
	a) Range (Operation)	:	0 to 60m/s or better
	b) Sustainability	:	Up to 75 m/sec
	c) Accuracy	:	± 0.5 m/s or better
	d) Resolution	:	0.1 m/s

	e) Threshold	:	0.5 m/s or less
	f) Response time	:	2 sec or better
5.5	Wind Direction		
	a) Range	:	0 to 359 Degrees
	b) Accuracy	:	±5 degrees or better
	c) Resolution	:	1 deg.
	d) Threshold	:	0.5 m/s or better
	e) Response time	:	2 sec or better
5.6	Tipping Bucket Rain Gauge (Siphon based)		
	a) Orifice Size/ collector diameter	:	20 cm
	b) Switch	:	Rugged Magnetic Proximity
	c) Resolution	:	0.5 mm
	d) Output	:	0.1 sec switch closure
	e) Accuracy	:	±0.5 % or better,for rainrate upto 15 mm/hr ±2% or better, for rainrate > 15 mm/hr and < 50 mm/hr ±5% or better ,for rainrate> 50 mm/hr

5.7	Soil Moisture		
	a) Range		0 to 1 m ³ /m ³
	b) Sensor type		Coaxial type
	c) Units		m ³ /m ³
	d) Accuracy		2% over entire range
	e) Resolution		0.1
	f) Depth		20 cm
5.8	Soil temperature		
	a) Range		-10 ⁰ C to + 55 ⁰ C
	b) Accuracy		± 0.3 ⁰ C or better
	c) Resolution		0.1 ⁰ C
	d) Sensor type		Resistance or equivalent type

	e) Response time		20 sec or better
	f) Depth		20 cm
5.9	Sunshine duration sensors (with No moving parts)		
	a) Spectral range		400 to 1100 nm
	b) Operating temperature		-10 ⁰ C to 70 ⁰ C
	c) Sunshine signal		1 V/5 V (direct radiation > 120 W/m ²)
	d) Accuracy		> 90% (direct signal for clear sky)
	e) Response time		< 10 ms
	f) Power supply		12 V DC
	g) Temperature dependence		< 0.2% / ⁰ C

6. DATA TRANSMISSION TO CENTRAL PROCESSING SERVER THROUGH GSM AND GPRS COMMUNICATION

6.1 GSM and GPRS Communication Requirements:

- a) Data from a network of 150 AWS across Bihar state shall be available in real time at CDRPS at Patna.
- b) Each AWS shall have facility to transmit data via GSM and GPRS services to **ensure data transfer in real time (every ten minutes)** and avoid delay in reception of data at the server in case of network congestion.
- c) The GSM and GPRS communication system shall automatically send message containing data to the central server at measurement interval selected by the user.

- d) The AWS shall transmit the GPRS message at set interval. **In case transmission in GPRS mode fails, AWS should switch over to GSM mode for transmission of data.**
- e) A two-way communication facility shall be provided so as to enable network manager to remotely modify set-up program/configuration of selected stations and poll the data besides configured measurement schedule when required.
- f) Overall requirements for compatibility to a GSM and 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. In addition, it shall support transmission of weather data to the central server in the form of SMS through GSM network.

6.2 GSM and GPRS Modem

GSM and GPRS facility with fast and reliable wireless data communications along with support for dynamic domain access to the central server IP address shall be provided. The following technical specifications are indicative and not exhaustive.

- a) GSM and GPRS facility with fast and reliable wireless data communications.
- b) Remote dial-up facility.
- c) Shall support SMS and Data.
- d) Quad Band GSM transmission.
- e) Accept standard SIM card with built-in holder.
- f) Ethernet/RS 232/485/USB interface with data logger and Field unit.
- g) Facility for static IP and domain transfer of data through GPRS.
- h) Full SMS Support.
- i) Compatible with Standard GSM/GPRS Networks available in India.
- j) Indication of network availability (signal strength).
- k) Suitable High gain Antenna for reliable communication.

7. POWER SUPPLY

- a) The complete remote station has to run on solar power and batteries.
- b) The supplier must provide fully solar power operated system with Solar Panels, Battery bank and Solar Charge Controller.

- c) The supplier must provide 20 days full power back up for operating the systems at field stations with sampling every 1 second for all the parameters including temperature, humidity, pressure, wind, rainfall, snowfall averaging every one minute and transmission of data as schedule every 3 minutes with sufficient batteries charging through solar panels.
- d) The system must be capable of working 20 days with transmission of data as schedule every 3 minutes without any external charging.
- e) The Supplier need to offer adequate solar panel and batteries to operate the system throughout the year.
- f) 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 station for minimum 20 days on batteries without any charging.
- g) 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. .

8. CENTRAL DATA RECEIVING AND PROCESSING SYSTEM (CDRPS)

8.1 Overall Requirements of CDRPS Patna.

- a) The supplier is required to establish the CDRPS at Patna in complete redundancy mode with hot stand by.
- b) The CDRPS at Patna shall have all necessary communication hardware to receive the data from remote AWS sites in their respective region
- c) The CDRPS shall have processing Servers.
- d) The **CDRPS, Patna** will monitor the performance of AWS through GUI based portal.
- e) Each station shall be identified by its name and identification number assigned by BIHAR GOVERNMENT.

- f) 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.
- g) 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 (2 KVA, 2 hours back-up) at CDRPS,Patna.
- h) 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.
- i) The **CDRPS** to be linked to the main computer network of BIHAR GOVERNMENT through FTP service or any other protocol.

8.2 SPECIFICATION OF HARDWARE AND SOFTWARE FOR CDRPS

8.2.1 Dual Redundant, Hot Standby Servers for CDRPS, Patna:

The server should have 2 TB HDD or latest for data receiving, retrieval and archiving with software for receiving, processing, visualization, data basing and communication accessories including cables, civil work, modems, switches etc.

8.2.2 Specifications of Dual Redundant, Hot Standby Servers:

- a) The servers should be fixed in a 21" (800x1000mm) rack with casters and glass door. The architect of the servers should be 100% redundancy with heat beat / status being reported to the administrator on Email/SMS in case of the failure event.
- b) Both servers will be loaded with original software and should be always in Hot position to take over from main server to secondary server and vice versa.
- c) The data base will be updated in both the servers in real time to avoid any loss of data in case of server failure.
- d) The performance/benchmark during the acceptance of system will include all hardware details.
- e) Identical servers required for Hot redundancy located within Central Station in 21" rack.
- f) Manufactured by ISO 9000 and 14000 certified manufacturing unit HP/COMPAQ/IBM/DELL.
- g) Model: Rack mountable 2U server.

- h) Processor: Intel Xeon 5600 Series processor.
- i) Rack Mountable: 2U Rack Mountable Server with rack mounting kit .
- j) Cache memory: Minimum 8 MB.
- k) No. of processors: (Dual Processor)
- l) Memory: 8 GB RAM, PC3 registered
- m) Networking: 2 x 10/100/1000 MBPS Ethernet controller
- n) DVD reader and writer
- o) Power Supply: Redundant Hot Pluggable power supply
- p) Operating System: Windows / LINUX based Server (latest available version), with media and manual. It must provide Virus protection at the Gateway for all inbound and Outbound HTTP, SMTP & FTP Traffic across the network (with hardware Firewall).
- q) Monitor: 32" Flat Panel LED Monitor.

8.2.3 Software for CDRPS Patna:

- a) Software package:
 - i) Intuitive and easy to use application which runs on WINDOWS/ LINUX.
 - ii) Data Retrieval in real time or by command with automatic and/or manual operation and data storage in a SQL database.
 - iii) Software capable for requesting, downloading, editing, processing and representation and management of data.
 - iv) The software integrates the entire data request commands made to the stations in real time data or data saved in the memory.
 - v) Software allows the user to change and/or modify the configuration of the stations.
 - vi) Facility to maintain METADATA information of every AWS sites.
 - vii) It should provide the real time working status report and periodic performance report.
 - viii) It shall have the provision to extract the data on any external storage device.
- b) Data Analysis:
 - i) Data enquiry over several days
 - ii) Comparison of readings between stations
 - iii) Daily statistics enquiry
 - iv) Strip charts of the daily statistics.

- v) Comparison between the daily statistics of various stations
 - vi) Comparison between parameters from the same station or from different stations
- c) Visualization of Data:
- i) Enquiry of data in Table Form
 - ii) Enquiry of data in graph form
 - iii) Temporary graphs composition window
 - iv) Map monitoring in real time.
 - v) Sensors performance monitoring in real time in graphical form.
- d) Additional Features:
- i) Printing of various reports and graphs.
 - ii) Zoom in and Zoom out facility with automatic graph scale Resizing
 - iii) Registers all the events like Information messages, error messages.
 - iv) Information of the communications resources used by the PC at that moment
 - v) Exportation of readings to text files (.txt), MS-EXCEL.

NOTE: The technical specifications of central receiving and processing system (both hard ware and software) are the minimum requirement. However the successful Successful bidder will be required to deliver the latest and upgraded version at the time of delivering the system without increasing the price.

9. INSTALLATION AND COMMISSIONING

- 9.1 The supplier shall be responsible for implementation of this project on a **turnkey** basis providing an end-to-end solution.
- 9.2 The supplier shall be responsible for supply of all equipments and deliverables including transportation to the field sites.
- 9.3 The supplier shall also be responsible for transporations of all equipments and deliverables up to BIHAR GOVERNMENT stores in Patna and subsequently to field sites across Bihar state. In order to ensure safety during transportation, proper insurance shall be arranged by the supplier. BIHAR GOVERNMENT will not able provide space for storage of AWS instruments. The Successful bidder should take the warehouse for items storage in the respective states.

- 9.4 Site preparation including all Civil and other related works such as construction of concrete foundation for mast and erection of 3m fixed mast for AWS installation and commissioning of AWS including installation of data logger system, interfacing of sensors, installation and configuration of telemetry system, installation of fencing and gate, installation of server and software etc so as to provide complete end to end solution on a turn key basis shall be the responsibility of the Successful bidder.
- 9.5 Supply, installation and integration of all required accessories such as cables, cable laying, connectors, conduits, switches, UPS, elements of power etc including necessary civil work and all such work required to be done at field sites for transmission of AWS data to the CDRPS shall be the responsibility of the successful bidder.
- 9.6 The supplier shall undertake installation work in presence of BIHAR GOVERNMENT official deputed for the purpose. The BIHAR GOVERNMENT official will commission the station after verification of data quality.
- 9.7 The supplier shall be responsible for leveling of site before taking installation.
- 9.8 The Air Temperature, Relative Humidity shall be mounted on separate boom/arm of at least 1.5 m length. The boom/arm shall be fixed horizontally on the mast at 2 m height.
- 9.9 The cost of fencing material and installation of fencing shall be quoted on per meter basis. The cost of the material and installation charges for AWS sites each of dimension 10 m X 10 m and AWS sites and taken into account for determining lowest bid.
- 9.10 All cabling in the AWS site should be concealed/underground using suitable PVC pipe conduits.
- 9.11 Each site should have a good quality metal sign board (Size: Height 4 ft x Width 3 ft) (rust proof) as depicted format below, which is painted in English, Hindi and Regional Languages, with the following information:

Government of Bihar AWS (Name of the station)
<i>Contact:</i> Phone:

Fax :
Email ID:
(Property of Govt. of Bihar. Trespassers will be prosecuted)

- 9.12 The details on sign board will be made in consultation of nodal officer of respective RMCs/MCs.
- 9.13 The supplier shall supply of 10 hard copies of operation and maintenance manuals.
- 9.14 The supplier shall also provide CDs/DVDs of operating system and software, licenses for OS and software, GIS etc
- 9.15 The detailed requirement of installation are given in Appendix-I which shall strictly adhered by the supplier.

10. GSM AND GPRS NETWORK SERVICE

- 10.1 The supplier shall arrange to provide reliable GSM and GPRS network for all AWS across India from a standard commercial network service provider.
- 10.2 The supplier shall also be responsible for payment of recurring charges towards GSM and GPRS network service for 5 years after installation and commissioning of the AWS network.

12. ONSITE COMPREHENSIVE WARRANTY FOR AWS NETWORK, CDRPS AND DRPS FOR ONE YEAR

- 12.1 The manufacturer/successful bidder shall provide onsite **comprehensive warranty of one year** after installation and commissioning of the **AWS network and CDRPS and DRPS** for each indoor and outdoor component.

13. ONSITE COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (AMC) FOR AWS NETWORK, CDRPS FOR FOUR YEARS

- 13.1 The manufacturer/successful bidder shall provide onsite **comprehensive AMC for four years** after expiry of one year warranty of the **AWS network and CDRPS** The successful bidder/manufacturer shall establish maintenance centers at Patna with sufficient number of qualified, manufacturer trained maintenance/service engineers. The name, address of maintenance centers, contact information including phone, Fax number, email ID etc. shall be provided to Nodal officer at CDPRS Patna .

14. CALIBRATION OF SENSORS

- 14.1 Hand held travelling digital standards for all sensors should be carried by maintenance party to the AWS sites to compare and evaluate the data quality. Sensors shall be calibrated once in a year during preventive maintenance tours. However, rain gauge and snow gauge shall be calibrated every three months.
- 14.2 It is mandatory to provide calibration certificate every year from OEM for each sensor installed at each site. For this purpose, Successful bidder is supposed to send the sensors to OEM for calibration and necessary certification. **A Penalty of Rs. 3000/= will be imposed per station per year if sensors are not calibrated periodically.** This penalty will deducted from the AMC Charge. In addition, the calibration charge per year will not be paid to the firm.
- 14.3 The sensor shall be removed from field sites and sent to OEM for calibration. Availability of data shall be ensured by the Successful bidder during this period.
- 14.4 Errors values obtained as result of calibration shall be incorporated in respective data loggers at field sites after every annual calibration.
- 14.5 Calibration certificates from OEM for each sensor shall be submitted to respective Nodal officers of Bihar government. BIHAR GOVERNMENT may independently verify the calibration status of sensors by randomly visiting AWS sites on its own.
- 14.6 The calibration charges of sensors will be paid to the Successful bidder on the Recommendation of Nodal officers of Bihar government..

15. DELIVERY SCHEDULE

a)	Delivery	:	(i) Delivery of all equipments and accessories shall be done through one consignments within 3 months from the date of placement of supply order (For Indian supplier)
			(ii) Delivery of all equipments and accessories shall be done through one consignment within 3 months from the date of opening of Letter of Credit. (For Foreign supplier)
b)	Installation and Commissioning	:	Within six months from the placement of supply order/ opening of LC as the case may be.

The list of deliverables is given as **Annexure-V**.

16. TRAINING

The successful bidder shall provide comprehensive factory training in installation, integration, operation, maintenance, troubleshooting and replacement of defective modules of proposed data logger, GSM and GPRS communication system, sensors, displays, application software, data logger programming etc to **5 (Five) BIHAR GOVERNMENT officers for a minimum period of Five Working Days at Patna** and Training material and documentation in English language shall be provided to all trainees.

5(Five) BIHAR GOVERNMENT staff should also be given 5 days training of server configuration at CDRPS-Patna.

17. BIDDER QUALIFICATION CRITERIA

Eligible Applicants:

- The tenders for this contract will be considered only for those tenders (firms, companies, corporations, consortium or joint ventures) who meet requisite eligibility criteria prescribed as under.

PERFORMANCE

- Prime Bidder should have running station experience for at least 100 Automatic weather stations in India for more than 3 Years. (Performance certificate against the same should be attached).
- Prime Bidder should be in Business in India for more than 5 years in the field of Weather Stations.
- Prime Bidder should have supplied and installed GSM/GPRS based/ similar kind of Network on at least 100 Station in India

FINANCIAL

- The Bidder (in case of consortium jointly) must have average Annual Turnover of Rs. 5 Crores per year during last 3 financial Years.

INFRASTRUCTURE

- Bidders must be Registered Company/Firm in India and having PAN/TAN and should have functioning office in India since at least Last 5 years.

JOINT VENTURE

- Joint venture consortium is permitted in the assignment. In case of a JV or Consortium, all the members of the group shall be jointly and severally liable for the performance of whole contract. The consortium should consist of Prime Bidder and maximum up to two secondary bidder and they must produce the MOU between them, which clearly explain the role and responsibility of all of them.

SERVICES

- "The bidder must have experience of Installation & maintaining of GSM/GPRS/ any kind of communication system (capable to provide real time data) based AWS network of at least 100 station for more than 5 years"

SALES TAX

- The Successful Tenderer will be required to register with Bihar Sales Tax, if not already registered, register & submit the proof of registration immediately after the order is placed. No Payment shall be released until Proof of the same is submitted.
- Tenderer must not have been blacklisted or deregistered by any central / state government department or public sector undertaking. Tenderer must submit an affidavit by Notary in original. Also no work of the tenderer must have been rescinded by client after award of contract during last 5 years.

EMD

- EMD for this project is 10 Lakhs in the form Bank draft only in name of "Dy. Director (DD), DES, Patna" payable at Patna.

Note- The Department will have right to reject the proposal of the Tenderer whose performance was not found satisfactory by the Department in any similar assignment given by or not allow to participate in the Tender .

SECURITY DEPOSIT

The successful Tendered shall furnish Performance security in the form of Account pay Demand Draft or fixed Deposit receipts (Five DD/FD receipts/Bank guarantee of equal amounts) from a commercial Bank or a Bank Guarantee on any Nationalized Bank in the favour of Dy. Director (DD), Directorate of Economics & Statistics, Bihar, Patna for amount equivalent to 10% of the order value within 15 days of acceptance of this supply order the said security shall stand forfeited in the event.

- i. The commissioning in part or in full are not effected in accordance with the delivery schedule.
- ii. The refection of supplies on account of sub-standard product, not in conformity with the specification.
- iii. Any act of breach of contract After furnishing performance security, the Earnest money in respect of successful tenderer shall be refunded/returned.

b. Refund of Security Deposit:

The security Deposit will be refund as per following Term & Condition:

- i. 45% of the security deposit refunded after fully supply of AWS hardware/materials.
- ii. 10% of the security deposit refunded after whole installation work.
- iii. Balance 45% after completion of the Project warranty period of 5 years.



Annexure-I

TENTATIVE LIST OF GSM AND GPRS BASED AWS SITES FOR BIHAR STATE

Note: The firm should note that 20 % of AWS sites may change in Bihar state so that the firm should be ready to install at new sites.

(Total AWS Sites: 150 Nos. in bihar & its block head quater)



Annexure – II

(A) DETAILS OF AWS SITE PREPARATION

1. AWS SITE

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

2. Fencing for the AWS site with Gate

- (a) The height of the fencing for the AWS site (10 m X 10 m) must be 1.5 meters from the ground level.
- (b) Fencing angle should be of size 50mm x 50mm x 6mm and precoated with red-oxide.Length of the angle shall be 2.5 meters i.e. (0.5 m below ground level).Each angle shall be grouted in concrete blocks of size (0.5 m X 0.5 m X 0.5 m).
- (c) Two MS angles must be used diagonally at each of the four corner angles of the site.
- (d) Distance between each fencing angle should be not more than 2 m.
- (e) Chainlink Fencing
 - (i) Dimensions of GI Chainlink: 10 cm x 10 cm and of Gauge: 10 (3 mm diameter).
 - (ii) GI chainlink mesh must be stretched on the fencing angles.
- (f) Gate :Entry Gate of Dimensions: 2 m X 1 m x 6 mm (Length x Width x Thickness) of MS angle with locking facility and painted with white / silver colour.

3. Mast Specification for AWS site

- (i) The mast shall be 3 m height and made of galvanized iron .
- (ii) The mast shall be painted in red and white colour scheme.
- (iii)The mast shall survive high wind speed of 75 m/s and test certificate shall be provided along with the technical bid.
- (iv) Concrete Platform for the mast should be 1.0 ft x 1 ft (length x width) and 1 ft height (2.0 ft below ground level and 1.0 ft. above the ground level).

4. Rain Gauge foundation

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

5. Chemical Earth for signal ground

(a) All the AWS stations shall be provided with earth pits for signal earth.

6. Sensor Installation

(a) Temperature and Humidity sensor will be installed at a height of 1.5 m and sensor is kept at North Direction and should be kept at distance of tower by 1m.

(b) Wind sensor will be installed at a height of 3 m.

(c) Raingauge sensor will be installed at distance of 3 meters from the tower.