

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
INDIAN INSTITUTE OF REMOTE SENSING
IIRS
DEHRADUN
PURCHASE & STORES
INVITATION TO TENDER**

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Date : 12/06/2018

M/s

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Our Ref No : GIER 2018-000046-01

Tender Due: 14:00 Hrs ISTon 13/07/2018

Opening : 16:00 Hrs ISTon 13/07/2018

Dear Sirs,

Please submit your sealed quotation , in the Tender Form enclosed here along with the descriptive catalogues / pamphlets / literature ,superscribed with Our Ref.No. and Due Date for the supply of the following items as per the terms & conditions mentioned in Annexure(Form No:)

S.No.	Description of Items with Specifications	Unit	Quantity
	Supply, Onsite Installation and Operationalisation on turn key basis of the following seismic instrument with specification as per the enclosure,		
	1) Broadband seismometer	Nos	2
	2) Data acquisition system	Nos	2
	3) Strong motion Accelerograph	Nos	2
	4) Solar Power Supply (Optional)	Nos	2
	5) Basic Monument/Platform construction and installation	Nos	2
	Note: Installation, warranty including Maintenance for first 3 years should be provided. Quote separately for AMC of 4th year and 5th year		
	Quote separately for each item. Detailed Technical specifications for BBS, DAS SMA and other accessories as per Annexure		


DELIVERY AT: IIRS, DEHRADUN

MODE OF DESPATCH ON SITE

DUTY EXEMPTIONS

SPECIAL INSTRUCTIONS TWO PART

SPECIFIC TERMS


ASHA CHANDRAN L
PURS. & STORES OFFICER
For and on behalf of the President of India
The Purchaser

S.No.	Description of Items	Quantity
1.	<p>Broad Band Seismometer Broadband Force Balance triaxial seismometer with seismometer with frequency response 120s (or better) to 50Hz, Dynamic range>130db, Automatic, motorized mass centering, Less than 2.0 W power consumption, Remote calibration. 5m high quality low noise seismometer cable with both side and connector -As per the detailed specification mentioned in the Annexure – 'A'</p>	02nos.
2.	<p>Data Acquisition System (DAS) True 24 bit 3 channel Digitizer, Dynamic Range>=135dB at 100SPS, user selectable hardware gain, user selectable sampling, 100 Mbps, T-Base Ethernet, less than 6.0 W power consumption with storage, Inbuilt GPS receiver, External GPS antenna, GPS cable 15 meter- As per the detailed specifications mentioned in the Annexure-'B'</p>	02nos.
3.	<p>SMA- Strong Motion Accelerograph, 24 bit digitizer, +/-4g to +/-0.25g adjustable in various range, Dc-420-440Hz, Dynamic Range 120db @1 Hz, 10 to 1000SPS user selectable SPS, Inbuilt GPS cable 15 meter- As per the detailed specifications mentioned in the Annexure- 'C'</p>	02nos.
4.	<p>Solar Power Supply (optional) 160W Solar Power, 100 AH Battery (SMF), 10 Amps Charge Controller, mounting kit cables, and junction box with warranty support.</p>	02nos.
5.	Basic Monument/Platform construction and installation	
6.	Installation, warranty including maintenance for first 3 years should be provided. Quote separately for AMC for 4 th year and 5 th year.	02nos.

SPECIAL TERMS AND CONDITIONS FOR SUBMITTING TWO PART BID

1. This is a two part tender viz., Techno-Commercial Bid (consisting of Technical Specifications, Commercial terms & condition etc.) and Price Bid. Hence, quotation should be submitted in separate sealed covers super-scribing "**Tender No. GIER 2018000046-01, Due on 13/07/2018 at 14.00 Hrs (Techno-Commercial Bid)**" and "**Tender No. GIER 2018000046-01, Due on 13/07/2018 at 14:00 Hrs (Price Bid)**"
2. Both the sealed tenders (Techno commercial & Price bid) should be kept in one big cover super scribing **Tender for Seismic Instrument** against Enquiry No **GIER 2018000046-01, Due on 13/07/2018 at 14:00 Hrs** and put in the Tender Box available in Purchase Division, IIRS or send by post or Courier within the due date and time prescribed.
3. The Techno-Commercial Bid should clearly indicate the technical details, scope of supply, payment terms, delivery terms, delivery period, taxes and duties, warranty, guarantee, security deposit, performance bank guarantee, etc. under separate heads. Please note that the **price should NOT be indicated** in the Techno-Commercial Bid
4. Tender forms can be purchased from Purchase & Store Section IIRS, Dehradun on all working days on payment of ₹ 573/- in the form of DD drawn in favor of Pay & Accounts Officer, IIRS Dehradun payable at Dehradun or can be downloaded from www.iirs.gov.in. When tender forms are downloaded, DD for ₹573/- drawn in favor of Pay & Accounts Officer, IIRS payable at Dehradun shall be attached with Technical Bid.
5. Only Techno-Commercial bid will be opened on the date of tender opening. The price Bids of those tenderers whose Techno-Commercial Bids are found to be meeting our specifications/ requirements will be opened. The bidders are allowed to attend the tender opening on the date and time of opening.
6. Late and Delayed Tenders will not be considered. Therefore, please ensure that your tender is posted well in time to reach us before the due date and time.
7. Fax/Email offers shall not be considered.
8. All the pages of your offer should be signed/initialed by competent authority and affixed with your company's Seal..
9. **EMD of ₹ 80,000/-** to be submitted along with the Technical Bid in the form of Crossed Demand Draft drawn on any Nationalized / scheduled bank in favor of Pay & Accounts Officer, IIRS, payable at Dehradun. Quotation received without EMD will not be considered. The EMD of unsuccessful bidder will be returned after finalization of order.



[Purchase & Stores Officer]

Specific terms and conditions to the tender

1. Please submit the Technical Details / Catalogue / Make/ Model/Data Sheets.
2. The offer should be valid for a period of 90 days from the date of opening of Tender.
3. **Please send the quotations ONLY in 'SEALED COVER' indicating our tender enquiry No. and due date by speed post so as to reach us on or before the due date & time. IIRS will not be responsible for any postal delays.**
4. **E- mail/ fax quotations 'WILL NOT BE ACCEPTED'.**
5. Please quote the percentage of GST applicable.
6. Our standard delivery term is FOR, IIRS. In case any vendor offers delivery term of Ex-works, Packing and Forwarding charges if any should be indicated separately either as a percentage of the quoted rate or as a Lump sum amount.
7. We are exempted from the payment of Customs Duty and necessary exemption certificate shall be issued upon request.
8. **Payment Term:** Payment will be made within 30 days from the date of receipt and acceptance of the item at our site for order value up to 2.00Lakhs. For order value above 2.0 Lakh, 90% payment will be made within 30 days and 10% against submission of Performance Bank Guarantee for the warranty period (wherever warranty is applicable). The Performance Bank Guarantee should be valid for a period of 2 months beyond the completion of the warranty period.
9. For foreign orders our Standard Payment terms is Sight Draft.
10. **Liquidated Damages** – The delivery period quoted should be realistic. The delivery period so quoted and mentioned in the order is the essence of the order/contract. In case of delay in delivery of material as per the delivery schedule, Liquidated Damage @ 0.5% per week or part thereof on the undelivered portion subject to a maximum of 10% of the contract value shall be levied. Wherever, installation and commissioning is also involved, the supply will be deemed to have been completed only when the entire Stores is supplied, installed and accepted.
11. **Security Deposit:** - Wherever the offer value is Rs. 5.00 Lakhs or above, the successful tenderer should submit Security Deposit @ 10% of the order value by way of Bank Guarantee / FD Receipt. The Bank Guarantee shall be obtained from any Scheduled Bank on Rs.200/- Non Judicial Stamp Paper and should be valid beyond 2 months from the completion of all contractual obligations.
12. In order to avail of the benefits extended to by Govt. of India to the Micro and Small Sectors, please submit attested copy of the valid Entrepreneur Memorandum Part-II signed by the General Manager, District Industries Centre / Udyog Adhar / NSIC Registration Certification along with your offer.
13. If any bidder submits forged / false document along with the tender, offer of such vendors will be summarily rejected and such bidders will be blacklisted for all future tenders.


Purchase & Stores Officer

ANNEXURE-'A'

1. BROADBAND SEISMOMETER (02 field stations)

S.No	Parameter	Specification
1.1	Topology	Triaxial electronic force balance broadband velocity transducer in a single sealed module with output for one vertical (Z) and two horizontal components (N-S and E-W) orthogonal to each other.
1.2	Frequency Response	Flat (within + 3dB) to ground velocity, at least in the range 120 sec or better to 50 Hz.
1.3	Dynamic range	Minimum 130 dB
1.4	Output voltage	± 20 V
1.5	Damping	0.7 critical
1.6	Sensitivity	Minimum 1500 v/m/s
1.7	Linearity	+/- 1% of full scale.
1.8	Mass centering	Automatic, motorized & on external command locally or from remote. No mass centering within +/- 45 Deg C temperature variation at site.
1.9	Calibration Facility	Calibration facility from Data Acquisition System (DAS)
1.10	Frequency response curve and system information	Frequency response curve of the unit along with information regarding transfer function including poles and zeros should be provided as per the serial number of the sensor
1.11	Electronic self-noise	Must be below the USGS Low Noise Model over 20 sec to 5Hz range
1.12	Indicator	a) Should have an indicator for leveling the transducer. b) Should have an indicator mark on its body to indicate the direction of relative orientation of the seismometer
1.13	Operating Temperature	-5° to 50°C
1.14	Humidity tolerance	Up to 100 % RH
1.15	Power Requirement	Less than 2.0 watts at 12V DC derived from the DAS
1.16	Housing	All the components should be permanently mounted in single stainless steel or cast aluminum casing, water tight, vacuum tight enclosure.
1.17	Mass Locking	Automatic Mass Locking facility during transportation
1.18	Connectors	Water proof and rust proof
1.19	Cable	Low-loss shielded cable of at least 5 meters with end connectors.
1.20	Thermal insulation cover	An air-tight thermal insulation cover should be provided from OEM,
1.21	Supporting Document	The Bidder (both hard and soft copy) should provide detailed technical documentation of the sensor supplied

2. Data Acquisition System (02 field stations)**ANNEXURE-'B'**

S.No	Parameter	Specification
2.1	Number of Channels	Three channels – upgradable to six
2.2	Dynamic range	135 dB or more measured at 100 sps
2.3	ADC resolution	24 bit independent digitizer for each channel
2.4	Input Range	Should match the sensor outputs
2.5	Common Mode Rejection	Greater than 70 dB
2.6	Channel to channel skew	a. Zero- Simultaneous sampling of all channels. b. Immune to electromagnetic interference.
2.7	System noise	Not more than 2-3 counts of 24 bit system
2.8	Sampling rate	User- selectable upto at least 200 SPS per channel
2.9	Filter	Linear phase digital FIR filter.
2.10	RAM	At least 32 MB RAM
2.11	Storage Type	Storage memory card/hard disk of 32 GB or more in ring buffer configuration. Each digitizer two storage media should be supplied.
2.12	Recording Format	Standard seismological format compatible to Windows/UNIX with proven compression technique. It should be easily convertible to SEED, SEISAN, ASCII formats etc.
2.13	GPS Timing System	a) UTC timed with digitally controlled precision VCXO clock phase locked to GPS b) Timing accuracy less than 0.1mSec when GPS is locked c) Free running TCXO accuracy of 1 ppm over wide temperature range. d) GPS receiver electronic circuit should be inside the DAS e) Antenna exposed to outer side f) Antenna thick cable length should be 15 mts or more. g) Antenna should be enclosed in water tight and can work effectively in extreme climatic condition. h) Antenna mounting rod and its accessories. i) The antenna cable should withstand harsh weather conditions.
2.14	Sensor control	a) Sensor calibration facility for both BB seismometer and accelerometer b) Sensor mass position monitoring for BB seismometer. c) Sensor mass centering on command for BB seismometer. d) Automatic re-centering while the seismometer deviates from the center position and exceeds the threshold value
2.15	State of Health Channel	Provision for checking state of health information like sensor mass position, temperature voltage, condition of GPS time lock etc. locally and remotely.

2.16	Status display	Status indicators for power, data acquisition, SOH (state of health), GPS etc. should be provided.
2.17	Gain	Hardware gain selection through software for 0.5, 1, 2 and 4
2.18	Data acquisition Mode	Both continuous and trigger mode
2.19	Trigger	User selectable, independently for each channel at different sampling rate based on triggering criteria as STA/LTA level etc.
2.20	Communication	a) In built communication interface circuitry for provision of remote data acquisition and State-of-Health in near real time mode through V-SAT. b) Suitable interface for computer/ laptop for parameter setting and data downloading.
2.21	Transmission setting	Should have facility to select transmission of continuous mode data to remote location.
2.22	VSAT connectivity (optional)	a) Ethernet port (10/100 Base-T) supporting TCP/IP and UDP/IP, Multicast b) Compression of data before transferring to VSAT. c) Continuous and trigger both. d) Duplex communication between field and central recording station e) Extensive error correction f) Support for off-the-shelf communication equipment
2.23	Power Supply	a) Supply voltage 10-15 Volts through solar panel activated maintenance free batteries. b) Power consumption of DAS less than 6W at 12V DC recording 6 channels at 100 SPS. c) Low battery voltage protection d) DAS shall resume data acquisition and transmission automatically when the power is restored.
2.24	Operating temperature and humidity range	a) Operating Temperature -5 deg to 50 deg C b) Humidity up to 100% RH
2.25	Environment	All the indoor units should work in typical tropical environment conditions and should work without air conditioning.
2.26	Housing	a) GPS and DAS modules should be enclosed in a weather- and shock-proof sealed enclosures with lightening protection. b) Earthing is to be provided to digitizer, if necessary, for trouble free operation.

2.27	DAS Firmware capabilities	<p>The firmware/software in DAS should support the following:</p> <ul style="list-style-type: none">a) Real time ground motion data acquisition (week motion and acceleration data) in DAS including GPS data and State of Health monitoring,b) Transmission of recorded data to central station in near real time using VSAT communication facilities in continuous or trigger mode or both as per user selected criteria.c) Restoration of automatic data acquisition in DAS on assumption of power in case of power failure.d) Capability to serve the request from CRS for re-transmission of data in case of real time data transmission break/failure.e) Provision to supply off-line waveform data transfer of any segment from the ring buffer on manual request from CRS.f) In case of communication failure, automatic request/transfer for the pending data from the point at which it was executing just before the failure.
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3. Strong Motion Sensor (Accelerometer) (2 field stations) ANNEXURE-‘C’

S.No.	Parameter	Specification
3.1	Topology	Tri-axial Mechanical feedback coil transducers, horizontal- vertical in a single sealed unit with internal recorder, The unit should have an indicator mark on its body to indicate relative orientation of the sensors.
3.2	Type	Force Balanced
3.3	Full Scale Range	$\pm 1g, \pm 2g, \pm 4g$ (or better), user selectable by software
3.4	Dynamic range	≥ 120 dB or better
3.5	Frequency Response	Flat response (within ± 3 dB) to ground acceleration in the range of DC to 100 HZ.
3.6	Damping	0.7 of critical
	Full Scale output Voltage	Up to $\pm 20V$
3.7	Cross axis sensitivity	$< 1\%$ (including misalignment)
3.8	Linearity	The relationship between output signal and input acceleration to be within $\pm 1\%$ of full scale for all frequencies from DC to 50 Hz.
3.9	Output impedance	Matching to that of the recording unit.
	Mass centring	Automatic
3.10	Level indicator	Bubble type
3.11	Input power	Single 12V DC Battery source for the sensor and the companion recording unit
II) Recorder (In-Built)		
3.12	Number of Channels	Three channels
3.13	Sampling Rate	Software selectable up to 1000 SPS per channel
3.14	Dynamic Range	At least 130 dB at 100 SPS
3.15	Bit resolution	24 bit
3.16	Frequency response	DC to Nyquist frequency
3.17	Input range	Matched to the accelerometer output
3.18	Channel to channel skew	None
3.19	System response	± 3 dB Flat from DC to Nyquist frequency
3.20	Timing system	Internal 12 channel GPS receiver, GPS antenna with 15 cable to be supplied.
3.21	Timing Accuracy	Free running accuracy of 0.1ppm to give ± 100 micro sec latch-on accuracy
3.22	Pre-event recording	Software selectable from 1 to 30 sec in steps of 1 sec
3.23	Post event recording	Software selectable up to 90 seconds or more

3.24	Triggering	The system must be capable of recording the acceleration data in triggered mode, e.g, threshold or STA/LTA ratio trigger.
3.25	Data Storage	Recording shall be on a market available memory card of the order 8 GB one additional card with each unit.
3.26	Recording capacity	At least 50 days of recording time at 200 SPS for three channels on the storage device.
3.27	Output Display	Can display Waveform output in real time for viewing including real time FFT and PSD when connected with the Computer.
3.28	Output Data format	Direct output of PGA,PGV and PGD
3.29	Communication	Ethernet interface, RS232. USB
3.30	Anti-aliasing filter	To be provided
3.31	Operating temperature	-20° C to + 60° C ambient
3.32	EMI/RFI Protection	All I/O Lines
3.34	Humidity tolerance	Upto 100% RH
3.35	Power consumption (accelerometer + recorder)	<3
3.36	Power supply	12 V DC
3.37	Communication	1) 10/100 Base-T Ethernet, RS232 Serial 2) The system should be have a strong facility for SOH and communicate to a central recording station.
3.38	Supporting Document	The Bidder (both hard and soft copy) should provide detailed technical documentation of the sensor supplied.

4. Power System

4.1	DC power supply for Sensors, DAS, GPS for each BBS (02) and SMA (02) equipment.	(a) All these equipment will be powered through SMF batteries charged through Solar Panel. (b) Bidders should provide power calculations for each BBS equipment for power back up for at least 5 days and supply solar panels, Solar Charge controllers and SMF batteries (02 Nos each).
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5. Warranty, Comprehensive annual maintenance

5.1	Warranty	(a) The Bidder should offer comprehensive on site free warranty for a period of three years from date of installation of the Goods. (b) During warranty period in the event of the equipment developing snags or malfunctioning or if it stops functioning altogether, the Purchaser will promptly inform the Bidder, and the Bidder's
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		<p>maintenance engineers should attend to the complaint immediately and operationalize the equipment in the least possible time (within 48hrs). The time period for which the equipment was down and not operational, beyond least possible time mentioned above, will be deemed to be the downtime and would be taken into consideration for extending the Warranty period by twice the downtime.</p> <p>(c) The Bidder should supply, free of cost, during the period of Warranty, updates of all software, supplied at the time of initial installation and commissioning.</p>
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