



**NATIONAL CENTRE OF EXCELLENCE IN  
GEOLOGY UNIVERSITY OF PESHAWAR**  
Peshawar-25130, Khyber Pakhtunkhwa, Pakistan  
Phone: +92-91-9221254; 9221256 Fax: +92-91-9221228  
Web: <http://nceg.uop.edu.pk/>

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Advertisement Date **Wednesday, 23<sup>rd</sup> October, 2024**  
Last date of tender is **Tuesday, 12<sup>th</sup> November, 2024 upto 10:30AM**  
Opening date of tender is **Tuesday, 12<sup>th</sup> November, 2024, 11:00AM**

Rs.1000/- Tender Fee

**(Firms downloading this file from NCEG site will have to deposit an amount of Rs.1000/- as the Tender Document fee at the time they submit their bids. Firms submitting tenders' documents through post/courier should send it before the last date of opening)**

**TENDER DOCUMENTS FOR THE  
PURCHASE OF EQUIPMENTS/ITEMS  
(FROM G-SAGL/NCGSA PROJECT)  
SINGLE STAGE – SINGLE ENVELOP BID**

(**Note:** Please provide a soft copy of all documents in a USB/CD drive along with hard copy of the offer.

**Document Issued By:**

**NCEG Official**

**Dated: / / 2024**



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**Terms & Conditions**

**1. INVITATION TO BID**

- 1.1. The Lab Director, GIS and Space Application in Geosciences Lab (G-SAGL), National Centre of Excellence in Geology invites bids for the items as per attached annexures.
- 1.2. Technical and Financial Bids must be submitted in separate sealed envelopes, including its due date on the face of each envelope.
- 1.3. Earnest money/bid security @ 2% of the total bid cost shall be submitted with the tender. Bids shall not be accepted without required earnest money/bid security.
- 1.4. The quoted price shall be inclusive of all duties / taxes.
- 1.5. The Lab Director (G-SAGL), NCE in Geology reserves the right to add, delete or amend any part of the tender documents during the bidding period.

**INSTRUCTION TO BIDDERS/GENERAL TERMS & CONDITIONS**

**2. Eligible Bidders/Suppliers**

- 2.1. This Invitation for Bids is open to all Bidder/Suppliers meeting the following requirements:
  - 2.1.1. Duly Registered with Federal Board of Revenue for Income Tax (Active Taxpayers) and Sales Tax.
  - 2.1.2. Manufacturer or authorized representative of the manufacturer.

**3. Qualifications of the Bidder/Suppliers**

- 3.1. The Bidder/Supplier shall provide documentary evidence that.
  - 3.1.1. The bidder/supplier has financial, technical, supplying, demonstration, fixing etc. capability necessary to perform the contract and has successful performance history in accordance with the nature of supplies required in these bidding.
  - 3.1.2. In case the bidder/supplier offering the supplies that the bidder/supplier did not manufacture or otherwise produce, the bidder/supplier has been authorized by the manufacturer or producer of such supply; and
  - 3.1.3. The technical specifications of the bidder's/supplier's quoted items meet the minimum technical specifications as stated in these tender documents.

**4. SUBMISSION OF BIDS**

- 4.1. Bids in sealed envelope should reach the office of the The Lab Director (G-SAGL), on or before the due date.
- 4.2. Bids sent through courier should be delivered at least half an hour before the scheduled time of opening.
- 4.3. After the bids / quotations are opened, no bidder shall be allowed to revise, propose, or request any changes in bid.
- 4.4. The bidder or authorized representative shall sign on each page of the tender document. No corrections and overwriting are allowed.
- 4.5. Item(s) should be quoted ANNEXURE-wise separately. Preference will be given to the firm(s) quoting maximum number of equipment ANNEXURE wise, along with installation and commissioning/Turnkey solution. However, NCEG reserves the right to opt any item from any bidder for the required items.
- 4.6. **Bidders are requested to carefully read the terms and conditions and sign the Tender Documents in token of having understood and accepted the same in all respects. All or any of the provisions of the terms and conditions may be changed/altered/modified/deleted/added or amended by the Centre as and when deemed suitable/necessary.**
- 4.7. While quoting tender rates, the items should be given numbers as are numbered in the



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Tender Document.

- 4.8. The tender Rate shall be item wise and on FOR/Local Currency basis.
- 4.9. Prices of optional accessories should be quoted separately.
- 4.10. Taxes levied by the Government, insurance & clearing charges, and freight charges, if any, shall be paid by the bidder and must be included in the quoted prices.
- 4.11. Bidder is responsible for timely delivery of bids. This office will not be responsible for misplacement / tampering / non-attendance delay or any other incident in case the bids are not delivered at the designated place & time.
- 4.12. The bidders should be either established firm or sole distributor / authorized agent of the manufacturer having after sale service facilities, preferably in Peshawar and/or Islamabad/Rawalpindi.
- 4.13. The payment of equipment is coupled with installation / commissioning of equipment; therefore, supplier should make sure that bid is complete in all respects including consumables etc.
- 4.14. **The bidders must enclose original Performa Invoice / Quotation from their Principals or authorization certification of the Principal / manufacturer failing to which, their offers will be rejected.**
- 4.15. **Bidders should preferably have office, workshop facilities and after sales services preferably in Peshawar and/or Islamabad/Rawalpindi.**
- 4.16. Bidders must have trained engineers to provide after sales service. Copy of Training Certificate should be submitted along with their offer.
- 4.17. Certificate of authorization / distribution from the Principle Vender / manufacturer be included with the offer.
- 4.18. Only those suppliers will be entertained who have previously supplied similar equipments in Pakistan OR Principal Vendor / manufacturer has its installation base of working equipment in Pakistan.
- 4.19. Training of Two end users will be the responsibility of the bidder, in case of winning the tender.
- 4.20. The price is to be quoted, essentially indicating the following:
  - 4.20.1. Country of origin.
  - 4.20.2. Estimated gross / net weight, dimension & volume of offered item.
  - 4.20.3. Delivery period.
  - 4.20.4. Original technical literature.
  - 4.20.5. List of Clients to whom the same natures of equipment are supplied in recent two years.
  - 4.20.6. The supplier must submit a certificate that the equipment supplied are according to international standards at time of delivery, otherwise no supply will be accepted by the client and the call deposit will be forfeited.
5. **BID VALIDITY**

All offers shall remain valid for 180 days from the date of opening of bids, until any further extension required by the client.
6. **ACCEPTANCE/REJECTION**

The Lab Director (G-SAGL), NCE in Geology reserves the right to reject all bids at any time prior to the acceptance of bids. The grounds of rejection will be communicated to the bidder(s) upon request. However, Lab Director (G-SAGL) shall not be liable to provide any justification of those grounds.
7. **RATE ESCALATIONS**



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Quoted price shall remain valid, firm, and irrevocable and fixed till the fulfillment of obligations by the supplier and will not be subject to escalation on any account.

**8. TECHNICAL LITERATURE & SAMPLES**

If applicable/required, the Bidder (s) shall submit the following;

- a. Data/Fact sheets of the equipment.
- b. Original technical literature/Evaluation Software (s)

**9. EVALUATION**

Evaluation will be done on item-wise basis unless otherwise specified. The Lab Director (G-SAGL) for timely delivery or economic reasons/compatibility, may:

- a. Split the tendered items/ quantities among more than one supplier.
- b. Form a package of tendered items/quantities.
- c. Omit, decrease, or increase any item of Bid.
- d. Increase / decrease the quantities of any required item(s).

**10. PURCHASE ORDER**

Purchase order of required item (s) shall be placed on fulfillment of conditions mentioned above.

**11. DELIVERIES**

**11.1.** Free delivery at the following location is required, unless otherwise specified:

- a) Lab Director (G-SAGL), NCE in Geology, University of Peshawar,  
Peshawar, Pakistan

**11.2.** The supplier shall replace defective material / software / hardware at his / her risk and cost. Including transportation duty, taxes etc.

**11.3.** The material shall be in original/sealed packing to ensure delivery without any damages during transit.

**11.4.** The supplier shall be responsible for and shall provide part of the work and services / functions related to packing, handling and general transportation requirements.

**11.5.** If any of the software/hardware is discovered to be damaged or unacceptable at the point of embarkation or disembarkation, the supplier shall be responsible for replacement of the software/hardware free of any charges and costs to the buyer / client.

**11.6.** Time of Delivery of all equipment will be Maximum 90 days (FOR) and 180 days (CIF) after the date of issuance of purchase order.

**11.7.** The equipment should be new and the vendor/supplier will ensure originality of the procurement channel as well as equipment.

**11.8.** The Equipment shall be supplied in packed form and shall only be opened in the presence of the Purchase Committee/NCEG Official. Working manuals and other related literature shall accompany the equipment in original at the time of delivery.

**12. SCOPE OF SUPPLY**

**12.1.** The bidder shall supply/deploy equipment/items, of the specifications given in the attached Annexure-II,III & IV.

**12.2.** The bidder shall also be responsible for their installation, calibration, free service, and the supplies for at least one year from the date which makes equipment's warranty functional.

**12.3.** All equipment should be accompanied by service manuals of the equipment/item separately in English.

**12.4.** In case installation at the times of supply / delivery is not possible; the vendor / supplier must fulfill the same on the new installation date, given by Technical/Concerned Person of the NCEG.

**13. INSPECTION**



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Pre-delivery inspection may be carried out at the premises of supplier (s) and / or post-delivery inspection at office of Lab Director (G-SAGL) by the Technical Committee/NCEG official.

**14. PAYMENT**

The supplier, after delivery of goods and its acceptance/satisfactory report shall submit invoice to this office, containing relevant information i.e.

- a. Purchase order number and date
- b. Item number
- c. Quantity
- d. Price
- e. Delivery challan indicating delivery date.
- f. Sales tax return invoices.
- g. No Interim payment will be made.

**15. TAXES**

**15.1.** Income tax as applicable under the prevailing Government rules will be deducted at source (except where the supplier provides an income tax exemption certificate).

**15.2.** Quoted price shall be inclusive of all taxes, especially GST 17% will be applicable.

**15.3.** Stamped duty of 1% will be deducted from the final bill.

**15.4.** Professional tax shall be deducted as applicable.

**16. LIQUIDATED DAMAGES**

**16.1.** If supplier fails to deliver ordered material within the stipulated period / scheduled time specified in purchase order, The PI, without prejudice to any other remedies, shall deduct from the bills or any other due payments / guarantees, as liquidated damages, a sum equivalent to 0.1% per day of the undelivered goods up to maximum 10% of the bid price & forfeit 2% earnest money.

**16.2.** The liquidated damages shall also be applicable for the cancelled quantity of goods.

**16.3.** Whenever liquidated damages become payable, if delivery of all goods and equipment is not made within the time period specified except on account of force majeure, the buyer shall demand the same and shall serve notice to the supplier requiring payment thereof.

**16.4.** If the supplier fails to remit payment within ten (10) days of receipt of such notice, the buyer shall forth-with become entitled to recover the same.

**17. SECURITY DEPOSIT/RETENTION MONEY/PERFORMANCE SECURITY**

10% Amount of bill price shall be deducted, or bank guarantee (in shape of CDR) be provided by supplier & the same should be released after one-year subject to the issuance of FAC / Satisfactory report.

**18. MAINTANANCE PERIOD**

Maintenance period is one year from the date of successful installation.

**19. INSTLLATION & COMMISIONING**

**19.1.** Please note that system/supply should be complete in all respect in terms of hardware, software, and accessories / spare parts. Any deficiency in acquisition of desired results at the time of installation and subsequent functioning will be the responsibility of the supplying firm / company, without any additional cost. All the supply should be based on National Centre of Excellence in Geology University of Peshawar.

**19.2.** The supplier will be responsible for installation, testing, commissioning, and one-year smooth running of equipment. And arrange free of cost training for the buyer/client.

**20. CONDITIONAL BIDS**

Conditional, incomplete and / or not fulfilling the technically unqualified bid(s) will not be accepted.

**21. BID BOND/ EARNEST MONEY**

**21.1.** The bidder shall furnish, as part of his bid, earnest money equal to 2% of quoted price with



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their offer in the form of demand draft/ pay order in favor of Lab Director (G-SAGL), NCE in Geology, University of Peshawar, Peshawar.

**21.2.** Banker's cheque as 2% bid security / earnest money will not be accepted.

**21.3.** The bid security / earnest money shall be denominated in Pak rupees and shall be in the form of Demand Draft, Pay Order or Call Deposit issued by a Pakistani scheduled Bank or branch of a Foreign Bank, acceptable in favor of the Lab Director (G-SAGL) NCE in Geology, Project titled: **GIS & Space Application in Geosciences Lab (G-SAGL) University of Peshawar.**

**21.4.** In case of alternate prices, bid security / earnest money shall be based on the maximum quoted price of the same/all item.

**21.5.** The Demand Draft shall be returned to unsuccessful bidders, upon their request.

**21.6. The bid security / earnest money will be forfeited if a bidder withdraws his bid during the period of his bid's validity or fails to supply the machinery / equipment ordered by the Centre.**

## **22. SIGNING OF BIDS**

The person signing the bid shall initial & stamp, all the pages of the bid and tender documents, where entries are made and attach Tender Document payment receipt in original.

## **23. PURCHASER'S RIGHT TO ACCEPT OR REJECT ANY OR ALL BIDS**

The PI reserves the right to reduce or increase the quantity, accept or reject any bid and to stop the bidding process and reject all bids, at any time prior to award of supply order without incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidders of the ground for such actions.

## **24. CONVENCING**

Unsolicited advice/clarification and any personal approaches at any stage of evaluations/purchase process are strictly prohibited and may lead to disqualification.

## **25. PERFORMANCE SECURITY**

**25.1.** Within one week of issuance of the purchase order for CIF equipment only, the successful bidders shall furnish to National Centre of Excellence in Geology, University of Peshawar, the performance security bond as per Annexure-I, equivalent to 10% of the bid price in the form of a bank guarantee, before opening of LC.

**25.2.** The performance security shall be payable to the National Centre of Excellence in Geology, University of Peshawar, as compensation for any loss resulting from the supplier's failure to complete its obligation.

**25.3.** The performance security will be discharged by the National Centre of Excellence in Geology, University of Peshawar, and returned to the supplier after completion of the supplier's performance obligations under the contract.

**25.4.** The security will be retained for one-year starting from the date of successful installation and operation of the machinery / equipment.

## **26. CALIBRATION OF EQUIPMENT**

**26.1.** It will be the responsibility of supplier to arrange standards / consumables required for the calibration of the equipment at the time of installation. The cost of any standards / consumables required for calibration shall be borne by the supplier/bidder.

**26.2.** No TA/DA claim will be entertained by NCEG, in case of after sale services, whenever it requires within the premises.

**26.3. In case of non-conformity with desired specification, the item shall be replaced by the supplier free of cost.**

## **27. WARRANTY**

**27.1.** The supplier shall furnish at least one year after sales service / warranty for successful operation of equipment(s) / item(s) from the date of installation.

**27.2.** In case of Malfunctioning / defect in any equipment / item, the supplier shall replace them free of cost within 30 days; otherwise the supplier will return the entire paid amount to National Centre of Excellence in Geology, University of Peshawar immediately.



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**Note:**

*By signing this agreement, you acknowledge that you have read and understood, and agree to be bound by the terms and conditions as outlined here and in the agreement, and confirming that your company/organization terms and conditions stand eradicated.*

Dated: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contact No: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

E-Mail: \_\_\_\_\_

Signature and official Seal: \_\_\_\_\_

**NCEG Official & Signature** \_\_\_\_\_



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**Bidders are required to provide a comprehensive solution both in terms of efficiency, utilization and economic as well.**

**Note:**

1. LC opening process will be the responsibility of the supplier with the facilitation of the NCE in Geology, insurance charges/expenses should be paid by the supplier and cover the item, machinery and equipment etc., should be provided up to the laboratories of NCE in Geology or end user destination.
2. The customs clearance of machinery and equipment etc., at any airport/seaport/dry port will be the responsibility of the supplier and their cost including the local transportation up to the lab/Centre or end user destination. The Centre will provide the exemption certificate and other documents for clearance purpose to the supplier.
3. Please note that system/supply should be completed in all respect in terms of hardware, software and accessories/spare parts. Any deficiency in acquisition of desired results at the time of installation and subsequent functioning will be the responsibility of the supplying firm/company, without any additional cost. All the supply should be based on National Centre of Excellence in Geology University of Peshawar.
4. No FTT will be entertained.
5. Please provide individual item prices (wherever possible) for item-wise comparison
6. The Equipment of which specifications are not given above, the suppliers are requested to quote all the models, which they can supply.
7. Submission of Data/Fact sheets, explaining the function and specification, of each equipment quoted is necessary.
8. The quotes should include all the accessories needed for the proper functioning of each equipment for the given task. The successful tenders will have to accept / abide by all the responsibilities regarding installation and proper functioning of the equipment and training to the end user.
9. Installation, commissioning and training of the end users on these systems will be responsibility of the supplier. The contract shall be liable to be cancellation if the supplier does not meet this condition.
10. The tender Rate shall be item wise. And rate will be on both **FOR basis in Pak Rupees and CIF basis Peshawar Air Port/Dry Port /NCE in Geology Premises.**
11. The bidders shall have to provide a certificate from the principle vendor that all the equipment are according to ASTM standards.
12. The cost should be inclusive of all the taxes as admissible as per rules.
13. **The specifications of the items where appropriate are given in this tender document. However, firms are encouraged to quote also the better-quality items, if available in the market.**





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**ANNEXURE-I**

**PERFORMANCE BOND**

Lab Director (G-SAGL),  
NCE in Geology,  
University of Peshawar, Peshawar

Dear Sir,

RE: AGREEMENT DATE : \_\_\_\_\_ BETWEEN  
YOURSELVES & M/S \_\_\_\_\_ No. \_\_\_\_\_ In consideration  
of your having concluded a CONTRACT evidenced by purchase order No. \_\_\_\_\_ dated  
\_\_\_\_\_ with m/s. \_\_\_\_\_ (SUPPLIER) for  
\_\_\_\_\_ and in consideration of value received from the SUPPLIER, we agree  
and undertake as follows:-

Name of equipment: \_\_\_\_\_ Amount: \_\_\_\_\_

1. To make unconditional payment of \_\_\_\_\_ or unconditional payments from time to time as called upon totaling the said sum of \_\_\_\_\_ being 10% (Ten Percent) of the CONTRACT price mentioned in the said Purchase Order/ Agreement upon your written demand(s) without further recourse, question or reference to SUPPLIER the event of Supplier's default in compliance with its obligatory liabilities and responsibilities arising under and in pursuance of the warranties and guarantees committed by it in the said Purchase Order / Agreement.
2. To accept written intimation(s) from you as sufficient evidence of the existence of a default or non-compliance as aforesaid in the part of SUPPLIER and to make payment accordingly within fifteen (15) days of receipt of the written intimations.
3. To keep this guarantee in full force from the date of this guarantee up to two years after the date of installation and successful operation of equipment.
4. No grant of time or other indulgence to or composition or arrangement with SUPPLIER in respect of the performance of its obligations under and in pursuance of the said Agreement / Purchase Order of any Clause thereof, with or without notice to us shall in any manner discharge or otherwise, howsoever, affect this guarantee and our liabilities and commitments hereunder.
5. This guarantee shall also cover obligations of the SUPPLIER so far as liquidated damages is concerned, as provided in Agreement / Purchase Order any recovery on account of liquidated damages shall not reduce the value of 10% (Ten Percent) provided herein.
6. This guarantee shall be binding on us and our successors-in-interest and shall be irrevocable.

Yours faithfully,

\_\_\_\_\_  
Bank Seal



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**Tender Form**

Equipment and items to be purchased from NCEG's and other project's budgets.

<b>Sr. No</b>	<b>Name of Lab Equipment</b>	<b>Annexure/page. No</b>
1	Terrestrial Laser Scanner (TLS) 4 <sup>th</sup> Tender	ANNEXURE II/10
2	Electrical resistivity 6 <sup>th</sup> Tender	ANNEXURE III/11
3	UAV (DRONE) & LiDAR Sensor 4 <sup>th</sup> Tender	ANNEXURE IV/12
4	Tromino for seismic microzonation 4 <sup>th</sup> Tender	ANNEXURE V/13

**Note: Firms are required to provide Annexure wise quotations, complete in all aspects of accessories, consumables and requirements of the labs. Further, for clarification of any specifications, please consult this office.**



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**ANNEXURE II**

**Lab Equipment for G-SAG**

S.no	Item Name	Specifications	Qty
1.	Terrestrial laser Scanner (TLS)	Laser pulse repetition rate: (min) 1.2 MHz Speed data acquisition: (min) 300,000 measurements/sec Wide field of view: (min) 100°x360° Range: (min) 300 m Accuracy: (min) 5 mm Cloud connectivity: Wi-Fi and 3G/4G LTE Integrated with GNSS receiver Multiple target capability Remote control, Processing software, High accuracy, high precision ranging based on echo digitization, online waveform processing, and multiple-time-around processing. Hands-on Training  <b>Optional</b> Backpack	01
<p><b>Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares, standards, latest accessories which can serve the purpose to its full satisfaction.</b></p>			



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**ANNEXURE III**

**Lab Equipment for G-SAG**

2.	Electrical Resistivity Meter	<p><b>Receiving:</b>            Voltage channel: (min) <math>\pm 6</math> V            Survey precision: if <math>V_p \geq 10</math> mV then <math>\pm 5\% \pm 1</math> LSB, if <math>V_p &lt; 10</math> mV, then <math>\pm 1\% \pm 1</math> LSB            Input impedance: <math>\geq 50M\Omega</math>            Apparent polarizability precision: <math>\pm 1\% \pm 1</math> LSB            SP compensation range: <math>\pm 10</math> V            Current channel: 6 A, survey precision: if <math>I_P \geq 10</math> mA then <math>\pm 5\% \pm 1</math> LSB, if <math>I_P &lt; 10</math> mA, then <math>\pm 1\% \pm 1</math> LSB            Suppression: <math>\geq 90</math> dB for 50 Hz industrial frequency            Transmitter part            Voltage maximum: 1100V            Current maximum: 6A (when voltage <math>\leq 900</math> V)            Pulse width: 1 ~ 60s, duty ratio 1:1            Depth of Investigation (DOI): 35 meter or above            Number Of Electrodes: 64 or 41  <b>Other:</b>            Operating temperature: <math>-10^\circ\text{C} \sim 50^\circ\text{C}</math>, humidity: 95 %RH            Memory temperature: <math>-20^\circ\text{C} \sim 50^\circ\text{C}</math>            Instrument power: compatible battery supporting the most power intensive survey for a period of an hour.            Complete appliance current: <math>\leq 55</math> mA            Earth resistivity meter equipment based on electric resistivity for landslide and soil risk assessment.   <b>Optional:</b>            IP accessories</p>	01
<p><b>Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares, standards, latest accessories which can serve the purpose to its full satisfaction.</b></p>			



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**ANNEXURE IV**

**Lab Equipment for G-SAG**

S.no	Item Name	Specifications	Qty
3	UAV (DRONE) & LiDAR Sensor)	<p><b>UAV (DRONE):</b>            Operating Frequency: (min) 2.4 GHz - 5 GHz            Take-off Weight: (min) 9 kg            RTK Positioning Accuracy: (When RTK enabled and fixed)            1cm + 1ppm Horizontal, 1.5cm + 1ppm Vertical            Hovering Accuracy: (P-mode with GPS)            Vertical: <math>\pm 0.1</math> m (Vision System enabled), <math>\pm 0.5</math> m (GPS enabled),  <math>\pm 0.1</math> m (RTK enabled), Horizontal: <math>\pm 0.3</math> m (Vision System enabled),  <math>\pm 1.5</math> m (GPS enabled), <math>\pm 0.1</math> m (RTK enabled)            Ascent Speed: (min) S mode: 6 m/s, P mode: 5 m/s            Decent Speed: Vertical (min) S mode: 5 m/s, P mode: 3 m/s            Wind Resistance:(min) 15 m/s            Flight Time:(min) 55 min            Speed: (min) S mode: 23 m/s, P mode: 17 m/s            Transmission Distance: (min) NCC/FCC: 15 km, CE / MIC: 8 km,            SRRC: 8 km            Supported DJI Gimbals: Zenmuse XT2/XTS/Z30/H20/H20T            GNSS: GPS+ GLONASS+ BeiDou+ Galileo            Operating Temperature: (min) <math>-20^{\circ}</math> to <math>50^{\circ}</math>C            Battery Life: Built-in battery: <math>\pm 2.5</math>h, Built-in battery + Ext battery:  <math>\pm 4.5</math>h</p> <p><b>LiDAR Sensor:</b>            Detection Range: (min) 450 m @ 80% reflectivity, 0 klx;            190 m @ 10% reflectivity, 100 klx            Point Rate: (min) Single return: max. 240,000 pts/s;            Multiple return: max. 480,000 pts/s            Ranging Accuracy (RMS <math>1\sigma</math>): (min) 3 cm @ 100 m            Scan Modes: Non-repetitive scanning pattern, Repetitive scanning            pattern            IMU Update Frequency: (min) 200 Hz, FoV: <math>95^{\circ}</math>            Effective Pixels: (min) 20 MP            Stabilized System: 3-axis (tilt, roll, pan)            Focal Length: (min) 8.8 mm /24 mm or Equivalent            Raw Data Storage: Photo/IMU/Point cloud data storage/ GNSS/            Calibration files            Supported microSD Cards: (min) 128 GB</p> <p><b>Data processing software, training and required accessories.</b></p>	01
<p><b>Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares, standards, latest accessories which can serve the purpose to its full satisfaction.</b></p>			



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**ANNEXURE V**

**Lab Equipment for G-SAG**

S.no	Item Name	Specifications	Qty
4.	Tromino for seismic microzonation	3 velocimetric channels (adjustable dynamic range) 3 accelerometric channels 1 analog channel GPS receiver Built-in radio transmitter/receiver (for synchronization among different units), radio triggering system (for MASW surveys and similar) Dynamic characterization of sub soils and structures and for vibration monitoring.	01
<b>Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares, standards, latest accessories which can serve the purpose to its full satisfaction.</b>			