

# National Center for Geodesy



INDIAN INSTITUTE OF TECHNOLOGY KANPUR

TENDER REFERENCE NO.: IITK/NCG/2019-20/02

BID SUBMISSION END DATE- 28.10.2019

TENDER DOCUMENTS

FOR

**“Supply, Installation and Integration of surveying equipment with associated data processing software”**

## BID DOCUMENT

Online bids (Technical & Financial) from eligible bidders, which are valid for a period of 120 days from the date of Technical Bid opening (i.e. 29.10.2019) are invited for and on behalf of the Assistant Registrar (Store and Purchase), IIT Kanpur for the **“Supply, Installation and Integration of surveying equipment with associated data processing software”**

|  |   |
|--|---|
| <b>Name of Work</b>  | <b>“Supply, Installation and Integration of surveying equipment with associated data processing software”</b> |
| Date of Publishing   | 4.10.2019 (17:00 hrs)   |
| <b>Bid Submission Start Date</b>   | 4.10.2019 (17:00 hrs)   |
| Last Date and time of uploading of Bids  | 28.10.2019 (16:00 hrs)  |
| Last Date and time of <b>submitting</b> EMD and other documents at IIT Kanpur (if any) | 29.10.2019 (12.00 hrs)  |
| Pre Bid Meeting  | NA  |
| Date and time of opening of Technical Bids   | 29.10.2019 (16:00 hrs)  |
| Date and time of opening of Financial Bids   | Will be separately notified for Technically shortlisted/qualified bidders                                     |

Interested parties may view and download the tender document containing the detailed terms & conditions from the website <http://eprocure.gov.in/eprocure/app>

**(The bids have to be submitted online in electronic form on <http://www.eprocure.gov.in> only. No physical bids will be accepted.)**

## **INSTRUCTIONS FOR ONLINE BID SUBMISSION**

The bidders are required to submit soft copies of their bids electronically on the Central Public Procurement (CPP) Portal <http://eprocure.gov.in/eprocure/app>, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

### **REGISTRATION:**

- (i) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal ([URL:https://eprocure.gov.in/eprocure/app](https://eprocure.gov.in/eprocure/app)) by clicking on the link "Online Bidder Enrolment" option available on the home page. **Enrolment on the CPP Portal is free of charge.**
- (ii) During enrolment/ registration, the bidders should provide the correct/true information including valid email-id & mobile no. All the correspondence shall be made directly with the contractors/ bidders through email-id provided.
- (iii) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- (iv) For e-tendering possession of valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) is mandatory which can be obtained from SIFY /nCode/eMudra or any Certifying Authority recognized by CCA India on eToken/ SmartCard.
- (v) Upon enrolment on CPP Portal for e-tendering, the bidders shall register their valid Digital Signature Certificate with their profile.
- (vi) Only one valid DSC should be registered by a bidder. Bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse and should ensure safety of the same.
- (vii) Bidders can then log into the site through the secured login by entering their user ID/ password and the password of the DSC/eToken.

### **SEARCHING FOR TENDER DOCUMENTS:**

- (i) There are various search options built in the CPP Portal to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords, etc., to search for a tender published on the CPP Portal.
- (ii) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- (iii) The bidder should make a note of the unique Tender ID assigned to each tender; in case they want to obtain any clarification / help from the Helpdesk.

### **PREPARATION OF BIDS:**

- (i) For preparation of bid, Bidders shall search the tender from published tender list available on site and download the complete tender document and should take into account corrigendum if any published before submitting their bids.
- (ii) After selecting the tender document same shall be moved to the 'My favorite' folder of bidders account from where bidder can view all the details of the tender document.

- (iii) Bidder shall go through the tender document carefully to understand the documents required to be submitted as part of the bid. Bidders shall note the number of covers in which the bid documents have to be submitted, the number of documents – including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- (iv) Any pre-bid clarifications if required, then same may be obtained online through the tender site, or through the contact details given in the tender document.
- (v) Bidders should get ready in advance the bid documents in the required format (PDF/xls/rar/dwf/jpg formats) to be submitted as indicated in the tender document/schedule. **Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.**
- (vi) Bidders can update well in advance, the documents such as experience certificates, annual report, PAN, EPF & other details etc., under “My Space/ Other Important Document” option, which can be submitted as per tender requirements. This will facilitate the bid submission process faster by reducing upload time of bids.

#### **SUBMISSION OF BIDS:**

- (i) Bidder should log into the site well in advance for bid submission so that he/ she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay.
- (ii) Bidder should prepare the EMD if any as per the instructions specified in the NIT/ tender document. The details of the DD/BC/BG/ others physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- (iii) While submitting the bids online, the bidder shall read the terms & conditions (of CPP portal) and accepts the same in order to proceed further to submit their bid.
- (iv) Bidders shall select the payment option as offline to pay the EMD if applicable and enter details of the DD/BC/BG/others.
- (v) Bidder shall digitally sign and upload the required bid documents one by one as indicated in the tender document.
- (vi) Bidders shall note that the very act of using DSC for downloading the tender document and uploading their offers is deemed to be a confirmation that they have read all sections and pages of the tender document without any exception and have understood the complete tender document and are clear about the requirements of the tender document.
- (vii) Bid documents may be scanned with 100 dpi with black and white option, which helps in reducing size of the scanned document. For the file size of less than 1 MB, the transaction uploading time will be very fast.
- (viii) If price quotes are required in XLS format, utmost care shall be taken for uploading Schedule of quantities & Prices and any change/ modification of the price schedule shall render it unfit for bidding.
- (ix) Bidders shall download the Schedule of Quantities & Prices i.e. Schedule-A, in XLS format and save it without changing the name of the file. Bidder shall quote their rate in figures in the appropriate cells. Thereafter, save and upload the file in financial bid cover (Price bid) only.
- (x) If the template of Schedule of Quantities & Prices file is found to be modified/corrupted in the eventuality by the bidder, the bid will be rejected and further dealt as per provision of clause no 23.0 of ITB including forfeiture of EMD if submitted.
- (xi) The bidders are cautioned that uploading of financial bid elsewhere i.e. other than in cover 2 will

result in rejection of the tender.

- (xii) Bidders shall submit their bids through online e-tendering system to the Tender Inviting Authority (TIA) well before the bid submission end date & time (as per Server System Clock). **The TIA will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders at the eleventh hour.**
- (xiii) After the bid submission (i.e. after Clicking “Freeze Bid Submission” in the portal), the bidders shall **take print out of system generated acknowledgement** number and keep it as a record of evidence for online submission of bid, which will also act as an entry pass to participate in the bid opening.
- (xiv) Bidders should follow the server time being displayed on bidder’s dashboard at the top of the tender site, which shall be considered valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system.
- (xv) All the documents being submitted by the bidders would be encrypted using PKI (Public Key Infrastructure) encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128-bit encryption technology.

#### **ASSISTANCE TO BIDDERS:**

- (i) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contract person indicated in the tender. The email for the helpdesk is [ncg@iitk.ac.in](mailto:ncg@iitk.ac.in)
- (ii) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24X7 CPP Portal Helpdesk. The 24 x 7 Help Desk Number 0120-4200462, 0120-4001002 and 0120-4001005. The helpdesk email id is [support-eproc@nic.in](mailto:support-eproc@nic.in)

### **INSTRUCTION FOR e-PROCUREMENT**

#### **PREPARATION AND SUBMISSION OF BIDS:**

- (i) The detailed tender documents may be downloaded from <http://eprocure.gov.in/eprocure/app> till the last date of submission of tender. The tender may be submitted online through CPP Portal <http://eprocure.gov.in/eprocure/app>
- (ii) The bidder should submit the bid online in two parts viz. Technical Bid and Financial Bid. Technical Bid should be uploaded online in cover 1 and Financial Bid in “.xls” should be upload online in cover-2

#### **SUBMISSION OF THE BID:**

All interested eligible bidders are requested to submit their bids online on CPP Portal: <http://eprocure.gov.in/eprocure/app> as per the criteria given in this document:

- a. Technical Bid should be uploaded online in cover-1.
- b. Financial Bid should be uploaded online in cover-2.

Both Technical and Financial Bid covers should be placed online on the CPP Portal

(<http://eprocure.gov.in/eprocure/app>).

**TECHNICAL BID:**

Signed and scanned copies of the Technical Bid documents as under must be submitted online on CPP Portal: <http://eprocure.gov.in/eprocure/app>

**List of Documents to be scanned and uploaded (Under Cover-1) within the period of bid submission:**

- (i) Scanned copy of Bank details. (Bank details of principal supplier in case of Import shipments)
- (ii) Scanned copy of work experience.
- (iii) Scanned copy of certificate of GST. (GSTIN of Indian Agent in case of Import Shipments)
- (iv) Scanned copy of tender acceptance letter and all other documents as per cover-1.
- (v) Scanned copy of specifications or brochures (if any).
- (vi) Scanned copy of other documents mentioned in tender document (if any)
- (vii) Scanned copies of (a) Tender compliance sheet and (b) authorization letter from OEM.

**Please note that no indication of the rates/amounts be made in any of the documents submitted with the TC-BID.**

**FINANCIAL BID:**

- (i) The currency of all quoted rates shall be in multi-currency (INR/USD/Euro/GBP/CHF).
- (ii) In preparing the financial bids, bidders are expected to take into account the requirements and conditions laid down in this Tender document. The financial bids should be uploaded online as per the specified ".xls" format i.e. Price Bid Excel sheet attached as '.xls' with the tender and based on the scope of work, service conditions and other terms of the Tender document. It should include all costs associated with the Terms of Reference/Scope of Work of the assignment.
- (iii) The Financial Proposal should be inclusive of all applicable taxes, duties, fees, levies, and other charges imposed under the applicable laws. The rates quoted in the Tender are inclusive of all applicable taxes, duties.

**LAST DATE FOR SUBMISSION OF TENDER:**

- (i) Online bids complete in all respects, must be submitted on or before the last date and time specified in the schedule of events.
- (ii) The IIT, Kanpur may, at its own discretion, alter/extend the last date for submission of tenders.

**BID VALIDITY:**

- (i) All the Bids must be valid for a period of 120 days from the last date of submission of the tender for execution of Contract. However, the quoted rates should be valid for the initial/ extended period of the Contract from the effective date of the Contract. No request will be considered for price revision during the original Contract period.

- (ii) A bid valid for a shorter period shall be declared as non-responsive.
- (iii) In exceptional circumstances, prior to expiry of the original time limit, the IIT may request the bidders to extend the period of validity for a specified additional period beyond the original validity of 120 days. The request and the bidders' responses shall be made in writing. The bidders, not agreeing for such extensions will be allowed to withdraw their bids without forfeiture of their Bid Security.

**MODIFICATION / SUBSTITUTION/ WITHDRAWAL OF BIDS:**

- (i) No Bid shall be modified, substituted or withdrawn by the Bidder after the Bid's due Date.
- (ii) Any alteration/ modification in the Bid or additional information supplied subsequent to the Bid's due date, unless the same has been expressly sought for by the Authority, shall be disregarded.

**REJECTION OF THE BID:**

The bid submitted shall become invalid and tender fee shall not be refunded if:

- (i) The bidder is found ineligible.
- (ii) The bidder does not upload all the documents as stipulated in the bid document.

## **Tender Document**

National Centre in Geodesy  
Indian Institute of Technology Kanpur  
Kanpur (UP) 208016 India

Enquiry date: October 04, 2019

Enquiry No: IITK/NCG /2019-20/02

Contact:

**Prof. Onkar Dikshit**

Department of Civil Engineering

Indian Institute of Technology Kanpur

Kanpur 208016 (UP), India

Online quotations are invited for **“Supply, Installation and Integration of surveying equipment with associated data processing software.”**

### **Terms and Conditions:**

1. All equipment must be compatible with Indian electrical standards and codes. Engineering documentation on the physical sizes and weights of all major and minor components must be submitted.
2. Warranty & Support: Three years comprehensive on-site for both hardware and SW from OEM directly.
3. Quotations must be valid for 120 days.
4. IIT Kanpur is fully exempted from payment of GST on Imported Goods against our DSIR certificate.
5. IIT Kanpur is partially exempted from payment of Customs Duty (We will provide Custom Duty Exemption Certificate, CD applicable is 5.5%).
6. Tender Specific Manufacturer Authorization Form from OEM is required.
7. The Institute reserves the right of accepting or rejecting any quotations without assigning any reason thereof.
8. All prices should be both *FOB and CIP basis*. IIT Kanpur has its own freight forwarder i.e., Balmer Lawrie & Co. Ltd.
9. IIT Kanpur is authorized to procure the equipment by opening the LC. Hence, procurement through opening of LC will be the preferred choice. All relevant documents to this effect will be provided by IIT Kanpur. However, one can also quote in Indian rupees as well. Therefore, it is desirable that the



quotation is provided for procurement by both these arrangements.

10. Supply, installation and integration must be done by the OEM or authorized suppliers of the OEM.
11. Full details of the *standard* configuration of equipment along with *accessories* and *technical literature* should be provided. **The standard configuration must be accompanied by associated brochure giving the complete and clear configuration of the system offered (e.g. part no., preferably photograph of the part, number of units, accessories: wires, connectors, etc.).**
12. The vendor must provide a compliance document which should clearly specify how each technical requirement is satisfied by the system suggested by the vendor.
13. Various *optional features* with the equipment (along with their cost) should be specified.
14. The vendor is liable to update all the necessary softwares and firmwares without any additional charges under warranty period. This will be counted from the date of training (PHASE -I).
15. Custom clearance/License/NOC from any Government agency required for Wireless, Bluetooth communication, if any, will be the responsibility of the vendor. However, necessary papers will be provided by IIT Kanpur, if required.
16. The vendor must bid for the latest equipment with a certificate from the manufacture that the equipment is still under production and not outdated.
17. The short-listed vendor(s) may be asked to demonstrate the functionality of quoted equipment and associated software at IIT-Kanpur. IIT Kanpur will provide a prior date for the same before the opening of the Financial bid.
18. The delivery of the equipment must be made within eight weeks after establishment of LC.
19. **Please clearly mention the arrangements and cost of the following:**
  - i) Warranty period of three years for equipment/ hardware from the OEM.
  - ii) Software maintenance period of three years.
  - iii) **Details of after-sales service (a) to be provided** which should include details of in-house facilities for the same, turn-around time with acceptable solution, availability of spare parts and their warranty and stand-by system.
20. **Training:** Provision of training of highest standards is one of the primary requirements in this work. **Please note that cost of training will be released by IIT-Kanpur only after certification that satisfactory training has been provided at IIT Kanpur.**

Please clearly mention the cost of such training with the following requirements:

- (i) In the PHASE-I, a minimum of five days good quality training should be provided at IIT-Kanpur to the users of the equipment which should cover the basic and the advanced concepts on the usage and data processing with the equipment. This should be followed by PHASE-II training of 3 days after 3 months.
- (ii) Please mention number of certified/qualified staff members/trainers who will conduct the training.

- (iii) One hard copy of handout and one softcopy of all training manuals should be provided, covering installation, operation, maintenance and calibration of the system, usage and the system application software at IIT Kanpur.
  - (iv) The vendor should provide all operation, service and maintenance manuals (in English).
21. Hard copies of detailed manuals/brochures/demand drafts of tender processing fee and EMD should reach to the office of "Assistant registrar" (Store and Purchase) on or before technical bid opening date i.e. 29.10.2019 by 12 noon.
  22. Bidder should bid for complete set of equipment, SW and training. Partial bidding shall be summarily rejected.

### **CRITERIA FOR QUALIFICATION**

- a) The applicant should be an organization engaged in the related field of work. A minimum of **5 years** of experience is mandatory.
- b) The applicant must be a profit-making organisation continuously for last three years ending March 2019.
- c) The applicant must have an average annual turnover of Rs 5.0 crore in the previous 3 years ending March 2019.
- d) The applicant who is barred or blacklisted by any Central/State Government in India or abroad will not be eligible for qualification.
- e) The details of technical qualification are provided under level of work done and turnover (See Annexure 6 for more details).
- f) Even though an applicant may satisfy the above requirements, he/she would be liable to disqualification if he/she has:
  - i. Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the prequalification document.
  - ii. Record of poor performance such as abandoning work, not properly completing the contract, or financial failures / weaknesses etc.
- g) Persons who are individually or institutionally, in any manner, involved with the selection/screening process of the tender and employees of IIT Kanpur, are ineligible for applying.
- h) **Technical evaluation consists of fulfilment of pre-requisite qualifications and technical details of equipment and successful demonstration of equipment and SW. The technical bid shall be examined by the expert group of the Institute. The bidders shall be invited to make presentations before the expert group. Based on the presentations, the agencies shall be shortlisted for opening the financial bid. Technical bids without EMD and tender fee will be summarily rejected.**

**The institute reserves the right to shortlisting of the agencies, subject to thorough verification of their credential and inspection of similar nature works carried out / in progress by them, through a Technical Committee of experts to be constituted by IIT Kanpur.**

## List of equipment, SW with specifications and training requirements:

### Hardware (with accessories):

- |  |            |
|--|------------|
| 1. Geodetic quality GNSS receivers with RTK capability         | 6 + 6 Nos. |
| 2. Geodetic receiver and Met sensor for GNSS                   | 2 Nos.     |
| 3. Total Positioning System (TPS)/Scanning total station       | 2 Nos.     |
| 4. Autolock Total Stations                                     | 15 Nos.    |
| 5. Auto lock Total Station with camera and scanning capability | 2 Nos.     |
| 6. Robotic Total stations                                      | 2 Nos.     |
| 7. Digital Levels  | 8 Nos.     |
| 8. Auto Levels   | 20 Nos.    |
| 9. Handheld Differential GPS                                   | 15 Nos.    |

### Software:

- |   |                                   |
|---|-----------------------------------|
| 10. Data Processing Software (Educational Licenses) | 50 perpetual educational licenses |
|---|-----------------------------------|

### Training

- |                            |
|----------------------------|
| 11. Training in two phases |
|----------------------------|

## 1. Technical Specifications for Geodetic quality GNSS receivers with RTK capability

### 1.1 Geodetic quality GNSS receivers with RTK capability

| Sr. No. | Item                       | Description  |
|---------|----------------------------|--|
|         |                            | <p><b>General Specifications:</b></p> <ul style="list-style-type: none"> <li>• Integrated system consisting of GNSS Receiver with Built in antenna and built in internal Radio for Base and Rover and related accessories.</li> <li>• The GNSS Base, Rover, Control units should be manufactured be from the same OEM manufacturer only.</li> <li>• The GNSS Receiver should have built in electronic bubble and automatic tilt compensation for <math>\pm 15^\circ</math> with built in digital compass and tilt sensor.</li> <li>• The GNSS receiver should have built in L-band reception for satellite-based correction services.</li> <li>• The GNSS Receiver should have the capability to use user definable accuracy and take the position without having to wait for the fix solution.</li> </ul>   |
| 1.      | GNSS Base & Rover Receiver | <p>The Differential Base/Rover system should be of geodetic quality with RTK enabled (GSM/GPRS), Interchangeable "Configurable as Base or Rover". Base Station should be able to serve multiple Rovers.</p> <p><b>Multi-Frequency GNSS receivers with integrated antenna</b><br/>The GNSS receiver should have 600 or more channels for the tracking of all the presently available frequencies of globally existing GNSS as below:</p> <ul style="list-style-type: none"> <li>• GPS: (L1C/A, L2E, L2C, L5),</li> <li>• GLONASS: (L1C/A, L1P, L2C/A, L2P, L3),</li> <li>• BeiDou: (B1, B2, B3)</li> <li>• Galileo: (E1, E5A, E5B, E5AltBOC, E6),</li> <li>• QZSS: L1C/A, L1C, L2C, L5, L1SAIF</li> <li>• NavIC (IRNSS): L5</li> <li>• SBAS: (WAAS, EGNOS, MSAS, GAGAN)</li> <li>• L Band for satellite-based subscription services for the</li> </ul> <p>Advance Receiver Autonomous Integrity Monitoring algorithm to improve position quality.</p> <p>Update rate up to 20 Hz or better, built in memory 6GB or above.</p> <p>Supported data formats: RTCM 2.3, RTCM 3.1, RTCM 3.2, CMR, CMR+, CMRX</p> <p>Data Format Output: 24NMEA output, GSOF, RT17 and RT27</p> <p>System should have capable to transmit and receive on RTK with internal radio 2Watt or above</p> <p><b>Real-Time Kinematic Position</b></p> <p>Horizontal: 8 mm + 1 ppm</p> |

|   |                   |  |
|---|-------------------|--|
|   |                   | Vertical: 15 mm + 1 ppm  |
|   |                   | <b>Network RTK Position</b>  |
|   |                   | Horizontal: 8 mm + 0.5 ppm   |
|   |                   | Vertical: 15 mm + 0.5 ppm  |
|   |                   | 99.9% reliability  |
|   |                   | RTK Initialization range in the GSM/GPRS mode: 30 km or better   |
|   |                   | <b>High Precision Static</b>   |
|   |                   | Horizontal 3 mm + 0.1 ppm  |
|   |                   | Vertical 3.5 mm + 0.4 ppm  |
|   |                   | Satellite Base correction Accuracy Horizontal 2 cm and vertical 5 cm   |
|   | Communication     | 1. RS232 / Power Port, Bluetooth, Wi-Fi  |
|   |                   | 2. Web UI for Receiver Status, Settings and Data Transfer  |
|   |                   | <b>Power Characteristics:</b> Li-ion rechargeable battery pack with charge indicator for minimum 5-6 hrs of RTK operation in the field along with external charger |
|   |                   | Provision for external DC input 11-24 V with overvoltage protection  |
|   |                   | Hot Swappable b/w External and Internal Power Sources without affecting Data Recording   |
|   |                   | <b>Protection:</b> Should be water and dust proof, humidity-proof (100%) and condensation-proof as per IP67 standards.   |
|   |                   | <b>Drop:</b> 2 m pole drop onto concrete   |
|   |                   | <b>User Interface:</b> LED Indicators  |
|   |                   | <b>Initialization Time:</b> typically, less than 8 sec.  |
|   |                   | Integrated cellular modem GSM, GPRS, LTE, HSDPA  |
|   |                   | Inbuilt Tilt Sensor for precise position capture.  |
|   |                   | Receiver should support Android and iOS platform   |
|   |                   | <b>Operating Temperature:</b> 0°C to 65°C  |
| 2 | <b>Controller</b> | <b>Display:</b> 7" or better.  |
|   |                   | Operating System: Windows latest version   |
|   |                   | Processor speed: Intel Processor quad core, 64-bit operating system  |
|   |                   | Internal memory: At least 8GB RAM, 64 GB internal memory better and expandable more through SD card slot.  |
|   |                   | Keyboard & Screen: Full alpha numeric hard QWERTY keyboard, 1280 x 800 pixel landscape resolution, Sunlight-Readable color TFT                                     |

|   |                                      |   |
|---|--------------------------------------|---|
|   |                                      | Environment protection for external Controller: Water proof with IP 68  |
|   |                                      | Input & Output: USB 3.1 & RS 232 Serial, Bluetooth & Wi-Fi  |
|   |                                      | Built in Camera rear camera 8MP with 2 MP front camera or better resolution with LED flash and geotagging facility, Integrated Accelerometer, Built in Digital Compass, Integrated / External Distance Meter support for accessing remote points. |
|   |                                      | Protection: Should be waterproof, shockproof, dustproof and drop resistance: Immersion, up to 1 m depth for 2 hours.  |
|   |                                      | Provision for SIM Card for GSM/GPRS RTK and serial RS232 DB9 port for External sensors.   |
|   |                                      | <b>Battery:</b> Sufficient battery/batteries for minimum 10 hrs of operation  |
|   |                                      | Operating Temperature: 0°C to + 60°C  |
| 3 | Field Survey Software for controller | The software should be capable of multitasking so that multiple operations can be opened at a time e.g. COGO, Stakeout, Point   |
|   |                                      | Should support Graphical stakeout, not only for points but for Lines and DTM as well. Should be able perform Real Time Quality Control for stake out positions.   |
|   |                                      | The Software should have color graphical support to visualize work while working.   |
|   |                                      | Coordinate system support: predefined grid systems, predefined datum's, projections, geoids, local grid   |
|   |                                      | Geodetic geometry: intersection, azimuth/ distance, offsetting, poly-line, curve, area  |
|   |                                      | Should support Feature Coding with attributes for GIS data collection. Control Coding should be possible for automatic plot creation.   |
|   |                                      | Should be able to accept background maps in .dxf and .ifc file.   |
|   |                                      | RTK, PPK and Static Survey Module   |
|   |                                      | The Field software should be able to log Kinematic data rover in case of GSM/GPRS RTK correction from Base is interrupted   |

**List of Deliverable (BOM)**

| Sr. No | Description  | Qty |
|--------|--|-----|
| 1      | Base GNSS Receiver with 2x internal Battery, carrying case and Charger | 6   |
| 2      | Tripod   | 2   |
| 3      | Tribrach   | 6   |
| 4      | Tribrach Adapter   | 6   |
| 5      | Control Unit with field Software                                       | 6   |

|   |   |   |
|---|---|---|
| 6 | Rover GNSS Receiver with 2x internal Battery, carrying case and Charger | 6 |
| 7 | Control Unit with Hard Physical Keyboard and Field Software             | 6 |
| 8 | Pole Holder for the Controller  | 9 |
| 9 | 2.5 m Telescopic Carbon Fiber range pole with Bipod                     | 9 |

## 1.2. GNSS receivers with RTK capability

| Sr. No. | Item                       | Description  |
|---------|----------------------------|--|
|         |                            | <p><b>General Specifications:</b></p> <p>Integrated system consisting of GNSS Receiver with Built in antenna and built in internal Radio for Base and Rover and related accessories.</p> <p>The GNSS Base, Rover, Control units should be manufactured be from the same OEM manufacturer only.</p> <p>The GNSS Receiver should have built in electronic bubble and automatic tilt compensation for <math>\pm 15^\circ</math> with built in digital compass and tilt sensor.</p> <p>The GNSS receiver should have built in L-band reception for satellite-based correction services.</p> <p>The GNSS Receiver should have the capability to use user definable accuracy and take the position without having to wait for the fix solution.</p>  |
| 1       | GNSS Base & Rover Receiver | <p>The Differential Base/Rover system should be of geodetic quality with RTK enabled (GSM/GPRS), Interchangeable "Configurable as Base or Rover". Base Station should be able to serve multiple Rovers.</p> <p>Multi-Frequency GNSS receivers with integrated antenna<br/>The GNSS receiver should have 600 or more channels for the tracking of all the presently available frequencies of globally existing GNSS as below</p> <ul style="list-style-type: none"> <li>• GPS: (L1C/A, L2E, L2C, L5),</li> <li>• GLONASS: (L1C/A, L1P, L2C/A, L2P, L3),</li> <li>• BeiDou: (B1, B2, B3)</li> <li>• Galileo: (E1, E5A, E5B, E5AltBOC, E6),</li> <li>• QZSS: L1C/A, L1C, L2C, L5, L1SAIF</li> <li>• NavIC (IRNSS): L5</li> <li>• SBAS: (WAAS, EGNOS, MSAS, GAGAN)</li> </ul> <p>L Band for satellite-based subscription services for the correction.<br/>Should have the X fill function to continue the RTK survey in case for the interruption of Base correction data.</p> <p>Advance Receiver Autonomous Integrity Monitoring algorithm to improve position quality. Additional filtering above 1616 M Hz and below 1510 M Hz to avoid the noise from the external transmitters.</p> <p>Update rate up to 20 Hz or better, built in memory 6GB or above.</p> <p>Supported data formats: RTCM 2.3, RTCM 3.1, RTCM 3.2, CMR, CMR+, CMRX</p> |

|   |                   |   |
|---|-------------------|---|
|   |                   | Data Format Output: 24NMEA output, GSOE, RT17 and RT27  |
|   |                   | System should have capable to transmit and receive on RTK with internal radio 2Watt or above  |
|   |                   | <b>Real-Time Kinematic Position</b>   |
|   |                   | Horizontal: 8 mm + 1 ppm  |
|   |                   | Vertical: 15 mm + 1 ppm   |
|   |                   | <b>Network RTK Position</b>   |
|   |                   | Horizontal: 8 mm + 0.5 ppm  |
|   |                   | Vertical: 15 mm + 0.5 ppm   |
|   |                   | 99.9% reliability   |
|   |                   | RTK Initialization range in the GSM/GPRS mode: 30 km or better  |
|   |                   | <b>High Precision Static</b>  |
|   |                   | Horizontal 3 mm + 0.1 ppm   |
|   |                   | Vertical 3.5 mm + 0.4 ppm   |
|   |                   | Satellite Base correction Accuracy Horizontal 2 cm and vertical 5 cm  |
|   | Communication     | 1. RS232 / Power Port, Bluetooth, Wi-Fi,  |
|   |                   | 2. Web UI for Receiver Status, Settings and Data Transfer   |
|   |                   | <b>Power Characteristics:</b> <u>Li-ion rechargeable battery pack with charge indicator</u> for minimum 5-6 hrs of RTK operation in the field along with external charger |
|   |                   | Provision for external DC input 11-24 V with overvoltage protection   |
|   |                   | Hot Swappable b/w External and Internal Power Sources without affecting Data Recording  |
|   |                   | <b>Protection:</b> Should be water and dust proof, humidity-proof (100%) and condensation-proof as per IP67 standards.  |
|   |                   | <b>Drop:</b> 2 m pole drop onto concrete  |
|   |                   | <b>User Interface:</b> LED Indicators   |
|   |                   | <b>Initialization Time:</b> typically, less than 8 sec.   |
|   |                   | Integrated cellular modem GSM, GPRS, LTE, HSDPA   |
|   |                   | Inbuilt Tilt Sensor for precise position capture.   |
|   |                   | Receiver should support Android and iOS platform  |
|   |                   | <b>Operating Temperature:</b> 0° C to 65° C   |
| 2 | <b>Controller</b> | <b>Display:</b> 7" or better  |
|   |                   | Operating System: Windows 10 pro  |



|   |   |  |
|---|---|--|
|   |   | Processor speed: Intel Processor quad core, 64-bit operating system  |
|   |   | Internal memory: At least 8 GB RAM, 128 GB internal memory better and expandable up to 256 GB more through SDXC card.  |
|   |   | Keyboard & Screen: 5-way directional, 4 Fn, Windows, Power, Volume physical keys, 7-inch, 1280 x 800 landscape, 16:10, 800 nits sunlight readable. LED backlit, Gorilla® Glass 3.0, 10-point capacitive multi touch with stylus, |
|   |   | Environment protection for external Controller: Water proof with IP 68   |
|   |   | Input & Output: 2xUSB 3.0 & Bluetooth 4.1 & Wi-Fi  |
|   |   | Built in Camera rear camera 8MP with 2 MP front camera or better resolution with LED flash and GNSS Integrated u-blox NEO-M8T, L1, GPS/GLONASS/BeiDou, SBAS  |
|   |   | Sensors 3-axis accelerometer, magnetic sensor, ambient light sensor, gyroscope   |
|   |   | Protection: Should be waterproof, shockproof, dustproof and drop resistance: Immersion, up to 1 m depth for 2 hours.   |
|   |   | Provision for SIM Card for GSM/GPRS RTK Worldwide LTE in regions where it is available, and compatible with 3G networks, MicroSIM card   |
|   |   | Batteries 2 x 3100 mAh (22.53 Wh) min. capacity/3150 mAh (22.90 Wh) nominal capacity; removable, hot swappable, charge LED indicator Charging time Full-charge 3.5 hours.  |
|   |   | Battery life Medium usage approx. 5 hours, can range 4-7 hours (depending on display settings, connectivity, data processing, ambient temperature, etc.)   |
|   |   | fast-charge (80 %) 1 ¾ hours   |
|   |   | Power input 19 V/5 A charging Notification LED Charging and power status   |
|   |   | Drop 1.22 m (4 ft) on concrete MIL-STD-810G, Method 516.6, Procedure IV  |
|   |   | Altitude Operational at 9,144 m (30,000 ft), MIL-STD810G, Method 500.5, (Altitude) I (storage) & II (operating)  |
|   |   | Vibration Method 514.5 Procedure I Category 24   |
|   |   | Solar Exposure Survives prolonged solar exposure, MIL-STD-810G Method 505.5, Procedure II  |
|   |   | Humidity 95% RH Non-condensing MIL-STD-810G, Method 507.6, Procedure II  |
|   |   | Operating Temperature: 0° C to +60° C  |
| 3 | <b>Field Survey for Software controller</b> | The software should be capable of multitasking so that multiple operations can be opened at a time e.g. COGO, Stakeout, Point  |
|   |   | Should support Graphical stakeout, not only for points but for Lines and DTM as well. Should be able perform Real Time Quality Control for stake out positions.  |
|   |   | The Software should have color graphical support to visualize work while working.  |

|  |   |
|--|---|
|  | Coordinate system support: predefined grid systems, predefined datum's, projections, geoids, local grid                               |
|  | Geodetic geometry: intersection, azimuth/ distance, offsetting, poly-line, curve, area  |
|  | Should support Feature Coding with attributes for GIS data collection. Control Coding should be possible for automatic plot creation. |
|  | Should be able to accept background maps in .dxf and .ifc file.   |
|  | RTK, PPK and Static Survey Module   |
|  | The Field software should be able to log Kinematic data rover in case of GSM/GPRS RTK correction from Base is interrupted             |

**List of Deliverable (BOM)**

| <b>Sr. No</b> | <b>Description</b>  | <b>Qty</b> |
|---------------|---|------------|
| 1             | Base GNSS Receiver with 2x internal Battery, carrying case and Charger  | 6          |
| 2             | Tripod  | 2          |
| 3             | Tribrach  | 6          |
| 4             | Tribrach Adapter  | 6          |
| 5             | Control Unit with Field Software  | 6          |
| 6             | Rover GNSS Receiver with 2x internal Battery, carrying case and Charger | 6          |
| 7             | Control Unit with Hard Physical Keyboard and Field Software             | 6          |
| 8             | Pole Holder for the Controller  | 9          |
| 9             | 2.5 m Telescopic Carbon Fiber range pole with Bipod                     | 9          |

## 2. Technical specification for Geodetic receiver and Met sensors for GNSS

| Sr. No.   | Item          | Description  |
|---|---------------|--|
| 1   | GNSS Receiver | The offered receiver shall have 600+ physical channels.  |
|   |               | <p>Multiple frequency and supporting the following simultaneous signal tracking:</p> <ul style="list-style-type: none"> <li>• GPS: L1 C/A, L2E (L2P), L2C, L5</li> <li>• GLONASS: L1 C/A2 and unencrypted P code, L2 C/A and unencrypted P code, L3 CDMA</li> <li>• Galileo: L1 CBOC, E5A, E5B &amp; E5AltBOC, E6</li> <li>• BeiDou: B1, B2, B3</li> <li>• QZSS: L1 C/A, L1C, L1 SAIF, L1S3, L2C, L5, LEX/L64</li> <li>• IRNSS: L5, S-Band</li> <li>• SBAS: L1 C/A (EGNOS/MSAS), L1 C/A and L5 (WAAS)</li> </ul> <p>L Band for satellite-based subscription services for the correction.</p> |
|   |               | Receiver must be capable of tracking all satellites in view, even if unhealthy, to an elevation angle of 0°.   |
|   |               | The receiver shall support real time kinematic positioning using industry standard formats.  |
|   |               | The receiver shall support onboard worldwide, real-time, absolute precise point positioning (PPP), via both Internet Protocol (IP) and L-Band satellite delivery.  |
|   |               | The offered receiver shall offer a minimum of two power inputs supporting both AC and DC operation with a minimum input power range of 10-28 VDC.  |
|   |               | The offered receiver shall have power consumption less than 5 W while tracking satellites.   |
|   |               | The offered receiver shall support Power over Ethernet (PoE 802.3af) as a means of powering the receiver. PoE must allow for user configurability to enable or disable this feature  |
|   |               | The receiver should have Dual hot-swappable Li-ION batteries with up to 15 hours of continuous operation.  |
|   |               | The receiver should have Spectrum Analyzer to troubleshoot GNSS Jamming. The receiver should have built in Wi-Fi Access Point and Client Mode.   |
|   |               | Integrated charger must be capable of charging from PoE input with user configurability to enable/disable this feature.  |
|   |               | The receiver must automatically restart after loss of power and must power up in the same configuration when powered down (or loss of power).  |
|   |               | The receiver must have a front panel display and a physical keyboard to allow the basic receiver configuration on site without the need of any other device (i.e.: IP configuration, data logging, coordinates set-up).  |
|   |               | The receiver shall offer an automatic shutdown and wakeup routine to allow the receiver to power down when not needed and wake up at a predetermined time and continue the configured activity.  |
| Support of logging rates from 50 Hz to 600 seconds. |               |  |

|  |  |
|--|--|
|  | <p>Must contain embedded (non-removable) solid state memory with up to 8 GB of logging space. The embedded memory will help to maintain operation and logging during high motion events such as earthquakes.</p>   |
|  | <p>In addition to the internal embedded memory, the receiver must have a source of removable media supporting up to 1 TB of logging space.</p>   |
|  | <p>Must support a minimum of 12 independent and concurrent logging sessions.</p>   |
|  | <p>Internally logged data shall have a file size of less than 1MB (unzipped) for a 24 hour, 15 second file to maximize storage capacity.</p>   |
|  | <p>Must be capable of producing both RINEX and BINEX file formats internal to the receiver without the need for external tools/converters.</p>   |
|  | <p>Must be capable of pushing logged and converted data files to three separate FTP servers.</p>   |
|  | <p>Receiver must support both a configurable ring buffer style memory deletion scheme as well as session specific “pools” with similar functionality. Additionally, data must be able to be protected from being overwritten in the case of an event.</p>  |
|  | <p>Receiver must support the configurable input, output and logging of Met/Tilt measurements.</p>  |
|  | <p>The receiver must have an integrated RJ45 connector (supporting both TCP/IP and UDP), two serial ports, USB, and an external frequency input.</p>   |
|  | <p>A minimum of 10 unique TCP/IP ports. Unique meaning one multicast TCP/IP port (allows multiple connections) only counts as 1 TCP/IP port. Each port must be fully configurable independent of the other ports and outputs.</p>  |
|  | <p>In addition to the 10 TCP/IP ports, the receiver shall support a minimum of 3 NTRIP Caster, 3 NTRIP Client, and 3 NTRIP Server ports.</p>   |
|  | <p>NTP Client and NTP Server functionality.</p>  |
|  | <p>Receiver must support IP filtering restricting IP packet access to and from the receiver for enhanced access control security based on Individual IP addresses or subnets based on a user specified net mask.</p>   |
|  | <p>The receiver must support three Bluetooth connections or greater.</p>   |
|  | <p>The receiver must support the following streaming data types: CMR, CMR+, CMRx, RTCM v2.x, RTCM v3.x (including MSM 1 through 7 messages), BINEX, and NMEA. Proprietary message types will be considered in addition to (not in replace of) the before mentioned formats.</p>  |
|  | <p>The offered receiver shall be capable of monitoring its own absolute position to centimeter level accuracy and alerting via both graphical and email mean of any detected change in antenna position. The tolerance at which to send alerts shall be user configurable depending upon the solution type in use. When this tolerance is exceeded, the receiver must be able to automatically stop sending correction data until the antenna moves back within tolerance.</p> |
|  | <p>The receiver shall support email alerts for various functions such as tracking, power, reboots, logging, status, etc.</p>   |
|  | <p>The receiver shall support dynamic domain name system (DDNS).</p>   |

|   |                                |   |
|---|--------------------------------|---|
|   |                                | Receiver must implement a secure network connection (secure means via an encrypted, authenticated session) as well as provide various access levels to the receiver controls.   |
|   |                                | Receiver must meet the following environmental specification: Operating temperature: -40° C to +65° C, Humidity: 100%, fully sealed with IP67 certification, Shock: 1m drop to hard surface.  |
| 2 | <b>GNSS Antenna</b>            | Geodetic Chock Ring tracking GPS, GLONASS, Galileo, BeiDou, SBAS, IRNSS L-Band  |
|   |                                | Technology that minimizes multi-path interference.  |
|   |                                | Phase center stability better than 2 mm and repeatability less than 1 mm  |
|   |                                | Antenna gain 50 dB ± 2 dB   |
|   |                                | Supply current 125 mA maximum   |
|   |                                | Minimum tracking elevation = 0°   |
|   |                                | Absolute calibration file from IGS must be available.   |
|   |                                | Powered by receiver (supply voltage 3.5 to 20 VDC)  |
|   |                                | Antenna shall operate in humidity, high winds, sand storm and blowing rain  |
|   |                                | Temperature range is -40° C to +85° C   |
|   |                                | Humidity up to 100, fully sealed  |
|   |                                | Shock rating 1 m drop   |
|   |                                | The antenna should be delivered with an external radome   |
| 3 | <b>Control center Software</b> | The Software should support Client/Server Architecture. It must run automatically and continuously as a windows service under Windows™ 2012 Server. Software Services shall start automatically with other services when booting. The software must support installation in virtual environments including Microsoft Hyper-V and VMWare. If power fails, the software will restart immediately when the power returns and the computer reboots. Shall have fast and efficient multiple-user access to its own database. |
|   |                                | The software should be able to perform all necessary functions of transferring data to card/external data logger/computer, remote communication, remote configuration, rinexing raw data etc.   |
|   |                                | The software should be capable of handling and configuring GNSS reference stations for GPS, GLONASS and GALILEO.  |
|   |                                | The software should automatically generate the Quality Check Reports for the stations.  |
|   |                                | Software should be able to handle receivers of different make and models of GNSS receivers.   |
|   |                                | The software should support automatic RINEX conversion based upon the user defined sampling interval and file length. At the same time the software should be able to store the data in proprietary format.   |

|  |  |   |
|--|--|---|
|  |  | <p>The software should be able to retrieve the data stored on the GNSS reference station as well as log data onto a server from the incoming data stream. In the event of real time communication/real time data transfer failure, the software should be able to download the missing data automatically, once the communication is restored.</p>  |
|  |  | <p>The software should graphically depict the raw data being received from the Receiver and also depict the data gap in the receiving status.</p>   |
|  |  | <p>The software should create the RINEX Products out of the raw data automatically which can be of variable length from a single raw data.</p>  |
|  |  | <p>The software should generate Real Time data stream from the connected stations to be distributed using a Radio or an IP communication. The supports for all common Real time Formats should be there.</p>  |
|  |  | <p>The GNSS Software shall generate different type of corrections to allow different kind of services:<br/>         DGPS corrections in RTCM v2.x format<br/>         Single RTK corrections from specific stations<br/>         Single RTK corrections from nearest station (requires user's position via NMEA string).<br/>         With the "multi-station" approach, the user should be automatically routed to the "best fit" reference station in the network that is closest to the field user's location.</p> |
|  |  | <p>All Real-time corrections shall be given in the International Recognized Standard called RTCM. RTCM messages in version 2.x and 3.x only are allowed. Any deviation to this standard is not recommended.</p>   |
|  |  | <p>The software should provide an overview of all installed device in the system as well as health status information for all connected receivers, single station Real Time Output (RTO) modules and storage modules.</p>   |
|  |  | <p>Should include key quality and quantity information, which should include data completeness, satellite tracking, cycle slip, multipath and receiver clock.</p>   |
|  |  | <p>Viewers should only be able to inspect the operation of the software, configuration parameters, system and receiver status etc. and not be able control the software and its operation</p>   |
|  |  | <p>Should include key quality and quantity information, which should include data completeness, satellite tracking, cycle slip, multipath and receiver clock.</p>   |
|  |  | <p>Should have decimation and concatenation of RINEX observation files.</p>   |
|  |  | <p>The Software should have a Web Application to provide an overview of the network along with status information on the reference stations and to delivers accuracy information on the stations.</p>   |
|  |  | <p>Generates event logs, alarms &amp; warnings on receiver status, network status and data quality status.</p>  |
|  |  | <p>The GNSS Software shall provide access to the following communication channels: Internet, intranet, local or wide area networks (TCP/IP) or with Mobile Cellular GPRS or Wireless technology using RTCM standard NTRIP Protocol.</p>   |

|   |                   |  |
|---|-------------------|--|
| 4 | <b>Met Sensor</b> | <p>Meteorological kits for measuring temp, pressure and humidity, to be integrated with the binary file in GPS receiver, with following specifications:</p> <ul style="list-style-type: none"> <li>(i) Accuracy: temp: 0.2° C, pressure: 0.15 hPa, humidity: 2%</li> <li>(ii) Stability: temp: 0.5° C/yr, pressure: 0.1 hPa/yr, humidity 2% /yr</li> <li>(iii) Operating range: temp: -40 to +60° C, pressure: 650-1100 hPa, humidity: 0-100%</li> <li>(iv) Power: +6 to +16V DC, typical current drain 3mA in sleep mode, and 38mA maximum.</li> <li>(v) Sampling Integration: User selectable, from 3ms to 30 s.</li> <li>(vi) Setup &amp; Configuration: Software to be provided. A single s/w should be able to configure using a PC.</li> <li>(vii) Port: RS232/USB, should be adaptable with the GNSS receivers of major brands.</li> <li>(viii) Data format: NMEA standard.</li> <li>(ix) Accessories: All required OEM accessories to be supplied including cables, manuals etc.</li> <li>(x) Met data are automatically stored in binary file of the GNSS receiver and generate separate met file upon RINEXING. The met interface should be configurable through GNSS receiver.</li> </ul> |
|---|-------------------|--|

**List of Deliverable (BOM)**

| <b>Sr. No</b> | <b>Description</b>                     | <b>Qty</b> |
|---------------|--|------------|
| 1             | GNSS Receiver with 2x internal Battery | 2          |
| 2             | Tribrach                               | 2          |
| 3             | Chock ring Antenna                     | 2          |
| 4             | Radome for antenna                     | 2          |
| 5             | Control center Software                | 2          |

### 3. Technical specification for Total Positioning System (TPS)/Scanning Total Station

| Sr. No. | Item       | Description  |
|---------|------------|--|
| 1       | Controller | <p><b>Display:</b> 7" or better</p> <p>Operating System: Windows 10 pro</p> <p>Processor speed: Intel Processor quad core, 64-bit operating system</p> <p>Internal memory: At least 8GB RAM 128 GB internal memory better and expandable up to 256 GB more through SDXC card.</p> <p>Keyboard &amp; Screen: 5-way directional, 4 Fn, Windows, Power, Volume physical keys, 7-inch, 1280 x 800 landscape, 16:10, 800 nits sunlight readable. LED backlit, Gorilla® Glass 3.0, 10-point capacitive multi touch with stylus, touch, and glove mode</p> <p>Environment protection for external Controller: Water proof with IP 68</p> <p>Input &amp; Output: 2xUSB 3.0 &amp; Bluetooth 4.1 &amp; Wi-Fi</p> <p>Built in Camera rear camera 8MP with 2 MP front camera or better resolution with LED flash and GNSS Integrated u-blox NEO-M8T, L1, GPS/GLONASS/BeiDou, SBAS</p> <p>Sensors 3-axis accelerometer, magnetic sensor, ambient light sensor, gyroscope</p> <p>Protection: Should be waterproof, shockproof, dustproof and drop resistance: Immersion, up to 1 m depth for 2 hours.</p> <p>Provision for SIM Card for GSM/GPRS RTK Worldwide LTE in regions where it is available, and compatible with 3G networks, MicroSIM card</p> <p>Batteries 2 x 3100 mAh (22.53 Wh) min. capacity/3150 mAh (22.90 Wh) nominal capacity; removable, hot swappable, charge LED indicator Charging time Full-charge 3.5 hours.</p> <p>Battery life Medium usage approx. 5 hours, can range 4-7 hours (depending on display settings, connectivity, data processing, ambient temperature, etc.)</p> <p>Fast-charge (80 %) 1 ¾ hours</p> <p>Power input 19 V/5 A charging Notification LED Charging and power status</p> |
|         |            | Drop 1.22 m (4 ft) on concrete MIL-STD-810G, Method 516.6, Procedure IV  |
|         |            | Altitude Operational at 9,144 m (30,000 ft), MIL-STD810G, Method 500.5, (Altitude) I (storage) & II (operating)  |
|         |            | Vibration Method 514.5 Procedure I Category 24   |
|         |            | Solar Exposure Survives prolonged solar exposure, MIL-STD-810G Method 505.5, Procedure II  |



|  |  |   |
|--|--|---|
|  |  | Humidity 95% RH Non-condensing MIL-STD-810G, Method 507.6, Procedure II |
|  |  | Operating Temperature: 0° C to + 60° C                                  |

**List of Deliverable (BOM)**

| <b>Sr. No</b> | <b>Description</b>   | <b>Qty</b> |
|---------------|--|------------|
| 1             | LASER 3D Scanner Unit with 7" tablet control unit          | 2          |
| 2             | Set of Traversing Prisms with Tripod, tribrach and adapter | 2          |
| 3             | Internal Rechargeable Battery                              | 2          |
| 4             | Battery Charger with Adaptor                               | 2          |
| 5             | Tripod - Heavy Duty Wooden                                 | 2          |
| 6             | 360 g Prism with Pole 2.5 m Telescopic                     | 2          |

#### 4. Technical Specifications for Autolock Total Stations

| Sr. No.  | Item   | Description  |
|----------|--|--|
| <b>1</b> | <b>Angle Measurement</b>                       |  |
|          | Accuracy                                       | 1"   |
|          | Least Count                                    | 0.1"   |
| <b>2</b> | <b>Telescope</b>                               |  |
|          | Magnification                                  | 30X  |
|          | Image  | Erect  |
|          | Minimum Focus                                  | 1.5 m  |
| <b>3</b> | <b>Distance Measurement Range</b>              |  |
|          | With Prism                                     | 5000 m or better   |
|          | Without Prism<br>Measurement on 90% reflective | >1000 m or better & 1500 m on white card 90% reflective  |
|          | DR Extended Range on white card                | 2200 m   |
|          | ATR (Auto Track Range)                         | 500 m or better  |
|          | Distance accuracy with Prism                   | 1 mm $\pm$ 2 ppm $\times$ D  |
|          | Distance accuracy without Prism                | 2 mm $\pm$ 2 ppm $\times$ D  |
|          | Distance Least count                           | 0.1 mm   |
|          | Rotating Speed                                 | 115 degree/sec   |
|          | Guide light                                    | Inbuilt (two LED)  |
| <b>4</b> | <b>Measuring Time on Prism</b>                 | 1.0 to 2.0 sec   |
| <b>5</b> | <b>Plummet</b>                                 |  |
|          | Plummet  | Inbuilt optical plummet  |
| <b>6</b> | <b>Key Board/ Display</b>                      |  |
|          | Keyboard                                       | Alphanumeric keyboard  |
|          | Display  | 3.5" Colored Touch Screen Display Minimum (640 x 480 pixel), Graphical, illumination & daylight readable or better |
| <b>7</b> | <b>Compensator</b>                             | Dual Axis or better  |
|          | Compensator range                              | $\pm$ 5.0' or better   |

|    |                                       |   |
|----|---------------------------------------|---|
| 8  | <b>On Board Feature</b>               | Surveying , Layout, Height measurement, missing distance measurement, Resection, Area Calculation, Sub Area division , reference Line, COGO, Projection Systems, National grids System , select Geoids, Grid to Ground , select Coordinate in order NEZ & ENZ , settings (units, precision, parameters, etc.) graphical display of Survey Data with Zoom in Zoom Out, Pan facility, line Joining , Import Background Image Shape file & DXF file , Auto Rotating, Target Tracking, Searching. |
| 9  | <b>Storage Memory</b>                 |   |
|    | Memory                                | 1 GB  |
|    | External Memory though pen drive only | 8 GB Pen drive or better.   |
| 10 | <b>Drives</b>                         |   |
|    | Operation                             | 3 Endless drives (1x Servo focus drive for object, 2 x Horizontal/ Vertical motion drive)   |
| 11 | <b>Operating Systems</b>              |   |
|    | Windows® Systems                      | Window CE 6.0 or better   |
| 12 | <b>Data Communication</b>             | Through Bluetooth, Memory pen drive & USB/mini USB or RS 232 Cable  |
| 13 | <b>Power Supply</b>                   |   |
|    | Operating Time                        | 6.5 hrs. (Li-ion)/- each  |
|    | External Power                        | 12V battery   |
| 14 | <b>Environmental Condition</b>        |   |
|    | Operating Temp                        | -20° C to + 50° C   |
|    | Dust and water protection             | IP65  |
|    | Humidity                              | 100% condensing   |
| 15 | <b>Down Loading Software</b>          | Should Be Capable of Downloading/Uploading though Pen drive or cable Direct Display of Survey Data in AutoCAD, DXF, CSV & TXT format etc.   |
| 16 | <b>Theft Protection (Optional)</b>    | Should have functionality to track & Locate machine in case of theft  |

**List of Deliverable (BOM)**

| Sr. No | Description            | Qty |
|--------|------------------------|-----|
| 1      | Data downloading cable | 15  |
| 2      | Battery Charger        | 15  |

|    |   |    |
|----|---|----|
| 3  | Rechargeable Battery Li-ion                   | 30 |
| 4  | 8GB pen drive                                 | 15 |
| 5  | Graduated range pole 2.15 m with bubble       | 15 |
| 6  | Prism assembly (target plate, Prism & holder) | 15 |
| 7  | 360° Prism                                    | 15 |
| 8  | Bipod   | 15 |
| 9  | Wooden Tripod                                 | 15 |
| 10 | User manual                                   | 15 |
| 11 | Tool Kit                                      | 15 |

## 5 Technical Specifications for Auto lock Total Station with camera and scanning capability

| Sr. No.  | Item   | Description  |
|----------|--|--|
| <b>1</b> | <b>Angle Measurement</b>                               |  |
|          | Accuracy   | 1"   |
|          | Least Count  | 0.1"   |
| <b>2</b> | <b>Telescope</b>                                       |  |
|          | Magnification  | 30X  |
|          | Image  | Erect  |
|          | Minimum Focus  | Less than 2 m  |
| <b>3</b> | <b>Distance Measurement Range</b>                      |  |
|          | With Prism   | 3500 m or better   |
|          | Without Prism<br>Measurement on 90% reflective Surface | >1200 m or Better  |
|          | ATR (Auto Track Range)                                 | 700 m or better  |
|          | Distance accuracy with Prism                           | 1 mm + 2 ppm×D   |
|          | Distance accuracy without Prism                        | 2 mm + 2 ppm×D   |
|          | Distance Least count                                   | 0.1 mm   |
|          | Rotating Speed   | 85 degree/sec  |
|          | Scan Mode  | 15 pts/s   |
| <b>4</b> | <b>Measuring Time</b>                                  | 1.0 sec  |
|          | <b>Camera</b>  |  |
|          | Type   | Color Digital Image  |
|          | Image Type   | JPEG   |
|          | Megapixel  | 3 MP   |
| <b>5</b> | <b>Plummet</b>   |  |
|          | Plummet  | Inbuilt optical plummet / Laser  |
| <b>6</b> | <b>Controller</b>                                      |  |
|          | Keyboard & Display                                     | Alphanumeric keyboard & Virtual Keyboard with 3.5" Full VGA Colored Touch Screen Display Minimum ((320 x 240 pixel), Graphical, illumination & daylight readable or Better |

|    |                                       |  |
|----|---------------------------------------|--|
| 7  | <b>Operating Systems</b>              |  |
|    | Windows® Systems                      | Embedded Compact / Window 6.5 or latest  |
| 8  | <b>Robotic Range</b>                  |  |
|    | Working Range                         | 300 m/ typically 5 s   |
| 9  | <b>Compensator</b>                    | Dual Axis or better  |
|    | Compensator range                     | ±5' or better  |
| 10 | <b>On Board Feature</b>               | Surveying , Layout, Height measurement, missing distance measurement, Resection, Area Calculation, Sub Area division, reference Line, COGO, Projection Systems, National grids System , select Geoids, Grid to Ground , select Coordinate in order NEZ & ENZ , settings (units, precision, parameters, etc.) graphical display of Survey Data with Zoom in Zoom Out, Pan facility, line Joining , Import Background Image & DWG. |
| 11 | <b>Storage Memory</b>                 |  |
|    | Memory                                | 1 GB or More   |
|    | External Memory though pen drive only | 8 GB Pen drive or better.  |
| 12 | <b>Drives</b>                         |  |
|    | Operation                             | 3 Endless drives (Object focusing, Horizontal &Vertical)   |
| 13 | <b>Data Communication</b>             | Through Bluetooth<br>Through Memory pen drive<br>Through USB or RS 232 Cable<br><b>all the above downloading feature should be a standard capability</b>   |
| 14 | <b>Power Supply</b>                   |  |
|    | Operating Time                        | 6.5 hrs (Li-ion)/- each  |
| 15 | <b>Environmental Condition</b>        |  |
|    | Operating Temp                        | -20° C to +50° C   |
|    | Dust and water protection             | IP65 or better   |
| 16 | <b>Downloading Software</b>           | Should Be Capable of Downloading/Uploading though Pen drive or USB cable Direct Display of Survey Data in AutoCAD, DXF, CSV & TXT format etc.  |

**List of Deliverable (BOM)**

| <b>Sr. No</b> | <b>Description</b>  | <b>Qty</b> |
|---------------|---|------------|
| 1             | Auto lock Total Station with camera and scanning capability | 2          |
| 2             | Data downloading cable                                      | 2          |
| 3             | Battery Charger   | 2          |
| 4             | Rechargeable Battery Li-ion                                 | 4          |
| 5             | 8GB pen drive   | 2          |
| 6             | Graduated range pole 2.15 m with bubble                     | 2          |
| 7             | prism assembly (target plate, Prism & holder)               | 2          |
| 8             | 360° Prism  | 2          |
| 9             | Bipod   | 2          |
| 10            | Wooden Tripod   | 2          |
| 11            | User manual   | 2          |
| 12            | Tool Kit  | 2          |

## 6. Technical specifications for Robotic Total stations

| Sr. No.  | Item   | Description  |
|----------|--|--|
| <b>1</b> | <b>Angle Measurement</b>                               |  |
|          | Accuracy   | 1"   |
|          | Least Count  | 0.1"   |
| <b>2</b> | <b>Telescope</b>                                       |  |
|          | Magnification  | 30X  |
|          | Image  | Erect  |
|          | Minimum Focus  | Less than 2 m  |
| <b>3</b> | <b>Distance Measurement Range</b>                      |  |
|          | With Prism   | 3500 m or better   |
|          | Without Prism<br>Measurement on 90% reflective Surface | >1200 m or Better  |
|          | ATR (Auto Track Range)                                 | 700 m or better  |
|          | Distance accuracy with Prism                           | 1 mm $\pm$ 2 ppm $\times$ D  |
|          | Distance accuracy without Prism                        | 2 mm $\pm$ 2 ppm $\times$ D  |
|          | Distance Least count                                   | 0.1 mm   |
|          | Rotating Speed   | 115 degree/sec   |
|          | Scan Mode  | 15 pts/s   |
| <b>4</b> | <b>Measuring Time</b>                                  | 1.0 sec  |
|          | <b>Camera</b>  |  |
|          | Type   | Color Digital Image  |
|          | Image Type   | JPEG   |
|          | Megapixel  | 3 MP   |
| <b>5</b> | <b>Plummet</b>   |  |
|          | Plummet  | In-built optical plummet / Laser   |
| <b>6</b> | <b>Robotic Controller</b>                              |  |
|          | Keyboard & Display                                     | Alphanumeric keyboard & Virtual Keyboard with 3.5" Full VGA Colored Touch Screen Display Minimum ((320 x 240 pixel), Graphical, illumination & daylight readable or Better |



|    |                                       |   |
|----|---------------------------------------|---|
| 7  | <b>Operating Systems</b>              |   |
|    | Windows® Systems                      | Embedded Compact / Window 6.5 or latest   |
| 8  | <b>Robotic Range</b>                  |   |
|    | Working Range                         | 300 m/ typically 5 s  |
| 9  | <b>Compensator</b>                    | Dual Axis or better   |
|    | Compensator range                     | ± 5' or better  |
| 10 | <b>On Board Feature</b>               | Surveying , Layout, Height measurement, missing distance measurement, Resection, Area Calculation, Sub Area division , reference Line, COGO, Projection Systems, National grids System , select Geoids, Grid to Ground , select Coordinate in order NEZ & ENZ , settings (units, precision, parameters, etc.) graphical display of Survey Data with Zoom in Zoom Out, Pan facility, line Joining , Import Background Image & DWG. |
| 11 | <b>Storage Memory</b>                 |   |
|    | Memory                                | 1 GB or More  |
|    | External Memory though pen drive only | 8 GB Pen drive or better.   |
| 12 | <b>Drives</b>                         |   |
|    | Operation                             | 3 Endless drives (Object focusing, Horizontal & Vertical)   |
| 13 | <b>Data Communication</b>             | Through Bluetooth<br>Through Memory pen drive<br>Through USB or RS 232 Cable<br><b>all the above downloading feature should be a standard capability</b>  |
| 14 | <b>Power Supply</b>                   |   |
|    | Operating Time                        | 6.5 hrs (Li-ion)/- each   |
| 15 | <b>Environmental Condition</b>        |   |
|    | Operating Temp                        | -20° C to +50° C  |
|    | Dust and water protection             | IP65 or better  |
| 16 | <b>Downloading Software</b>           | Should Be Capable of Downloading/Uploading though Pen drive or USB cable Direct Display of Survey Data in AutoCAD, DXF, CSV & TXT format etc.   |

**List of Deliverable (BOM)**

| <b>Sr. No</b> | <b>Description</b>                            | <b>Qty</b> |
|---------------|---|------------|
| 1             | Total Station                                 | 2          |
| 2             | Data downloading cable                        | 2          |
| 3             | Battery Charger                               | 2          |
| 4             | Rechargeable Battery Li-ion                   | 4          |
| 5             | 8GB pen drive                                 | 2          |
| 6             | Graduated range pole 2.15 m with bubble       | 2          |
| 7             | Prism assembly (target plate, Prism & holder) | 2          |
| 8             | 360° Prism                                    | 2          |
| 9             | Bipod   | 2          |
| 10            | Wooden Tripod                                 | 2          |
| 11            | User manual                                   | 2          |
| 12            | Tool Kit                                      | 2          |
| 13            | Robotic Kit                                   | 2          |

## 7. Technical Specifications for Digital Levels

| Sr. No. | Item   | Description   |
|---------|--|---|
| 1       | <b>Height Measurement Accuracy (per Km Double run)</b>                           |   |
|         | With Invar Staff   | Equal to or Better than 0.3 mm/km double run                    |
|         | With Standard Staff  | Equal to or Better than 1 mm                                    |
| 2       | <b>Resolution of Each Height Measurement Reading (With Invar Staff)</b>          | Equal to or Better than 0.1 mm                                  |
| 3       | <b>Electronic Measurement Range (Distance) (With Invar Staff)</b>                | Between 1.5 m to 100.0 m or better                              |
| 4       | <b>Visual Distance Measurement (With Invar Staff)</b>                            | From 1.3 m or better  |
|         | Accuracy   | Equal to or Better than 30 mm at 30 m                           |
|         | Resolution   | Equal to or Better than 1.0 mm                                  |
|         | Measurement Time   | Equal to or Better than 2 seconds                               |
| 5       | <b>Compensator</b>   |   |
|         | Setting Accuracy   | ± 0.5" or Better  |
|         | Tilt/Inclination Range   | ± 15' or Better   |
| 6       | <b>Sensitivity of Circular Level</b>   | 8' / 2 mm or Better   |
| 7       | <b>Telescope Magnification</b>   | Equal to or Better than 26x                                     |
| 8       | <b>Levelling Methods</b>   | BF, BFFB, BFBF, BBFF, FBBF, aBF, aBFFB, aBFBF, aBBFF, aFBBF     |
| 9       | <b>Internal Power Backup (Operating Time) (With Li-ion Rechargeable Battery)</b> | Equal to or Better than 10 hrs. (without external power backup) |
| 10      | <b>Environment</b>   |   |
|         | Operating Temperature  | Should able to work in -15° C to +50° C                         |
|         | Dust and Water Proofing  | Should confer to IP55 or better Standards                       |
|         | Humidity   | Should able to work at 95%, Non-condensing                      |
| 11      | <b>Data Transfer Interface</b>   | RS-232 C Port   |
| 12      | <b>Memory</b>  |   |
|         | Internal   | Equal to or Better than storing 24,000 measurements             |
|         | External   | 1 GB or higher USB backup                                       |

|           |                    |  |
|-----------|--------------------|--|
| <b>13</b> | <b>Invar Staff</b> | With two circular bubble and stave container |
|           | Length             | Minimum 3 m                                  |
| <b>14</b> | <b>Display</b>     | Graphical with minimum 240 x 160 pixels      |
| <b>15</b> | <b>Keyboard</b>    | Alpha-numeric                                |

**List of Deliverable (BOM)**

| <b>Sr. No.</b> | <b>Description</b>          | <b>Qty</b> |
|----------------|-----------------------------|------------|
| 1              | Digital Level               | 8          |
| 2              | Battery Charger             | 8          |
| 3              | Rechargeable Battery Li-ion | 16         |
| 4              | 4GB pen drive               | 8          |
| 5              | Data downloading cable      | 8          |
| 6              | Wooden Tripod for Dini      | 8          |
| 7              | User manual                 | 8          |
| 8              | Tool Kit                    | 8          |
| 9              | Invar staff 3m              | 4          |
| 10             | Telescopic staff 5 m        | 16         |
| 11             | Ground plate                | 16         |

## 8. Technical Specifications for Auto levels

| Sr. No. | Item                         | Description                                |
|---------|------------------------------|--|
| 1       | Telescope Length             | 190 mm                                     |
| 2       | Magnification                | 24X  |
| 3       | Objective Aperture           | 30 mm                                      |
| 4       | Resolving power              | 3.5"                                       |
| 5       | Field of View                | 1° 30'                                     |
| 6       | Minimum Focus                | 75 cm                                      |
| 7       | Image                        | Erect                                      |
| 8       | Reticle Pattern              | Cross Hair                                 |
| 9       | Stadia constant              | 0  |
| 10      | Stadia Ratio                 | 100  |
| 11      | Focusing Knob                | 1 speed                                    |
| 12      | Sighting aid                 | Gun Sight                                  |
| 13      | Accuracy without micrometer  | 2 mm per km double line leveling           |
| 14      | Compensator type             | Pendulum Compensator with Magnetic Damping |
| 15      | Setting accuracy             | 0.5"                                       |
| 16      | Working Range                | ± 16                                       |
| 17      | Circular level Sensitivity   | 10'/2 mm                                   |
| 18      | Mirror                       | Plane mirror                               |
| 19      | Horizontal Circle Diameter   | 110 mm                                     |
| 20      | Horizontal Circle Graduation | 1 deg/1 gon                                |
| 21      | Horizontal Motion Drive      | Clamp less, Endless, double-side knobs     |
| 22      | water resistance             | IPX6                                       |
| 23      | Operating Temperature        | -20° C to 50° C                            |

### List of Deliverable (BOM)

| Sr. No. | Description                    | Qty |
|---------|--------------------------------|-----|
| 1       | Auto Level                     | 20  |
| 2       | Aluminum Tripod                | 20  |
| 3       | Operating Manual and Plumb Bob | 20  |

## 9. Technical Specifications for Handheld Differential GPS

| Sr. No. | Item                           | Description   |
|---------|--------------------------------|---|
| 1       | Handheld GNSS Operating System | Android 8.0 or better   |
| 2       | communications                 | Wi-Fi, Bluetooth 4.0, USB3.0, NFC   |
| 3       | Rear camera                    | 13 MP camera autofocus with led flash or better   |
| 4       | Memory                         | 4 GB RAM, 64 GB Flash memory, card expansion slot up to 128 GB  |
| 5       | Text and Voice Capability      | Integrated 4GLTE cellular data, text and voice capability   |
| 6       | Battery                        | Rechargeable Li-Ion battery pack 8000 mAh or better   |
| 7       | Battery Life                   | 15 hrs. or better   |
| 8       | Charging Time                  | 4 hrs or Less   |
| 9       | Operating Temp                 | -20° C to 55° C   |
| 10      | Humidity                       | 95%   |
| 11      | Water and Dust Protection      | IP67  |
| 12      | Free Drop                      | 1.2 m   |
| 13      | Display                        | 6" or more with 1920x1080 pixel resolution or better  |
| 14      | sensors                        | Ambient Light sensor, digital compass, gyro meter, accelerometer, barometer   |
| 15      | Internal antenna channels      | 72 or better should track GPS L1C/A, GLONASS, Bei-Dou,  |
| 16      | External Antenna Connector     | Yes   |
| 17      | Real Time SBAS Accuracy        | <2 m  |
| 18      | Integrated Real Time           | SBAS(WASS/EGNOS/MSAS/GAGAN/QZSS)  |
| 19      | On Board Field Software        | On board, Field Software should capable to collect Point, Line, Area Features with Attributes and geotagged image. Should have capability to import Shape file as back ground image.<br>Google earth satellite image, street map, georeferenced raster image as background image.<br>Collected data can be exported in CSV, shp, kml.<br>Navigation should be possible by inputting the coordinates or by collected data. |

### List of Deliverable (BOM)

| Sr. No. | Description | Qty |
|---------|-------------|-----|
|---------|-------------|-----|

|   |                 |    |
|---|-----------------|----|
| 1 | Handheld Device | 15 |
| 2 | Hand Strap      | 15 |
| 3 | A/C Charger     | 15 |
| 4 | USB cable       | 15 |
| 5 | Lanyard         | 15 |

## 10. Technical Specifications for Data Processing Software (50 Educational Licenses)

|   |                     |   |
|---|---------------------|---|
| 1 | Processing Software | <p>Should be capable of Handle data from Laser Scanner, Total station, Photogrammetry, DGPS data, Digital level, UAV etc.</p> <p>Built in CAD Platform, Linework and CAD geometry</p> <p>Should be capable of Network Adjustment, DGPS baseline Processing</p> <p>Should be capable to Create CAD Points from Scan Points</p> <p>Should have CAD and COGO Tools, Automated Dimensioning</p> <p>Should be Automatic Scan Registration, Automatic Region Classification</p> <p>Should be capable 3D Data Visualization, data formatting, Sketchup Compatibility, Google Earth Tools, digital deliverable 3D PDF conversion of drawing.</p> <p>Should be Import Raster and Vector PDF Data, Georeferenced Vector,3d PDF also.</p> <p>Should be Elevate Contours Tools, Elevate Points, Lines, and Pads</p> <p>Capability to generate L-x section, Grid Plan, Digitize Pads, Line strings, and Contours</p> <p>Should be Create Rectified Image, Cutting Plan View.</p> <p>Should be Plane Definition Manager.</p> <p>Should be Create Orth photo Image</p> <p>Should be Smart Pick Feature Extraction Tools</p> <p>Should be Automatic Ground Extraction.</p> <p>Should be Intensity Based Filtering</p> <p>Sample Point Clouds.</p> <p>Should be Create Scan Station</p> <p>Should be Georeferenced Point Clouds</p> <p>Geo referencing Tools, Image blending option Panorama and Image Deliverables, should be capable to Project the Vertical Surfaces</p> <p>Report generation capability i.e.: Area &amp; volume Calculation, Base Line processing, Digital level run Report, Earth work calculations travers adjustment report customized report option</p> <p>Post processing of data received from GIS field source capabilities to import .shp format</p> |
|---|---------------------|---|



## HOW TO APPLY

Bidders should submit bids through online mode on CPPP. Any other mode is not accepted in any case. The documents as listed below (but not limited to) should be submitted in two respective sealed envelopes, clearly marked on the envelope its contents, as given below.

### Cover 1:

- a) A Demand Draft (DD) towards tender processing fees (non-refundable) of Rs. 1000/- plus Rs. 180/- GST (a Total of Rs. 1180/). This DD should be in favour of Registrar, IIT Kanpur.
- b) For EMD, a demand draft of Rs. 10 lakhs (refundable) in favour of Registrar, IIT Kanpur should be submitted.
- c) Covering letter as well as Authority letter as per Annexure 1
- d) Affidavit for registration of firm/company and an undertaking of not being blacklisted as per Annexure 2
- e) Organization structure as per Annexure 3
- f) Details of In-house services as per Annexure 4
- g) Brief Biodata of Key professionals as per Annexure 5
- h) The copies of valid registration/incorporation certificate of the firm(s) along with the copies of relevant documents.
- i) The *authorization certificate and propriety certificates* must be attached with the offer.
- j) The document establishing that the applicant has a work and qualifying experience of more than **five (5)** years in the related field as per Annexure 6.
- k) The applicant shall attach work performance certificates of the works completed as per the requirement of minimum qualification criteria. The details be submitted as per Annexure 7.
- l) Copy of the audited balance sheet for last three (3) financial years starting 2015 – 2016. The details be submitted as per Annexure 8.
- m) Technical specification compliance report per proposal (Annexure 9).
- n) Technical proposal as per the scope of the work.

**Cover-2:**

Financial bid: The financial bid shall be submitted as per BOQ:

**Date:**

**Signature**

**Place:**

**Seal**

**Note:**

1. The terms of payments:
    - a) 75% after the supply of equipment and SW (as per item 1 to 5).
    - b) 15% after the installation
    - c) 10% after integration
    - d) Cost of training will be released in a phase-wise manner only after providing satisfactory training and handing over all training material as specified in the tender document.
  2. No advance payment without bank guarantee of equal amount shall be admissible.
  3. Incorrect, incomplete, inadequate information may lead to rejection of the application. Canvassing in any form may lead to summarily rejection of application.
  4. IIT Kanpur reserves the right to reject any application without disclosing the reason.
  5. IIT Kanpur also will not provide any explanation to the applicants related to the short listing and selection process. The decision of IIT Kanpur in this respect shall be final and binding on all applicants.
  6. All disputes are subject to Kanpur jurisdiction only.
-

**TENDER ACCEPTANCE LETTER**  
**(To be given on Company Letter Head)**

Date: \_\_\_\_\_

To,

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No: \_\_\_\_\_

Name of Tender / Work: - \_\_\_\_\_

Dear Sir,

1. I / We have downloaded / obtained the tender document(s) for the above mentioned 'Tender/Work' from the web site(s) namely: \_\_\_\_\_ as per your advertisement, given in the above mentioned website(s).
2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from Page No. \_\_\_\_\_ to \_\_\_\_\_ (including all documents like annexure(s), schedule(s), etc.), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.
3. The corrigendum(s) issued from time to time by your department/ organization too have also been taken into consideration, while submitting this acceptance letter.
4. I / We hereby unconditionally accept the tender conditions of above-mentioned tender document(s) / corrigendum(s) in its totality / entirety.
5. I / We do hereby declare that our Firm has not been blacklisted/ debarred/ terminated/ banned by any Govt. Department/Public sector undertaking.
6. I / We certify that all information furnished by our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/ organisation shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

**Yours Faithfully,**

**(Signature of the Bidder, with Official Seal)**

**Annexures**

All Annexures from 1 to 9 are to be filled, signed and executed by all the applicants. No blank is to be left empty. In case the blank is not applicable, then that is to be mentioned as "NOT APPLICABLE".

**Annexure 1**

TO BE SWORN ON A NON-JUDICIAL STAMP PAPER OF RS.100/-

AFFADAVIT

\*I/we .....\*Director/Proprietor/Partner of .....(mention name of organization and its complete address) do hereby solemnly affirm and declare as under:-

1. That \*I/we ..... \*am/are registered as (mention name of \*firm/company) vide Registration No..... under the provisions of ..... (Mention the name of the Act).
2. That \*I/we ..... have applied in response to the Request for “**Supply, Installation and Integration of surveying equipment with associated data processing software to IIT Kanpur**”.

DEPONENT VERIFICATION

I/we ..... the above-named deponent do hereby verify that the contents of the aforesaid paragraphs 1 and 2 are true and correct to the best of \*my/our knowledge and belief and nothing is concealed therefrom.

Verified at .....(place) this ..... Day of ..... 2018

(Strike off whichever is not applicable)

DEPONENT

Note: Deponent will be the authorized signatory of the Applicant

**Annexure 2**

TO BE SWORN ON A NON-JUDICIAL STAMP PAPER OF RS.100/-

**AFFADAVIT**

\*I/we .....\*Director/Proprietor/Partner of .....(mention name of organization and its complete address) do hereby solemnly affirm and declare as under:-

1. That ..... (Mention name of organization) is eligible to submit the aforesaid proposal as neither the applicant has been barred and/or blacklisted by the Central Government and/or any State Government of India at any time prior to the date of submitting this affidavit.
2. That ..... (mention name of organization) or any of its constituents during the last three years has neither failed to perform on any agreement nor was expelled from any project or agreement nor any agreement terminated for any breach by the applicants or any of its constituents.
3. That an annexure attached to this affidavit gives list of all contracts of ..... (mention organization) or any of its constituents with the state / central government that are in arbitration.

**DEPONENT**

**VERIFICATION**

\*I/we ..... the above-named deponent do hereby verify that the contents of the aforesaid paragraphs 1 to 3 are true and correct to the best of \*my/our knowledge and belief and nothing is concealed therefrom.

Verified at ..... (place) this ..... Day of ..... 20.....

(Strike off whichever is not applicable)

**DEPONENT**

Note: Deponent will be the authorized signatory of the Applicant

## Pro forma: ORGANISATIONAL STRUCTURE

(This form to be furnished not only by the Prime Consulting firm applying for the prequalification, but also furnish separately for sub-consultants who would be associated with this project work)

|    |  |  |
|----|--|--|
| 1  | Name & Address of the applicant with Telephone No./Fax No./ Email ID   |  |
| 2  | a. Year of Establishment<br>b. Date & Year of commencement of practice.  |  |
| 3  | Legal status of the applicant (attach copies of original document defining the legal status)<br>A proprietary firm<br>A firm in partnership<br>A limited company or Corporation                                      |  |
| 4  | Names of Directors & other executives with designation   |  |
| 5  | Designation of individuals authorized to act for the organization  |  |
| 6  | Total No. of professional staff (In house):-   |  |
| 7  | Was the applicant ever required to suspend the project for a period of more than six months continuously after you commenced the planning? If so, give the name of the project and reasons of suspension of project. |  |
| 8  | Has the applicant, or any partner in case of partnership firm, ever abandoned the awarded project before its completion? If so, give name of the project and reasons for abandonment.                                |  |
| 9  | Has the applicant or any constituent partner in case of partnership firm, ever been debarred/black listed for competing in any organization at any time? If so, give details.  |  |
| 10 | Has the applicant or any constituent partner in case of partnership firm, ever been convicted by a court of law? If so, give details.  |  |
| 11 | In which field of work the applicant has specialization & interest   |  |
| 12 | Any other information considered necessary but not included above.   |  |
| 13 | Address of local office if any   |  |

**DETAILS OF IN-HOUSE SERVICES AVAILABLE FOR THE ASSIGNMENTS**

| S. No. | In-house Service                                  | Availability of Services | Nos. of In-house Staff with experience |                           |                                 |
|--------|---|--------------------------|--|---------------------------|---------------------------------|
|        |   |                          | Experience of 10 years & above         | Experience of 5 -10 years | Experience of less than 5 years |
| 1      | Training  | Yes/No                   |  |                           |                                 |
| 2      | Repair  | Yes/No                   |  |                           |                                 |
| 3      | Calibration                                       | Yes/No                   |  |                           |                                 |
| 4      | Temporary replacement for faulty equipment        | Yes/No                   |  |                           |                                 |
| 5      |   | Yes/No                   |  |                           |                                 |
| 6      |   | Yes/No                   |  |                           |                                 |
| 7      | Add other services as appropriate for this tender | Yes/No                   |  |                           |                                 |
| 8      |   | Yes/No                   |  |                           |                                 |
| 9      |   | Yes/No                   |  |                           |                                 |
| 10     |   | Yes/No                   |  |                           |                                 |
| 11     |   | Yes/No                   |  |                           |                                 |
| 12     |   | Yes/No                   |  |                           |                                 |

**If no in-house service is available, explain how it is proposed to be provided to IIT-Kanpur, if required**

Note:

Maximum two-page CV of each main member and key expert shall be furnished as per Annexure 7.



BRIEF BIO-DATA OF KEY PROFESSIONALS

(with emphasis on providing training, technical support, calibration, repairs)

(This form to be furnished not only by the principal member of the firm applying for the prequalification, but also furnish separately for sub-consultants who would be associated with this project work)

Name of Firm: \_\_\_\_\_

Professional: \_\_\_\_\_

Date of Birth: \_\_\_\_\_

Years with Firm: \_\_\_\_\_

Nationality: \_\_\_\_\_

Membership in Professional Societies: \_\_\_\_\_

Detailed Task Assigned: \_\_\_\_\_

Key Qualifications: [Give an outline of staff member's experience and training relevant to responsibility in context of assignment. Describe degree of responsibility held by staff member on relevant previous assignment and give dates and location. Use up to half a page.]

Education: [Summarize college/university and other specialized education of staff member, giving names of schools, dates attended, and degree(s) obtained. Use up to a quarter page.]

Employment Record: [Starting with present position, list in reverse order every employment held. List all positions held by staff member since graduation, giving dates, name(s) of employing organization(s), title of positions held and location of assignments. For experience in last ten years, also give type of activities performed and client references, where appropriate. Use up to three quarter of a page.]

Languages: [Indicate proficiency in speaking, reading and writing of English language: excellent, good, fair, or poor.]

Certification: I, the undersigned, certify that to the best of my knowledge and belief, these biodatas correctly describe my qualifications, my experience and myself.

**Annexure 6**

DETAILS OF QUALIFYING PROJECTS HANDLED/COMPLETED DURING THE LAST FIVE (5) YEARS.

| SIMILAR NATURE OF ASSIGNMENT - COMPLETED WORKS |  |           |            |            |
|--|--|-----------|------------|------------|
| S. No.   | Description  | Work No.1 | Work No. 2 | Work No. 3 |
| 1  | Name of work / Project and location  |           |            |            |
| 2  | Name & Address of Employer / Organization, Telephone no. of officer to whom reference may be made. |           |            |            |
| 3  | Cost of work in Rs. Lakhs (Attach copy of Work Order) and the Site Area                            |           |            |            |
| 4  | Date of commencement as per contract   |           |            |            |
| 5  | Stipulated date of completion  |           |            |            |
| 6  | Actual date of completion  |           |            |            |
| 7  | Litigation / arbitration pending / in progress with details *                                      |           |            |            |
| 8  | Service rendered<br>In-house teams   |           |            |            |
|  | Associated Consultants   |           |            |            |
| 9  | Names of Project In charge & Key staff & nos. of staff involved.                                   |           |            |            |
| 10   | Any other information  |           |            |            |

\* Indicate gross amount claimed and amount awarded by the Arbitrator.

The Applicant may provide in this annexure, details of maximum 3 projects, which in his/her opinion, best present his/her ability to participate in this tender (qualifying project referring to the project).

To qualify, one must have satisfactorily completed the following works (in the area of tender):

- (i) At least one work of 80% of the cost (approximately Rs. 5 Cr.) OR
- (ii) At least two works of 40% each of the cost (approximately Rs. 5 Cr.) OR
- (iii) At least three works of 30% each of the cost (approximately Rs. 5 Cr.)

## CLIENT WISE PERFORMANCE REPORT OF WORKS

|   |  |                                |
|---|--|--------------------------------|
| 1 | Name of work/Project & Location                              |                                |
| 2 | Agreement No.  |                                |
| 3 | Estimated Cost   |                                |
| 4 | Tendered Cost  |                                |
| 5 | Date of start  |                                |
| 6 | Date of completion   |                                |
|   | Stipulated date of completion                                |                                |
|   | Actual date of completion                                    |                                |
| 7 | Amount of compensation levied for delayed completion, if any |                                |
| 8 | Amount of reduced rate items, if any                         |                                |
| 9 | Performance Report   |                                |
|   | Quality of work  | Very Good/Good/Fair/Poor       |
|   | Financial soundness  | Very Good / Good / Fair / Poor |
|   | Technical Proficiency  | Very Good / Good / Fair / Poor |
|   | Resourcefulness  | Very Good / Good / Fair / Poor |
|   | General Approach & Behaviour                                 | Very Good / Good / Fair / Poor |

Dated:

Signature &amp; Seal of

Executive engineer or equivalent

AVERAGE ANNUAL FINANCIAL TURN OVER (GROSS) OF LAST THREE YEARS

Financial Analysis -

Details to be furnished duly supported by figures in balance sheet/profit and loss account for the last three years duly certified by the Chartered Accountant, as submitted by the applicant to the Income Tax Department (copies to be attached).

| Particulars  | Financial Year |              |              |
|--|----------------|--------------|--------------|
|  | Year 2016-17   | Year 2017-18 | Year 2018-19 |
| Gross Annual turnover on construction work. (In Lakhs) |                |              |              |
| Profit / Loss  |                |              |              |
| Certified by   |                |              |              |

Financial arrangements for carrying out the proposed work.

The following certificates are enclosed:

Current Income Tax Clearance Certificate / Profit & Loss account

Signature of Chartered Accountant with Seal

**SPECIFICATION COMPLIANCE REPORT**

| S. No. | Equipment/SW | Specification | Pamphlet no. | Part/Catalogue/page |
|--------|--------------|---------------|--------------|---------------------|
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |
|        |              |               |              |                     |

**Certified that the quoted equipment and SW satisfies all specifications as per tender document**

**Seal and Signature of the Bidder**