# MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

## No. F5(658)ST/MNIT/CIVIL/2019

Phone: 0141-2713312,2713352

# **NOTICE INVITING E- TENDERS**

Registrar MNIT, JLN Marg, Jaipur invites online sealed tenders for the supply of "Equipments" for Water Resources Engineering Lab in Civil Engineering Department of this Institute in Two Bid System (Technical & Financial bids in separate envelope) as per schedule given below. The complete Tender document can be viewed and downloaded only from the website (www.tenderwizard.com/MNITJ), (www.mnit.ac.in) and CPPP site https://eprocure.gov.in/epublish/app during the tender period. The intending bidders should submit the tender documents fee and EMD through DD Mode and to be handed over in the office of Deputy Registrar (S&P), MNIT, Jawahar Lal Nehru Marg, Jaipur -302017 (E-mail address storepurchase@mnit.ac.in) during office hours (9.30am to 6.00pm) on all working days. The tender processing fee is to be payable through e-payment, at the time of making online request.

Event	Date & Time
Download of Tender	21.08.2019
Pre-Bid Meeting Date & Time	30.08.2019 at 2.00 PM
Online Bid Submission Last Date & Time	13.09.2019 by 2.00 PM
Technical Bid Opening Date & Time	13.09.2019 at 3.00 PM
Financial Bid Opening	Will be intimated later on
Tender Fees	Rs. 500.00 (Non-refundable) in the name of The Registrar, MNIT and payable at Jaipur
Earnest Money	(As per annexure- E) in the name of The
	Registrar, MNIT and payable at Jaipur
	(Kindly attached the RTGS details with
	cancelled cheque along with the Earnest
	Money)
Last date and time for submission of hard copy of	13.09.2019 by 2.00 PM
registration certificate (NSIC/MSME), tender fee	
and the earnest money	
Tender Processing Fee	The tender processing fee is to be
(Non-refundable)	payable through e-payment, at the time of making online request.

# **INFORMATION AND INSTRUCTIONS TO VENDORS**

- To participate in the E-Tendering, it is mandatory for the bidder to have user ID & password, which has to be obtained by submitting an annual registration charges of Rs. 2000/-+GST @ 18.00% to ITI, through e-payment.
- For any difficulty in downloading & submission of tender document at website <u>www.tenderwizard.com/MNITJ</u>, please contact at tenderwizard.com helpdesk no. 011- 49424365 or Sh. Deepak Jangid, M/s ITI Ltd: 91-9680005669
- 3. It is mandatory for all Tenderers to have Class-III Digital Signature Certified from any of the Licensed Certifying Agencies ('CA') to participate in E-Tendering of MNIT Jaipur, (Tenderer can see the list of Licensed CAs from the link www.cca.gov.in), in the name of the person who will submit the Online tender and is authorized to do so.Or if any support required on DSC, please contact back to us. (Help Desk No:-011-49424365)
- Registration: The Bidder has to register (if not registered earlier) with our website <u>www.tenderwizard.com/MNITJ</u> with a non-refundable registration fee of Rs. . 2000/-+GST @ 18.00% to ITI, through e-payment.

The registration fee is payable once on a yearly basis. For Registered vendors: Renewal is required. The procedure for the registration is as under:

- 1) Go to the url:-www.tenderwizard.com/MNITJ
- 2) In the home page, click on Vendor Registration

3) In the Vendor Registration form, vendor has to fill up the applicant details, upload minimum any of three self-attested documents (PAN Card, Registration, DVAT, Goods and Service Tax Registration, Work Order), digital signature information.

- 4. After submission of the form, the User-id and Password are generated in the form of Acknowledgement.
- 5. Vendors Training: Please contact to Sh. Deepak Jangid, M/s ITI Ltd: M. No.91-9680005669

## **GENERAL TERMS & CONDITIONS**

- 1. THE RATES QUOTED SHOULD BE F.O.R. JAIPUR inclusive of all charges related to transportation from your end to MNIT, Jaipur in Indian rupees. For imported items, the rates are to be quoted CIF (Cost, Insurance & Freight) Delhi only in freely convertible foreign currencies. In case the rates are quoted CIF (Cost, Insurance & Freight) New Delhi, then it will be the responsibility of the supplier to intimate us well in advance prior to dispatch and submission of all the relevant documents in time which will be required in clearing the consignment from Custom. If, there is delay in sending the documents and demurrage is imposed, then it will be in the account of foreign supplier. Kindly note that if any amendment is required in LC, after its establishment, the Bank Charges in this respect will be in the account of beneficiary only. The rates and units shall not be overwritten. Quotations shall always be both in the figures and words. The words "No quotations" should be written across any or all of the items in the schedule for which a tender does not wish to tender.
- 2. As far as possible, quotations should be given for goods of India manufacture which are readily available. Foreign goods quoted and proposed to be supplied should be covered by normal import quota of the dealer. This institute is exempted from payment of custom duty.
- 3. Detailed specifications and "make" of each item should be clearly given supported by the illustrated pamphlets wherever possible. Quotations without specifying the make and other particulars may be rejected. The accessories included in the equipment should also be clearly mentioned.
- 4. Losses or damage in transit will be in to the account of the supplier in case of rates **F.O.R. JAIPUR.** The supplier may, if he so desires, get the goods insured and include such charges in the tendered rate.
- 5. The payment for the ordered items would be made after the articles have been received, found in order and its successful installation. Payment will be made by RTGS to indigenous suppliers. Kindly send the RTGS details and cancelled cheque along with the Invoice. The payment to foreign supplier will be made through FDD/Wire Transfer OR Letter of Credit as the case may be. However 90 present payment will be released after receipt of items and remaining 10 present after its successfully installation
- 6. Your rates should be valid at least for three months (minimum) from the last date of opening of bid.
- 7. All legal proceedings, if necessity arises to institute may be any of the parties (Institute or Contractor/Supplier) shall have to be lodged in the courts situated at Jaipur and not elsewhere.
- 8. The institute is not bound to accept the lowest tender and may reject any tender or any part of the tender giving justification for such an action.

## 9. (a) The Penalty Clause is as under:-

If the seller fails to deliver any or all of the Goods/Services within the original /re-fixed delivery period specified in the Purchase Order, this Institute will be entitled to deduct/recover the Liquidated Damages for the delay at the following percentage:

(i)	Delay up to one month		1%
(;;)	Delay exceeding one month but		2%
(ii)	not exceeding two month		2 70
(iii)	Delay exceeding two month but		5%
(111)	not exceeding three month		570
(iv)	Delay exceeding three month		5% for each month and part there of subject
(1V)	Delay exceeding three month		tomaximum 10%

(b) In case of failure to supply the goods within the prescribed time and in accordance with the specifications give in the Quotations, the institute shall be free to cancel the order and make purchases from the next higher tenderer or from the open market as the case may be. In that case the loss sustained by the institute shall be recovered from the defaulting supplier. The institute will be at liberty to recover the loss from the permanent earnest money/or any other pending claims of the supplier without prejudice to its general right to affect recovery from the supplier.

- 10. The prospective bidders can be those who are the manufacturers of the equipment. For items manufactured outside India, the manufacturer itself can be a bidder or its authorised Indian agent can bid on behalf of its Principal that is the manufacturer.
- 11. In the event, the country of origin of goods is India, only the manufacturers shall be considered eligible for bidding. Authorised agents of Indian manufacturers may be permitted to submit the bid, provided the concerned manufacturer states that as its policy, it does not bid itself in India and that there is no qualitative difference between manufacturer and its agent as bidder in respect of quality of supplies, cost, and responsibility of maintenance and servicing. The Indian manufacturer must describe the alternatives in clear terms, in the event the bidding agent ceases to continue as agent of the concerned manufacturer within the stipulated warrantee period.
- 12. If any Indian manufacturer requires importing an essential part from a foreign country, the said company may be given to enjoy the benefit of customs duty exemption with the aid of CDEC of MNIT, Jaipur provided the import of the concerned item is done on behalf of MNIT, Jaipur.

## 13. THERE IS TWO BID SYSTEM:-

### (TECHNICAL AND FINANCIAL BID, both bids should be submitted in separate envelopes):

### (A) Technical Bid:

- a) Bidder must be a manufacturer/authorized distributor/ Dealers and they have to enclose a certificate of authorization of manufacturer in format at Annexure A (Authorization certificate in any other format will not be valid). OEM itself or any one authorised dealer on behalf of OEM may participate in bid. OEM and its dealers both may not participate at the same time.
- b) The manufacturers should supply documentary proof i.e. Registration with the Registrar of Industries, National Small Scale Industries Corporation or with penal of MNIT in case of manufacturer. Offers other then the manufacturers should be supported with an authority

letter from the manufacturers, authorizing them to quote rates standing guarantee for the satisfactory execution of supply orders failing which offers are liable to be ignored.

- c) One declaration by the Manufacturer to the extent that in case of failure of its local agent /office to provide service support to the satisfaction of MNIT Jaipur, it shall make immediate arrangement for required service support.
- d) Bidder should enclose technical compliance from the Manufacturer. The specifications of items should be strictly as specified. Deviation, if any may please be mentioned separately. If there is no deviation than it should be mentioned as "No Deviation".
- e) The leaflets catalogue, related to quoted equipment/model etc. should be sent invariably, so that a proper evaluation of the equipment offered is possible.
- f) Mention must be made of the pre-installation requirements for the equipment quoted viz. ambient temperature, humidity, weather specifications, power specifications, civil works etc. When items are provided full performance satisfaction should be demonstrated.
- g) Bidder must enclose the acceptance of terms and conditions and must enclose the duly signed and stamped tender document.
- h) All the Annexure enclosed should be duly filled up and signed.
- i) Please attach proof/certificate of each condition required in the tender document.

## (B) Financial Bid:

- a) The bidders should clearly mentioned their payment terms & conditions
- b) The GST or any other taxes including Custom duty Etc. should be mentioned clearly
- c) The financial bid is to be submitted on excel sheet only
- 14. Delivery Period:-The ordered quantity of stores must be delivered within 6 to 8 weeks in the case of indigenous equipment and 14 to 16 weeks in the case of imported equipment after opening of L.C. / FDD and Wire Transfer. The extention of delivery period after placing the PO, if required, will be considered only on genuine reasons and proper justifications only.
- 15. <u>Installation:</u> Successful BIDDER shall depute concerned specialist, for supervision of erection & commissioning of the machine to be carried out as and when necessary. The successful BIDDER shall make necessary arrangements during the entire warranty period at their own expenses for stay, transport and other expenses of their specialist during their stay in Jaipur;
- 16. <u>Warranty:</u> All the bidders are required to provide minimum <u>01 Year + 60 Days</u> warranty on the quoted equipment / instrument

## 17. **Performance Bank guarantee**

Successful Bidder has to Provide Performance security @ 10% of the equipment cost, valid for stipulated warranty period plus 60 days which should be in the form of Bank's Guarantee from a commercial bank in format at **Annexure – B**. Warranty will cover repair/replacement of all defective parts, if any, with the same or equivalent make for any part removed. Maintenance will be provided at site. The supplier will provide after sale service during the warranty period from nearest place to installation. The supplier will attend the complaint within 24 working hours and not beyond 5 working days.

- 18. <u>EARNEST MONEY:</u> A Demand Draft As per annexure –E from a Commercial bank only in the name of the Registrar, M.N.I.T. and payable at Jaipur may please be sent at the office of Deputy Registrar (S&P), MNIT, Jawahar Lal Nehru Marg, Jaipur -302017 during office hours (9.30am to 6.00pm) on all working days prior to opening date of the tenders. <u>No tender shall be considered without earnest money / tender fee. Cheques are not accepted as earnest money amount</u>. No interest is paid by us on the amount of earnest money. Kindly attached the RTGS details with cancelled cheque along with the Earnest Money. Any bid security/EMD received by the institute after the due date for submission of bids prescribed by the institute is liable to be rejected. The firms registered with NSIC/MSME are exempted for furnishing of EMD / Tender Fee. The Hard copy of NSIC/MSME registration certificate is to be sent positively prior to opening of the tenders.
- 19. **Jurisdiction:** The Courts of Jaipur alone will have the jurisdiction to try any matter, dispute or difference between the parties arising out of this tender/contract. It is specifically agreed that no Court outside and other than Jaipur court shall have jurisdiction in the matter.

# 20. <u>Arbitration Clause: -</u> In the eventuality of any dispute, the sole Arbitrator shall be MNIT, Jaipur and his decision shall be binding on all the parties.

- 21. **Force Majeure** : Any failure of omission or commission to carry out the provision of this contract by the supplier shall not give rise to any claim by one party, one against the other, if such failure of omission or commission arises from an act of God; which shall include all acts of nature calamities such as fire, flood, earthquake, hurricane, or nay pestilence or from civil strikes, compliance with any statute and / or regulations of the Government, lockouts and strikes, riots, embargoes or from any political or other reason beyond the supplier's control including war (whether declared or not) civil war or stage of insurrection, provided that notice of the occurrence of any event by either party to the other shall be given within two weeks from the date of occurrence of such an event which could be attributed to Force Majeure conditions.
- 22. **<u>Risk & Cost</u>** : In the event of failure to carry out the contractual obligations, within the stipulated period or extended period and determination of the contract for any reason, violation of warranties etc. the MNIT Jaipur shall have the right to carry out the unfinished obligation at the exclusive cost and risk of the bidder/firm, after due notice and the difference so accrued shall be recoverable from the bidder/firm.
- 23. The material found defective upon opening by the supplier representative in presence of Central stores personnel / indenter of MNIT Jaipur or not as per tendered specifications will be lifted back at the cost and risk of the supplier. The material lying in MNIT Jaipur premises would be at supplier's risk and cost.
- 24. <u>Custom Duty</u> : The MNIT, Jaipur is a public funded research Institution registered with Department of Scientific & Industrial Research and concessional Custom Duty @5.15% is applicable for the goods purchased for research purpose vide Government of India Notification No.51/96-Customs dated 23.07.1996

- 25. <u>GST:</u> MNIT, Jaipur is a public funded research Institution registered with Department of Scientific & Industrial Research for concessional GST @5% applicable for the goods purchased for research purpose vide Ministry of Finance (Department of Revenue) Notification No.47/2017-Integrated Tax dated 14.11.2017 & Notification No.45/2017-Central Tax dated 14.11.2017.
- 26. Bid Validity: 90 days (Minimum)
- 27. **Opening of Bids:** The Bids shall be opened by authorised officials of the institute as per schedule given in Date Sheet. In case, the day of bid opening is declared a holiday by the government, the Bids will be opened on the next working day at the same time. No separate intimation shall be sent to the bidders in this regard. Only opening of bids and accepting the bid will not mean that the firm is technically or financially qualified.
- 28. **Institute right to vary Quantities at Time of Award or later** : Institute reserves the right at the time of awarding the contract to increase or decrease the quantity of goods and services originally mentioned in our NIT without any change in unit price or other terms and conditions.
- 29. While submitting the tender, the **GST Registration No.**, **PAN No.** & **E-mail Address** is to be mentioned by the bidder positively. Failing this, there bid will be treated as non responsive.
- 30. <u>After Sales Service Certificate</u> : After sales service certificate is to be furnished by successful bidder in the prescribed form as **annexure** –**C**
- 31. Specification Enclosed as annexure D

Deputy Registrar (Store & Purchase)

## MANUFACTURERS' AUTHORIZATION FORM

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer.]

Date : [insert date (as day, month and year) of Bid Submission]

Tender No. :[insert number from Invitation For Bids]

To : [insert complete name and address of Purchaser]

#### WHEREAS

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Bidder]to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 2.20 of the General Conditions of Contract, with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

Duly authorized to sign this Authorization on behalf of: [insert complete name of Bidder]

Dated on \_\_\_\_\_\_ day of \_\_\_\_\_\_, \_\_\_\_ [insert date of signing]

\*(Not required in case the bidder itself is the manufacturer)

#### PERFORMANCE BANK GUARANTEE

(To be executed on Stamp Paper of Rs. 100/- or such higher value as per the Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Bank Issuing the Guarantee.)

BANK GUARANTEE NO. : DATED :

Dear Sirs,

- 3.0 THIS DEED WITHNESSETH AND IT IS HEREBY AGREED AND DECLARED BY AND BETWEEN PARTIES HERETO AS FOLLOWS:
- 3.2 In consideration of the aforesaid premise and at the request of the supplier, we the Bank hereby irrevocably and unconditionally guarantee that the supplier shall perform in an orderly manner their contractual obligations in accordance with the terms and conditions set forth in the Purchase order dated ...... and in the event of the supplier's failure to do so, the Bank unconditionally pay to the MNIT, Jaipur on demand, any amount up to the value mentioned in Clause 3.1 above without any reference to the supplier and without questioning the claim.
- 3.3 The guarantee herein shall remain in full force for a period of two months beyond the warranty period from the date of certification by the MNIT, Jaipur of successful installation and commissioning of the equipment/ service contracted. Date of start of warranty period will be notified by MNIT, Jaipur to the Bank.

- 3.4 The decision of the MNIT, Jaipur regarding the liability of the Bank under the guarantee and the amount payable there under shall be final and conclusive and binding on us without question. The Bank shall pay forthwith the amount demanded by the MNIT, Jaipur not withstanding any dispute, if any, between the MNIT, Jaipur and the supplier.
- 3.5 The Bank further agrees that the guarantee herein shall remain in full force during the pendency of aforesaid period mentioned in Clause 3.3 above and also any extension of the guarantee which has been provided by the Bank for this purpose beyond the aforesaid period provided, further, that if any claim accrues or against the Bank by virtue of this guarantee, should be lodged with us within a period of 60 days from the date of expiry of the guarantee period.
- 3.6 This Guarantee shall not be affected by any change in constitution of the supplier, MNIT, Jaipur or us not shall it be affected by any change in constitution or by any amalgamation or absorption or reconstruction thereof otherwise, but will ensure for and be available to and endorsable by the absorbing amalgamated company or concern.
- 3.7 The MNIT, Jaipur has the fullest liberty without affecting the guarantee to postpone at any time or from time any of the powers exercisable by it against the supplier, either to enforce or forbear the clause governing guarantee in the terms and conditions of the said contract and Bank shall not be released from its liabilities under the guarantee by any matter referred to or by reason of time being given to the supplier or any other forbearance, act or omission on the part of the MNIT, Jaipur or any material or things whatsoever which under the law relating to sureties shall but for the provisions hereof have the effect of so releasing the Bank from its liabilities.
- 3.8 We further agree that the MNIT, Jaipur shall have the fullest liberty without affecting in any way our obligations hereunder with or without our consent or knowledge to vary any of the terms and conditions of the said contract or to extend the time of delivery from time to time.
- 3.9 The Bank undertakes not to revoke this guarantee during its currency except with the previous consent in writing of the MNIT, Jaipur.
- 3.10 We further agree that in order to give full effect to the guarantee herein contained MNIT, Jaipur shall be entitled to act as if we were its principal debtors in respect of its claim against the Supplier hereby guaranteed by us as aforesaid and we hereby expressly waive all our rights of suretyship and other rights if any which are in any way inconsistent with the above provision of this Guarantee.

#### COUNTERSIGNED

Signature	:	Signature	:
Name	:	Name	:
Designation	:	Designation	:
Organization	n :	Organization :	

#### AFTER SALE SERVICE CERTIFICATE

From:

\_\_\_\_\_

То

The Registrar, Malaviya National Institute of Technology (MNIT), Jaipur

Whereas, we M/s (Bidder Name) are established & reputable manufacturers (Make of items) of [items name] having service offices at Delhi, Jaipur and in the state of Rajasthan. Details are as under:

Address of Service Centre	Phone No.	Number of Engineers
	Address of Service Centre	Address of Service Centre Phone No.

We do hereby confirm that:

Services including repair/replacement of defective parts will be done by us. Replacement of defective Systems/parts will be done by equivalent or better systems/parts of the same make. We will attend all the complaints/service calls within 24 working hours and not beyond 5 working days. Down time will not exceed beyond 5 working days. In case, down time exceed 5 working days then we will extend the warranty period of that item(s) double of the down time.

(Signature) Name : Designation : (Head or Senior Executive of Firm) Address : Phone No : Fax No: Mobile No :

# **Technical Specifications of the Equipments**

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
1.	Pressure plate apparatus (1 bar to 15 bar) along with all accessories to generate the soil characteristics	The equipment is suitable for determination of pF-curves in the range pF2.0-4.2 (0.1-15 bar of suction). Furthermore, these are suitable for the calibration of soil moisture blocks or soil moisture measurement equipment. The pressure plate doesn't actually measure the water potential of a sample. Instead, it brings the sample to a specific water potential by applying pressure to the sample and allowing the excess water to flow out through a porous ceramic plate. When the sample comes to equilibrium, its water potential will be equivalent to the pressure applied. Pressure plates are typically used to make soil moisture characteristics. Once the soil samples reach a specific water potential under pressure, the researcher can remove the sample from the plate and dry it to measure its water content. A soil moisture characteristic can be produced by making these measurements at different pressures in the pressure plate apparatus. <i>Specifications:</i> 15 bar Pressure Plate Extractor; 5 bar Pressure Plate Extractor, 1 bar Pressure Plates; 3 bar Pressure Plates, 5 bar Pressure Plates, 15 bar Pressure Plates (four each), Soil Sample retaining rings (4 dozens); Manifold with digital gauges for running both extractors Regulator for 0 to 20 bar (tank to manifold) and a connecting hose; two connecting hose (60" long); PM Hinge; Regulators, 230 Volt operated Air Compressor (20 bar) with built-in safety precautions.	01 Nos
2.	Hydrological Experiment Apparatus with permeable medium	<ul> <li>Experimental setup for study of hydrological processes, including rainfall and movement of water over land and rivers -</li> <li>Permeable catchment area fed with 'rain' from overhead spray nozzles and/or by groundwater flow from ends of tank</li> <li>Spray nozzles to supply half or all of catchment area</li> <li>Piezometer tappings to measure water table profile</li> <li>Can measure 'drawdown' due to single or two interacting wells</li> <li>Adjustable inclination of catchment area angle</li> </ul>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		<ul> <li>Includes flow meter to measure flow to the catchment area</li> <li>Run-off and well flows measured by calibrated rectangular weir</li> <li>Self-contained – requires only an electrical supply</li> <li>Setup should be capable of performing following experiments – <ul> <li>Investigation of rainfall/run-off relationships for dry, saturated and impermeable catchments of various slopes (surface run-off only)</li> <li>Effect of interflow on outflow hydrograph surface runoff (plus groundwater flow)</li> <li>Simulation of multiple and moving storms</li> <li>Measurement of cone of depression for a single well and comparison with theory interaction of cones of depression for two adjacent wells</li> <li>De-watering of excavation sites by use of wells</li> <li>Flow from a well in a confined aquifer</li> <li>Demonstration of watersheds for a simulated rivers</li> <li>Studies of scour around simulated bridge piers</li> </ul> </li> <li>Setup should include all necessary accessories and material including permeable media required for performing above mentioned equipments.</li> </ul>	
3.	Supply & Installation of Soil Moisture Sensors With Data Logger/Monitor and Telemetry Facility	<ul> <li>Supply &amp; Installation of Soil Moisture Sensors With Data Logger/Monitor And Telemetry Facility (01 No)Which Should Include:</li> <li>a) SOIL MOISTURE TENSION SENSORS (7 in no) (solid-state electrical resistance type);</li> <li>b) Monitoring Unit/Data Logger having compatibility with sensors and Telemetry Units/Cellular Gateway (01)</li> <li>c) Soil Temperature Sensors in Centigrade compatible with Monitoring Unit/Data logger and recommended by original soil moisture sensors/data logger/ interface software manufacturers) with connection lead at least 4 m long, RANGE : 0 – 50° C (1)</li> <li>d) Remote Data Access Unit (01 no) with all the necessary accessories to collect data at server/computer at central facility (IIRS, Dehradun) compatible with data monitor/Data Logger preferably cellular gateway which uses GPRS data network having facility of Secure connection accessible from an web enabled computer with outdoor enclosure/ outdoor installation case, Along with warranty and technical support for each of the components</li> </ul>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
4.	Dual-head Infiltrometer	Infiltrometer should be fully automated, capable of unattended measurement, $K_{fs}$ values calculated and graphed in real time, no data post-processing is necessary; Portable; Includes self-contained water reservoir; Infiltration range: 0.0038 cm/hr to 115 cm /hr; infiltration rate resolution 0.0038 cm/hr; accuracy ±5% of reading; water level to be maintained at 5 cm; pressure head ranges from 0 to 40 cm; operating temperature range is 0 to 50 °C; suitable charging adapter. Complete setup with all accessories required to perform the targeted experiments.	01 Nos
5.	Supply and on field Installation of Meteorological Sensors setup with Data logger for ET measurement	<ul> <li>Supply and on field Installation of Meteorological Sensors setup with Data logger for ET measurement at field site.</li> <li>The Sensor Setup consist of : <ol> <li>Data Logger-CR1000</li> <li>Four component Radiometer (CNR 4 net radiometer)</li> <li>HC2S3 - Air temperature and Relative humidity sensor</li> <li>Barometric Pressure Sensor</li> <li>Wind Speed and Direction Sensor</li> <li>HFP01SC soil heat flux plates</li> <li>Solar Panel primary Battery and backup battery setup.</li> <li>5 meter tower/Tripod/Mast with mounting accessories at two heights with Datalogger + Batteries casing and connections</li> <li>All the sensors must be compatible with CR1000 Datalogger</li> </ol> </li> <li>Data Logger-CR1000: <ul> <li>Data Logger should support and should be compatible with all slow and fast sensors put on meteorological tower to measure Temperature at two heights, RH at two heights, Wind Speed &amp; Direction, Barometric pressure, Soil Heat Flux Plates (pair) • The system should have in-built facility to store about 20 lakh data records for minimum duration of one year in at least 4 MB memory. It should also be possible to download the stored data on a Flash/USB card including data and time information. •Should come with 32 channel relay multiplexer. •Standard operating range: -25° to +50°C •User Interface to program the logger. •software for data logger support. •Ethernet TCP/IP, compatible with RS-232 and RS-485 interface</li> </ul></li></ul>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		<ul> <li>Analog Channel: Analog Data Inputs: 16 and Input range: The data logger should have multiple input ranges along with "Auto Ranging" facility to measure the sensors accurately without any loss of accuracy. The data logger should this input range: +5000mV, +250mV, +250mV, +25mV, +7.5 mV, + 2.5 mV: 0 to 5 V DC.</li> <li>Digital Channel: Frequency Type: 04 Channel, Counter Type: 02 Channel and the facility to convert counter channels to frequency channels &amp; vice versa should be provided.</li> <li>SDI-12 Input: 04 Channel</li> </ul>	
		Analog to Digital Conversion : Resolution (13 Bit) or more and Conversion Accuracy +/-1 LSB	
		<b>RS 232 C- Port:</b> The DCP should have a free RS232-C port capable of having communication with	
		external devices. Also, it should be possible to access the data logger through this port. Serial	
		communications with serial sensors and devices supported via I/O port pairs &Pakbus, Modbus, and DNP3 protocols supported.	
		HC2S3 - Air temperature and Relative humidity sensor:	
		HC2S3-L Specifications •Electronics Operating Limits: -40° to +100°C•Storage Temperature: -50° to	
		+100°C•Diameter: 15 mm (0.6 in.) •Length w/o connector: 85 mm (3.3 in.)•Length w/connector:	
		183 mm (7.25 in.)•Weight: 10 g (0.35 oz) •Filter: Teflon / Polyethylene• Current Consumption: <	
		4.3 mA @ 5 Vdc< 2.0 mA @ 12 Vdc • Supply Voltage: 5 to 24 Vdc • Startup Time: 1.5 s.	
		<ul> <li>Air Temperature Sensor: PT100 RTD, IEC 751 1/3 Class B •Measurement Range: - 40° to +60°C</li> <li>Output Signal Range: 0 to 5 V DC or (compatible with data logger) •Accuracy at 23°C: ±0.5°C with standard configuration settings</li> </ul>	
		• Relative Humidity Sensor : Measurement Range: 0 to 100% RH, non- condensing •Output Signal	
		Range: 0 to 5 V DC •Long- Term Stability: <1% RH per year •Response Time: Typical 15 s, 63% of a	
		35% to 80% RH step change (1 m/s air flow at sensor) • Accuracy at 23°C: ±1% RH with standard configuration settings •	
		Hukse Flux - HFP01SC soil heat flux plates:	
		•Self-calibrating soil heat flux sensor for high accuracy measurement of soil heat flux. • Should	
		include film heater for online calibration to automatically correct for variations in thermal	
		conductivity of sensor and soil Specifications HEAT FLUX SENSOR SPECIFICATIONS.	
		•Sensitivity (nominal): 50 µV/ Wm <sup>2</sup> . •Resistance (nominal): 2 Ohm. •Temperature range: -30 °C to	

Qty
e (nominal): 100
nin at 1.5 Watt,
ABLE LENGTH
of incoming and
ter to facilitate a
under all weather
tion downward
or and Pt-
dependence of
to $10 \text{ iV/W/m}^2$
eld of view: 180 °
sor 150 ° long-
essary mounting
Weight with rod
lean air flow
nb. •Hysteresis:
±0.1 mb per year.
Dverall Height: 37 .0 in.). • Propeller adard 1.0-in. • IPS
.0 ir

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		<ul> <li>Wind Speed :• Range: 0 to 100 m/s. •Accuracy: ±0.3 m/ or 1% of reading. • •Distance Constant (63% recovery): 2.7 m (8.9 ft).</li> <li>Wind Direction :• Range: Mechanical: 0 to 360°. •Accuracy: ±3°. •Output: analog DC voltage from potentiometer – resistance 10 kohms; linearity 0.25%; life expectancy 50 million revolutions, Power switched excitation voltage should be supplied by datalogger.</li> </ul>	
		<ul> <li>Solar Panel primary Battery and backup Battery setup:</li> <li>Vendor should provide power budget calculations</li> <li>The vendors should provide Sealed Maintenance Free Lead Acid (VRLA) Batteries of 12V/34 AH.</li> <li>A suitable in-built charge controller having over and under voltage protection should be provided in the DCP.</li> <li>The capacity of the Solar panel should be such that the battery can be charged with 30% to 50% sunshine.</li> </ul>	
		<ul> <li>5 meter Tower/tripod/Mast with mounting accessories:</li> <li>Tower/Tripod/Mast with arrangement with mount sensors at two different heights and casing for data logger and battery/batteries. The Tower/Tripod/Mast should be manufactured taking in the consideration the installation requirement of each separated. Mast should have Baseplate, Lightning protection, U-shaped Mounting arm for wind speed and direction sensors, 2-sided Mounting arms upper temperature sensor and Radiation Sensor and 1-sided Mounting arm lower temperature sensor.</li> </ul>	
6.	Automatic Weather Station along with data acquisition system	<ul> <li>Data Acquisition System having following features:</li> <li>DT80 has18 bit resolution with built in display</li> <li>Robust, Real Time &amp; Stand alone, low power data logger</li> <li>Capability of Remote Monitoring &amp; Control using various communication methods as RS232, RS485, GSM, Spread Spectrum</li> <li>It has Removable Terminal Base Assembly</li> <li>Is has User definable memory allocation &amp; mode</li> <li>It comes with Easy Configurable Windows Based Software</li> <li>The system will be able to transfer data continuously from the monitoring site to the central lab.</li> <li>It has capability of putting SMS alerts.</li> </ul>	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		•	
		• The system will be provided with battery backup so that in case of supply failure it will be	
		automatically switched on to Battery.	
		• A display will be provided separately which can show all the mentioned weather parameters	
		continuously.	
		System Specifications:	
		• It has LCD display with 2 line 16 characters with back light and keypad facility for function	
		execution.	
		• Operating Temperature range : $-45 \degree C$ to 70 $\degree C$	
		• Display functions – channel data, alarms and system status	
		<ul> <li>Real Time Clock : resolution 200 μs accuracy +/- 1 min /year</li> </ul>	
		• Power supply – 10 to 30 Vdc and facility to connect additional power source to system.	
		• 5W power consumption	
		o 6V (1.2AHr) lead acid internal battery with 21 days of operating capacity with I hour	
		sampling	
		• Weight will not be more than 2.0 Kg	
		• Inbuilt signal conditioning for various parameter i.e voltage, current, temperature (TC, RTDs	
		, Thermistors, etc.) and various IC sensors	
		• Universal channel concept to allow the same terminals to be used for other type of sensors	
		Analog Inputs:	
		<ul> <li>5 -15 number of analog channels</li> </ul>	
		<ul> <li>DT 80 can measures voltage, current, resistance and frequency</li> </ul>	
		• Resolution up to 0.25 $\mu$ V and 2.5 nA, 1.5 mΩ.	
		• Accuracy 0.1%	
		• There is isolation between the inputs	
		• Input impedance > 100 M $\Omega$ programmable	
		<ul> <li>Sampling Resolution: 18 bit</li> </ul>	
		• Linearity : 0.01 %	
		<ul> <li>Facility to expand the number of channels to at least 90 channels</li> </ul>	
		Digital Channels:	
		<ul> <li>12 Flexible Digital channels</li> </ul>	
		<ul> <li>8 Bi-directional channels for state &amp; count input and state output</li> </ul>	

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		<ul> <li>Digital Input Type : 8 logic level measures state or low speed count</li> <li>Digital Output type : 4 with open drain FET</li> <li>1 latching relay</li> <li>It has 4 dedicated counters or 2 phase encoders</li> <li>4 SDI – 12 inputs, shared with digital channels</li> <li>2 channels available and programmable for data to be logged from smart sensors with Host and Dedicated port</li> <li>Alarms with high, low, within range and outside range conditions, delays can be provided.</li> <li>Memory:</li> <li>Internal storage capacity is 128 MB i.e 100,00,000 data points which can be expanded 90,000 data points per 1MB using memory stick</li> <li>DAQ system has up to11 numbers of schedules with schedule rates of 10 ms to days to program logging times and triggering facilities.</li> </ul>	
		WIND DIRECTION SENSOR::         Sensor : Wind vane coupled to a Linear endless Potentiometer	
		Range : 0 to 359 degrees from North	
		Accuracy : + 3 degrees.	
		Linearity: With in the accuracy limit	
		Output: 0 to 5 K ohms resistance corresponding to the range option of 0 to 1 Volt or 0 to 2.5 Volt for the range	
		Power input: 5 to 12 Volt depending on the users requirement.	
		Termination: On a 4/5 pin MS connector ( including Anemometer ) WIND SPEED SENSOR:	
		Sensor : 3 cup rotor coupled to a chopper and IR emitter/ detector circuit.	

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		Range   : Wind speed 0 to 60 Meters /sec	
		Accuracy :+ 2% of full scale	
		Starting Threshold : 0.3 Meters /sec	
		<ul> <li>Linearity : With in the accuracy limits.</li> <li>Output : TTL level pulses frequency proportional to W .Speed. Approx. 15 Hz/ Mtr/sec</li> <li>OPTION – Voltage output 0 - 1 V or 0 – 2.5V for 0 to 60 Meters /sec</li> <li><u>AIR TEMPERATURE SENSOR</u></li> <li>Sensor : Standard Platinum RTD element (PT1000, or PT100 mounted inside weather shield)</li> <li>Range : - 40 degrees to + 60 degrees Celsius.</li> <li>Resolution : 0.1 degrees Celsius.</li> <li>Accuracy : + 0.2 degrees Celsius.</li> <li>Output : Resistance</li> <li>Weather Shield: Weather shield coated with weather proof reflective white paint</li> <li>Size of body: 320(H) x 90 mm diameter (with weather shield).</li> </ul>	
		Housing : Nylon body with weather shield and brass system to mount the sensor. The sensor is fitted with a three pin MS connector for easy removal.	
		<ul> <li>HUMIDITYSENSOR</li> <li>Sensing: Solid state capacity type sensor.</li> <li>Resolution: 0.1 %.</li> <li>Range: 0 to 100 % operating at - 40 °C to +50° C</li> <li>Accuracy: ± 3% of full scale reading.</li> <li>Operating Temperature: - 40 °C to +50° C</li> <li>Power requirement: + 5 volts DC.</li> </ul>	
		<ul> <li>Power consumption: ~ 4 mA.</li> <li>Output : 0- 1V for 0 to 100% humidity</li> <li>Weather Shield: Weather shield with weather proof reflective white paint coating.</li> </ul>	

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		• Size of body : 250 (H) x 90 mm diameter. (With weather shield)	
		ATMOSPHERIC PRESSURE SENSOR	
		• Range: 600 to 1100 hpa	
		• Sensor: Solid state sensor with built in processor for temperature compensation and	
		linearization	
		• Resolution: 0.1 hpa( milli bar)	
		• Accuracy: + 0.2 hpa.	
		• Operating Temperature: $0 \degree C$ to $+50 \degree C$ .	
		• Output: 0 to 5 Volts. RS232 output optional	
		• Power requirement: +12 Volts DC., 18-20 mA	
		Housing: Weather and insect proof housing	
		• Response Time: < 2 secs	
		RAINFALL SENSOR	
		• Sensor: Tipping bucket rain gauge.	
		• Sensing: Magnet and reed switch (on-off output).	
		• Resolution: 0.5 mm.	
		• Accuracy: better than + 5%	
		• Operating Temperature: -40 ° C to +50 ° C with built in heater (optional)	
		• Rim diameter: 203 mm.	
		• Collecting area: 325 mm <sup>2</sup> .	
		• Rain gauge is made of FRP.	
		• Bucket is made of stainless steel and mounting assembly of powder coated brass.( SS316	
		body optional)	
		• Capacity: Unlimited.	
		• Sensitivity: 0.5 mm or, 0.2 mm (rainfall per pulse)	

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
7.	Soil Moisture Profile Probe	A portable and robust device measuring soil water over multiple depths (at 10 cm intervals) in the profile consisting of a probe and hand-held data logging display unit allowing the user to make onsite management decisions at up to at least 99 sites. 10 number of excess tubes.	01 Nos
		Specifications:	
		Portable & Light weight Quick, accurate and precise Automatic depth sensing (up to 16 depths/1.6 m) Inbuilt probe orientation to increase sensor repeatability Stores data from up to 99 sites Data viewed on the large backlit LCD display screen Graphical and tabular display of data allowing for instant management decisions Hand held	
8.	Smart Field Lysimeter with bi-directional boundary control, basic setup, extendable to up to 4 lysimeters.	Data readily downloadable into related software         Field Lysimeter with bi-directional boundary control, basic setup, extendable to up to 4 lysimeters.         Consisting of:         LYSIMETER         Stainless steel cylinder, height 300 mm or more, inner diameter about 300 mm, 6 sensor ports, 2 each in 5, 15 and 25 cm         Field enclosure with removable sealing and collar, diameter around 45 cm, height around 45 cm         Lower hydraulic boundary control for bi-directional regulation of the, controlled by field matrix potential or manually         weighing platform for Lysimeter         3 x 5TE Echo-probes for soil moisture         3 x MPS-2 probes for matrix potential         Auger set for probes         FIELDBOX         weighing platform for leachate tank         Pumping unit         1 x T8 field reference Tensiometer	01 Nos

S.N.	ITEM	TECHNICAL SPECIFICATIONS	Qty
		LOGGERBOX	
		Data logger with integrated GPRS/3G-modem for data transfer and remote access, SIM-ready SIM-	
		Card with Data upload contract to UMS Webserver for 12 months	
		Rechargeable battery 12 V/26 Ah, charger and power-management module	
		Solar panel, enclosure and mast, integrated lightning protection	
		Preassembled with 5 mtr. Kabel for 2.7 meter distance to FIELDBOX, tested and documented	

## Purchase may be done as per the following general terms and conditions:

- 1. Preference will be given to ISO 9001:2008 certified Manufacturer/suppliers, who can ensure the manufacturing of the machine as per the required testing standards/BS/BIS/ASTM standards and within the specified tolerance limits.
- 2. Bidders must submit compliance certificate (item wise).
- 3. Bidders will provide details of service centre and information on service support facilities that would be provided after the warranty period.
- 4. The bidder should furnish detailed technical description and original literature of the instruments.
- 5. Bidders should give undertaking regarding installation /commissioning training / demonstration and after sales service of the instruments.
- 6. Bidders should have supplied such equipment to the Institute of repute like IITs and NITs in last three years

Sr No.	Name of Item	<b>EMD</b> Amount
01	Pressure plate apparatus (1 bar to 15 bar) along with all accessories to generate the soil characteristics	Rs.90,000.00
02	Hydrological Experiment Apparatus with permeable medium	Rs.65,000.00
03	Supply & Installation of Soil Moisture Sensors With Data Logger/Monitor and Telemetry Facility	Rs.8,000.00
04	Dual-head Infiltrometer	Rs.10,000.00
05	Supply and on field Installation of Meteorological Sensors setup with Data logger for ET measurement	Rs.12,000.00
06	Automatic Weather Station along with data acquisition system	Rs.30,000.00
07	Soil Moisture Profile Probe	Rs.15,000.00
08	Smart Field Lysimeter with bi-directional boundary control, basic setup, extendable to up to 4 lysimeters.	Rs.60,000.00

**Note: Any Bidder may quote for one item or more than one item as the case may be**. In this case, if a bidder quote for more than one item, he may furnish only one DD calculating the EMD Amount of the quoted items. However kindly ensure that the envelope containing DD towards EMD should have specified the tender no. and name of item/items for which they have quoted and furnished EMD

Deputy Registrar (Store & Purchase)