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DEHRADUN (UTTARAKHAND)- 248001

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OPEN TENDER ENQUIRY FOR
PROVISION OF SERVICES FOR ACQUISITION, PROCESSING AND DELIVERY
OF DTM USING AIRBORNE LIDAR AND OPTICAL SENSOR IN THE STATE OF
UTTARAKHAND

BID REFERENCE : 773/15-J-3 DTM(TEHRI GARHWAL)NMCG
Dated 15/04/2021

PERIOD OF SALE OF : FROM 16/04/2021, 10:00 hrs
BIDDING DOCUMENT : TO 05/05/2021, 11:00 hrs

LAST DATE AND TIME FOR : 05/05/2021, 11:00 hrs
RECEIPT OF BIDS

* TIME AND DATE OF OPENING : 06/05/2021, 11:30 hrs
OF BIDS – Technical Part

PLACE OF OPENING OF BIDS : Office of Director, G&RB,
17 EC Road, Survey Chowk,
Dehradun (U.K) -248001

OFFICER INVITING BIDS : Director, G&RB,
17 EC Road, Survey Chowk,
Dehradun (U.K) -248001

*Time and date of opening of Financial part of bid will be intimated after Technical acceptance of bid

OPEN TENDER ENQUIRY FOR
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OF DTM USING AIRBORNE LIDAR AND OPTICAL SENSOR IN THE STATE OF
UTTARAKHAND

(Two-Envelope Bidding Process with e-Procurement)

NOTICE INVITING TENDER (NIT)

Date : 15/04/2021

OTE No. : 773/15-J-3DTM(TEHRIGARHWAL) NMCG
Dated 15/04/2021

1. The Government of India has received financing from the Govt. of Uttarakhand towards the cost of **Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand.**
2. Director, G&RB, Survey of India, Dehradun invites sealed bids from eligible bidders for supply of following goods and services listed below:

Item No.	Description of Services	Area (in Sq. Km)	Lot	Bid Security In Rs.
1.	Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand	3254	Lot1	400000/-
		657	Lot2	100000/-

Area figures provided above and shape file uploaded with tender document is indicative. Final area shape file will be provided to the contractor at the time of award.

3. Bidding will be conducted through the OPEN TENDER ENQUIRY(OTE) procedures as per GFR-2017. The bidding is open to all eligible bidders as defined in bid document.

4. Interested eligible Bidders may obtain further information from the Office of Director, Uttarakhand G&RB 17-EC Road, Survey chowk, Dehradun (U.K) at the address given above during office hours from 10:00 AM to 5:00 PM on any working day.
5. The bid document is available online and bids are to be submitted online through the e-procurement portal <https://eprocure.gov.in/eprocure/apponly>. Bids submitted in any other manner will not be accepted. Bidders are required to obtain Digital signature from designated firms (available on e-proc. Portal and then register with the Government of India e-procurement platform and submit bids by using their user ID and Digital Signature.)
 - (a) Date of Pre Bid Meeting : 27/04/2021, 11:00 hrs
 - (b) Last date and time for receipt of bids : 05/05/2021, 11:00 hrs
 - (c) Time and date of opening of bids- Technical : 06/05/2021, 11:30 hrs
 - (d) Place of opening of bids : Director, G&RB 17-EC Road,
Survey Chowk, Dehradun (U.K) 248001
Tele: 0135-2656759
Fax: 01352654528
Email – grb.soi@gov.in
 - (e) Address for communication : Director, G&RB 17-EC Road,
Survey Chowk, Dehradun (U.K) 248001
Tele: 0135-2656759
Fax: 01352654528
Email – grb.soi@gov.in
6. For submission of the bids, the bidder is required to have Digital Signature Certificate (DSC) from one of the authorized Certifying Authorities, authorised by Government of India for issuing DSC. Aspiring bidders who have not obtained the user ID and password for participating in e-procurement in this Project, may obtain the same from the website: <https://eprocure.gov.in/eprocure/app>.
7. Bid security of the amount specified in the bidding document, drawn in favour of **Establishment and Account Officer, G&RB Survey of India Dehradun** must be submitted as per the procedure described in paragraph 9 below. The Bid security will have to be in any one of the forms as specified in the bidding document and shall have to be valid for 45 days beyond the validity of the bid. Bids must be submitted online on <https://eprocure.gov.in/eprocure/app> (website) on or before the date and time for receipt of bids, and the ‘Technical Part’ of bids will be opened online on the specified time and date for opening of bids, as given above. The “Financial Part” shall remain unopened in the e-procurement system until the second public Bid opening for the

financial part. Any bid or modifications to bid (including discount) received outside e-procurement system will not be considered. If the office happens to be closed on the date of opening of the bids as specified, the bids will be opened on the next working day at the same time. The electronic bidding system would not allow any late submission of bids.

8. The bidders are required to submit (a) original bid security in approved form; and (b) original affidavit regarding correctness of information furnished with bid document with Director, Geodetic & Research Branch 17-EC Road Survey Chowk, Dehradun (U.K) -248001 INDIA before the opening of the Technical part of the bid given above, either by registered post/speed post/courier or by hand, failing which the bids will be declared non-responsive and will not be opened.
9. A pre-bid meeting will be held: yes
 - A pre-bid meeting will be held on 27/04/2021 at 11:00 hours at conference room of G&RB, 17 EC Road, Survey of India, Dehradun to clarify the issues and to answer queries on any matter that may be raised at that stage. Prospective Bidders, if cannot attend pre-bid meeting, may ask clarification on the Bidding Documents through CPP portal on or before 27/04/2021 10.00 hrs.
 - Clarifications requested through any other mode or after said due date shall not be considered by the Purchaser.
 - Description of clarification sought and the response of the Purchaser shall be uploaded for information of all Bidders without identifying the source of request for clarification. Bidders are also advised to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document.
10. Other details can be seen in the bidding document. The Purchaser shall not be held liable for any delays due to system failure beyond its control. Even though the system will attempt to notify the bidders of any bid updates, the Purchaser shall not be liable for any information not received by the bidder. It is the bidders' responsibility to verify the website for the latest information related to this bid.

Seal of Office&Address : Director, G&RB 17-EC Road,
Survey Chowk, Dehradun (U.K) 248001
Tele: 0135-2656759
Fax: 0135-2654528
Email – grb.soi@gov.in

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PART 1 –REQUEST FOR BIDS

SECTION I –INSTRUCTIONS TO BIDDERS [ITB]

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Section I. Instructions to Bidders

A. General	
1. Scope of Bid	<p>1.1 The Purchaser indicated in the Amendment to Instruction to Bidder (AITB), issues these Bidding Documents for the supply of Goods and Related Services incidental thereto as specified in Section V, Schedule of Requirements. The name, identification and number of lots (contracts) of this OPEN TENDER ENQUIRY (OTE) procurement are specified in the AITB.</p> <p>1.2 Throughout these Bidding Documents: the term “in writing” means communicated in written form (e.g. by mail, e-mail, fax, telex, including if specified in the AITB, distributed or received through the electronic-procurement system used by the Purchaser) with proof of receipt;</p> <p>if the context so requires, “singular” means “plural” and vice versa; and</p> <p>“day” means calendar day.</p>
2. Source of Funds	<p>2.1 The Employer, as defined in the BDS, intends to apply part of the funds received from National Mission for Clean Ganga (NMCG) towards the cost of the Project, as defined in the BDS, to cover eligible payments under the Contract for the Services to be performed as per MoU signed between Survey of India (SoI) and NMCG.</p>
3. Corrupt & Fraudulent Practices	<p>3.1 It is the Government of India’s (GoI) policy to require that the highest standards of ethics are observed during the procurement and execution of contracts. In pursuance of this policy, the officials of Procuring Entities and the bidders / suppliers/ contractors/ sub-contractors/consultants/ service-providers involved in procurement process must abide by the Code of Integrity for Public Procurement (CIPP).</p> <p>3.2 Code of Integrity for Public Procurement: Procuring authorities as well as bidders, suppliers, contractors and consultants/service providers should observe the highest standard of ethics and should not indulge in the following prohibited practices, either directly or indirectly, at any stage during the procurement process or during execution of resultant contracts:</p> <p>i) “Corrupt practice”: making offers, solicitation or acceptance of bribe, rewards or gifts or any material benefit, in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process or contract execution;</p> <p>ii) “Fraudulent practice”: any omission or misrepresentation that</p>

may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. This includes making false declaration or providing false information for participation in a tender process or to secure a contract or in execution of the contract;

iii) “Anti-competitive practice”: any collusion, bid rigging or anti-competitive arrangement, or any other practice coming under the purview of The Competition Act,2002, between two or more bidders, with or without the knowledge of the Procuring Entity, that may impair the transparency, fairness and the progress of the procurement process or to establish bid prices at artificial, non-competitive levels;

iv) “Coercive practice”: harming or threatening to harm, persons or their property to influence their participation in the procurement process or affect the execution of a contract;

v) “Conflict of interest”: participation by a bidding firm or any of its affiliates that are either involved in the consultancy contract to which this procurement is linked; or if they are part of more than one bid in the procurement; or if the bidding firm or their personnel have relationships or financial or business transactions with any official of Procuring Entity who are directly or indirectly related to tender or execution process of contract; or improper use of information obtained by the (prospective) bidder from the Procuring Entity with an intent to gain unfair advantage in the procurement process or for personal gain; and

vi) “Obstructive practice”: materially impede the Procuring Entity’s investigation into allegations of one or more of the above mentioned prohibited practices either by deliberately destroying, falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/or by threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding the Procuring Entity’s rights of audit or access to information;

3.3 The bidders shall submit, as part of Bidding Document, a signed declaration to the effect that they shall abide by the Code of Integrity for Public Procurement in Letter of Bid-Technical Part at Section IV(Bidding Forms).

3.4 Without prejudice to and in addition to the rights of the Purchaser to other penal provisions as per the bid documents or contract, if the Purchaser comes to a conclusion that a (prospective) bidder (including members of Joint Venture/ Sub-Contractor)/contractor/supplier/consultant/service-provider, directly or through an agent, has violated this Code of Integrity in competing for the contract or in executing a contract, the Purchaser may take appropriate measures including one or more of the following:

i) If his bids are under consideration in any procurement,

	<p>a) forfeiture or encashment of bid security; b) calling off of any pre-contract negotiations; and c) rejection and exclusion of the bidder from the procurement process.</p> <p>ii) <u>If a contract has already been awarded,</u> a) cancellation of the relevant contract and recovery of compensation for loss incurred by the Purchaser; b) forfeiture or encashment of any other security or bond relating to the procurement; c) recovery of payments made by the Procuring Entity along with interest thereon at the prevailing rate;</p> <p>iii) <u>Provisions in addition to above,</u> a) removal from the list of registered suppliers and banning/debarment of the bidder from participation in future procurements of the Procuring Entity for a period not less than one year; b) in case of anti-competitive practices, information for further processing may be filed by the Purchaser, with the Competition Commission of India; c) initiation of suitable disciplinary or criminal proceedings against any individual or staff found responsible.</p>
	<p>3.5 Furthermore, Bidders shall be aware of the provision stated in Clause 3 of the General Conditions of Contract.</p>
<p>4. Eligible Bidders</p>	<p>4.1 All bidders shall provide in Section IV, Bidding Forms, a statement that the Bidder (including all members of a joint venture and subcontractors) is not associated, nor has been associated in the past, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide Consultant Services for the preparation or supervision of the procurement, and any of its affiliates, shall not be eligible to bid.</p> <p>4.2 Bidders shall not be under Ban/Blacklisting/Debarment for corrupt and fraudulent practices or for lack in performance by any Government/Semi-Government entity.</p> <p>4.3 A Bidder may be a firm that is a private entity, or combination of such entities in the form of a Joint Venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the</p>

	<p>members of the JV during the Bidding process and, in the event the JV is awarded the Contract, during contract execution. Unless specified in the AITB, there is no limit on the number of members in a JV.</p> <p>4.4 Compliance of Restrictions under Rule 144 (xi) of GFR 2017: Restrictions on procurement from a bidder of a country which shares a land border with India</p> <p>Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority, as specified in Rule 144 (xi) of GFR 2017.</p> <p>"Bidder" (Seller / Service Provider) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.</p> <p>"Bidder from a country which shares a land border with India" for the purpose of this Order means: -</p> <ul style="list-style-type: none">An entity incorporated, established, or registered in such a country;orA subsidiary of an entity incorporated, established, or registered in such a country; orAn entity substantially controlled through entities incorporated, established, or registered in such a country; orAn entity whose beneficial owner is situated in such a country; orAn Indian (or other) agent of such an entity; or <p>A natural person who is a citizen of such a country; or</p> <p>A consortium or joint venture where any member of the consortium or joint venture falls under any of the above</p> <p>The beneficial owner for the purpose of (iii) above will be as under: In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.</p> <p>Explanation—</p> <p>"Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company;</p> <p>"Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue</p>
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	<p>of their shareholding or management rights or shareholders agreements or voting agreements;</p> <p>In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;</p> <p>In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;</p> <p>Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;</p> <p>In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.</p> <p>An Agent is a person employed to do any act for another, or to represent another in dealings with third person.</p> <p>The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.</p> <p>4.5 Any false declaration and non-compliance of the above would be a ground for immediate termination of the contract and further legal action in accordance with the laws.</p>
<p>5. One Bid Per Bidder</p>	<p>5.1 Each Bidder shall submit only one Bid, either individually or as a partner in a joint venture (If allowed in ITB 17). A Bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.</p>
	<p>B. Contents of Bidding Document</p>
<p>6. Sections of Bidding Documents</p>	<p>6.1 The Bidding Documents consist of Parts 1, 2, and 3, which include all the Sections indicated below, and should be read in conjunction with any Addendum issued in accordance with ITB</p>

	<p>Clause 8.</p> <p>PART 1 Bidding Procedures Section I. Instructions to Bidders (ITB) Section II. Amendment to Instruction to Bidder(AITB) Section III. Evaluation and Qualification Criteria Section IV. Bidding Forms</p> <p>PART 2 Supply Requirements Section V. Schedule of Requirements</p> <p>PART 3 Contract Section VI. General Conditions of Contract (GCC) Section VII. Special Conditions of Contract (SCC) Section VIII. Contract Forms</p> <p>6.2 The NOTICE INVITING BIDS issued by the Purchaser is not part of the Bidding Document.</p> <p>6.3 Unless obtained directly from the Purchaser, the Purchaser is not responsible for the completeness of the document, responses to requests for clarification, minutes of pre-bid meeting (if any),or Addenda to the Bidding Document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Purchaser shall prevail.</p> <p>6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its Bid all information or documentation as is required by the Bidding Documents.</p>
<p>7. Clarification of Bidding Documents</p>	<p>7.1 The electronic bidding system specified in the AITB provides for online clarifications.A prospective Bidder requiring any clarification on the Bidding Documents may notify the Purchaser through CPP portal. Clarifications requested through any other mode shall not be considered by the Purchaser. The Purchaser will respond to any request for clarification, provided that such request is received no later than fifteen (15) days prior to the deadline for submission of bids. Description of clarification sought and the response ofthe Purchaser shall be uploaded for information of all Bidders without identifying the source of request for clarification. Should the Purchaser deem it necessary to amend the Bidding Documents as a result of a clarification, it shall do so following the procedure under ITB Clause 8 and ITB Sub-Clause 22.2. It is the bidder’s responsibility to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document.</p>
<p>8. Amendment of Bidding Documents</p>	<p>8.1 At any time prior to the deadline for submission of bids, the Purchaser may amend the Bidding Documents by issuing addendum.The addendum will appear on the e-procurement system under “Latest Corrigendum” and email notification is</p>

	<p>also automatically sent to those bidders who have started working on the tender, or as otherwise specified in AITB.</p> <p>8.2 Any addendum thus issued shall be part of the Bidding Documents and shall be deemed to have been communicated to all the bidders.</p> <p>8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Purchaser may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB Sub-Clause 22.2</p>
	C. Preparation of Bids
9. Cost of Bidding	<p>9.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Purchaser shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.</p> <p>The Bidder, at the Bidder's own responsibility and risk, is encouraged to visit and examine the Site of required Services and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the Services. The costs of visiting the Site shall be at the Bidder's own expense.</p>
10. Language of Bid	<p>10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in Hindi or English language. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages into Hindi or English language, in which case, for purposes of interpretation of the Bid, such translation shall govern.</p>
11. Documents Comprising the Bid	<p>11.1 The Bid shall comprise two Parts, namely the Technical Part and the Financial Part. These two Parts shall be submitted simultaneously.</p> <p>11.2 The Technical Part shall contain the following:</p> <ul style="list-style-type: none"> (a) Letter of Bid – Technical Part, in accordance with ITB Clause 12; (b) Bid Security, in accordance with ITB Clause 19.1, if required; (c) Alternative bids– Technical Part, if permissible, in accordance with ITB 13, the Technical Part of any Alternative Bid; (d) Written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB Clause 20.2;

	<p>(e) Documentary evidence in accordance with ITB Clause 17 establishing the Bidder’s qualifications to perform the contract if its bid is accepted;</p> <p>(f) Documentary evidence in accordance with ITB 17 establishing the Bidder’s eligibility to bid;</p> <p>(g) Documentary evidence in accordance with ITB Clauses 16, that the Services conform to the Bidding Documents; and</p> <p>(h) Bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all members and submitted with the Bid, together with a copy of the proposed Agreement.</p> <p>(i) Any other document required in the AITB.</p> <p>11.3 The Financial Part shall contain the following:</p> <p>(a) Letter of Bid – Financial Part: prepared in accordance with ITB 12 and ITB 14;</p> <p>(b) Price Schedules: completed prepared in accordance with ITB 12 and ITB 14;</p> <p>(c) Alternative Bid - Financial Part; if permissible in accordance with ITB 13, the Financial Part of any Alternative Bid; and</p> <p>(d) Any other document required in the AITB.</p> <p>11.4 The Technical Part shall not include any financial information related to the Bid price. Where material financial information related to the Bid price is contained in the Technical Part, the Bid shall be declared non-responsive.</p> <p>11.5 The Bidder shall furnish in the Letter of Bid, information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.</p>
<p>12. Process of Bid Submission</p>	<p>12.1 The Letter of Bid – technical Part, Letter of Bid – Financial Part and Price Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.2. All blank spaces shall be filled in with the information requested.</p> <p>12.2 Entire Bid including the Letter of Bid and filled-up Price Schedules shall be submitted online on e-procurement system specified in ITB 7.1. Details and process of online submission of the tender and relevant documents are given</p>

	<p>in the website mentioned above. Scanned copies of documents listed in clauses 11 and 12.3 should also be uploaded on this website.</p> <p>12.3 Submission of Original Documents: The bidders are required to separately submit (i) written confirmation authorizing the signatory of the Bid to commit the Bidder as per ITB Clause 11.2(d); (ii) original bid security in approved form; and (iii) original affidavit regarding correctness of information furnished with bid document, with the office specified in the AITB, before the opening of the technical part of the Bid, either by registered/speed post/courier or by hand, failing which the bids will be declared non-responsive and will not be opened. Hard copy of rest of the bid is not to be submitted.</p>
<p>13. Alternative Bids</p>	<p>13.1 Unless otherwise specified in the AITB, alternative bids shall not be considered.</p>
<p>14. Bid Prices and Discounts</p>	<p>14.1 The prices and discounts quoted by the Bidder in the Letter of Bid – Financial Part and in the Price Schedules shall conform to the requirements specified below:</p> <p>14.2 All lots (contracts) and items must be listed and priced separately in the Price Schedules.</p> <p>14.3 The price to be quoted in the Letter of Bid – Financial Part, in accordance with ITB 12.1, shall be the total price of the bid, excluding any discounts offered.</p> <p>14.4 The Bidder shall quote any discounts and indicate the methodology for their application in the Letter of Bid – Financial Part in accordance with ITB 12.1.</p> <p>14.5 Prices quoted by the Bidder shall be fixed during the Bidder’s performance of the Contract and not subject to variation on any account, unless otherwise specified in the AITB. A bid submitted with an adjustable price quotation shall be treated as nonresponsive and shall be rejected, pursuant to ITB 31. However, if in accordance with the AITB, prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract, a bid submitted with a fixed price quotation shall not be rejected, but the price adjustment shall be treated as zero.</p> <p>14.6 If so specified in ITB 1.1, bids are being invited for individual lots (contracts) or for any combination of lots (packages). Unless otherwise specified in the AITB, prices quoted shall correspond to 100 % of the items specified for each lot and to 100% of the quantities specified for each item of a lot. Bidders wishing to offer</p>

	<p>discounts for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4 provided the bids for all lots (contracts) are submitted and opened at the same time.</p> <p>14.7 The Bidder, at the Bidder’s own responsibility and risk, is encouraged to visit and examine the locations of required Services and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the Services. The costs of visiting the locations of required Services and its surroundings shall be at the Bidder’s own expense.</p> <p>14.8 Prices shall be quoted in excel sheet available with Bid document on CPP portal as specified in the Price Schedule included in Section IV, Bidding Forms. Prices shall be entered in the following manner:</p> <p style="padding-left: 40px;">(i) Bidder shall fill in rates and prices for all items of the Services described in the Specifications, and listed in the Activity Schedule in Section V, Schedule of Requirements. Items for which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Activity Schedule</p> <p style="padding-left: 40px;">(ii) All duties, taxes, and other levies payable by the Service Provider under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of Bids, shall be included in the total Bid price submitted by the Bidder.</p> <p>14.9 Deemed Exemption Benefits Bidders may like to ascertain availability of tax/duty exemption benefits, if any. They are solely responsible for obtaining such benefits, which they have considered in their bid and in case of failure to receive such benefits for reasons whatsoever, the Purchaser will not compensate the bidder. Where the bidder has quoted taking into account such benefits, it must give all information required for issue of necessary Certificates in terms of the Government of India’s relevant Notification along with its bid as proforma stipulated in Section IV Bidding Forms. If the Bidder has considered the Deemed Export Benefits in its bid, the Bidder shall confirm and certify that the Purchaser will not be required to undertake any responsibilities of the deemed export scheme or the benefits available during contract execution except issuing the</p>
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	required certificates. Bids which do not conform to this provision or any condition by the Bidder which makes the bid subject to availability of deemed export benefits or compensation on withdrawal of or any variations in the deemed export benefits scheme will make the bid non responsive and hence liable to rejection.
15. Currencies of Bid & Payment	15.1 The Bidder shall quote the Price in Indian Rupees only.
16. Documents Establishing the Eligibility and conformity of the Services	16.1 To establish the conformity of the Non-Consulting Services to the bidding document, the Bidder shall furnish as part of its Bid the documentary evidence that Services provided conform to the technical specifications and standards specified in Section V, Schedule of Requirements.
	16.2 Standards for provision of the Non-Consulting Services are intended to be descriptive only and not restrictive. The Bidder may offer other standards of quality provided that it demonstrates, to the Employer's satisfaction, that the substitutions ensure substantial equivalence or are superior to those specified in the Section V, Schedule of Requirements.
17. Documents Establishing the Eligibility & Qualifications of the Bidder	17.1 To establish Bidder's eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid – Technical Part, included in Section IV, Bidding Forms.
	17.2 The documentary evidence of the Bidder's qualifications to perform the contract if its bid is accepted shall establish to the Purchaser's satisfaction: that the Bidder meets each of the qualification criteria specified in Section III, Evaluation and Qualification;
	17.3 All Bidder shall provide in Section IV, Bidding Forms, a preliminary description of the proposed methodology work plan and schedule
18. Period of Validity of Bids	18.1 Bids shall remain valid for the period specified in the AITB after the bid submission deadline date prescribed by the Purchaser in accordance with ITB 22.1. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.
	18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Purchaser may request bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB Clause 19, it shall also be extended for a corresponding period. A Bidder may refuse the request without forfeiting its Bid Security. A

	Bidder granting the request shall not be required or permitted to modify its bid, except as provided in ITB Sub-Clause
19. Bid Security	<p>19.1 The Bidder shall furnish as part of the Technical Part of its bid, a Bid Security, if required, as specified in the AITB.</p> <p>19.2 Not used.</p> <p>19.3 The Bid Security shall be in the amount specified in the AITB and denominated in Indian Rupees or a freely convertible currency, and shall:</p> <ul style="list-style-type: none"> (a) at the bidder's option, be in the form of either a certified check, letter of credit, or a bank guarantee from a Nationalized /Scheduled Bank in India, or another security specified in the AITB; (b) be substantially in accordance with one of the forms of Bid Security included in Section IV, Bidding Forms, or other form approved by the Purchaser prior to bid submission; (c) be payable promptly upon written demand by the Purchaser in case the conditions listed in ITB Clause 19.7 are invoked; (d) be submitted in its original form; copies will not be accepted; (e) Remain valid for a period of 45 days beyond the original validity period of the bids, or beyond any period of extension of bid validity, if so requested under ITB Clause 18.2. <p>19.4 If a Bid Security is required in accordance with ITB Sub-Clause 19.1, any bid not accompanied by a substantially responsive Bid Security shall be rejected by the Purchaser as non-responsive.</p> <p>19.5 The Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the contract and furnishing the Performance Security pursuant to ITB Clause 44.</p> <p>19.6 The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the contract and furnished the required performance security.</p> <p>19.7 The Bid Security may be forfeited:</p> <ul style="list-style-type: none"> (a) if a Bidder <ul style="list-style-type: none"> (iii) withdraws its bid during the period of bid validity specified by the Bidder in the Letter of Bid (Technical Part and/or Financial Part), except as provided in ITB Sub-Clause 18.2; OR (iv) does not accept the correction of errors in pursuant to ITB 35, OR (b) if the successful Bidder fails to:

	<ul style="list-style-type: none"> (i) sign the Contract in accordance with ITB Clause 43; or (ii) Furnish a Performance Security in accordance with ITB Clause 44. <p>19.8 The start-ups and MSEs are exempted from payment of Earnest Money Deposit (EMD) & tender fees. However, start-ups and MSEs participating in the tender must submit valid & authorized copy of certificate of registration with relevant authorities and nature of services and goods/items manufactured mentioned in MSE's certificate matches with the nature of the services and goods /items to be supplied as per Tender. Traders/ resellers/ distributors/ authorized agents will not be considered for availing benefits under PP Policy 2012 for MSEs as per MSE guidelines issued by MoMSME.</p> <p>19.9 If a bid security is not required in the AITB, and</p> <ul style="list-style-type: none"> (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid Form, except as provided in ITB 18.2, or does not accept the correction of errors pursuant to ITB 35; or (b) if the successful Bidder fails to sign the Contract in accordance with ITB 43; or furnish a performance security in accordance with ITB 44; (c) if the Purchaser comes to a conclusion that a (prospective) bidder (including members of Joint Venture/Sub-Contractor)/contractor/supplier/consultant/ service provider, directly or through an agent, has violated this Code of Integrity in completing the contract. <p>The Employer may, if provided for in the AITB, declare the Bidder ineligible to be awarded a contract and will be suspended for the period of time as stated in AITB in from being eligible to submit Bids/Proposals for contract with the Procuring Entity.</p>
<p>20 Format and Signing of Bid</p>	<p>20.1 The Bidder shall prepare the Bid as per details given in ITB</p> <p>20.2 The bid shall be signed by a person duly authorized to sign on behalf of the Bidder. The authorization shall consist of a written confirmation as specified in the AITB and shall be uploaded along with the bid.</p> <p>20.3 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced</p>

	<p>by a power of attorney signed by their legally authorized representatives.</p> <p>20.4 Corrections if any in the bid can be carried out by editing the information before electronic submission on e-procurement portal.</p>
	D. Online Submission of Bids
21 Preparation of Bids	<p>21.1 Bids, both Technical and Financial Parts, shall be submitted online on the e-procurement system specified in AITB 7.1. Detailed guidelines for viewing bids and submission of online bids are given on the website. The NOTICE INVITING BIDS under this Project is published on this website. Any citizen or prospective bidder can logon to this website and view the NOTICE INVITING BIDS and can view the details of goods for which bids are invited. A prospective bidder can submit its bid online; however, the bidder is required to have enrolment/registration in the website, and should have valid Digital Signature Certificate (DSC) obtained from any authorised certifying agency of Government of India (for class of DSC specified in AITB). The bidder should register in the website using the relevant option available. Then the Digital Signature registration has to be done with the e-token, after logging into the website. The bidder can then login the website through the secured login by entering the password of the e-token & the user id/ password chosen during registration. After getting the bid schedules, the Bidder should go through them carefully and submit the specified documents, along with the bid; otherwise the bid will be rejected.</p> <p>21.2 The completed bid comprising of documents indicated in ITB 11, should be uploaded on the e-procurement portal along with scanned copies of requisite certificates as are mentioned in different sections in the bidding document and scanned copy of the bid security.</p> <p>21.3 All the documents are required to be signed digitally by the bidder. After electronic on line bid submission, the system generates a unique bid identification number which is time stamped as per server time. This shall be treated as acknowledgement of bid submission.</p> <p>21.4 Physical, Email, Telex, Cable or Facsimile bids will be rejected as non-responsive.</p>
22 Deadline for Submission of Bids	<p>22.1 Bids must be uploaded online no later than the date and time specified in the AITB.</p> <p>22.2 The Purchaser may, at its discretion, extend the deadline for</p>

	<p>the submission of bids by amending the Bidding Documents in accordance with ITB Clause 8, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.</p>
23 Late Bids	<p>23.1 The electronic bidding system would not allow any late submission of bids after due date & time as per server time.</p>
24 Withdrawal, Substitution, and Modification of Bids	<p>24.1 Bidders may modify their bids by using appropriate option for bid modification on the e-procurement portal, before the deadline for submission of bids. For this the bidder need not make any additional payment towards the cost of bid document. For bid modification and consequential re-submission, the bidder is not required to withdraw his bid submitted earlier. The last modified bid submitted by the bidder within the bid submission time shall be considered as the bid. For this purpose, modification/withdrawal by other means will not be accepted. In online system of bid submission, the modification and consequential re-submission of bids is allowed any number of times. A bidder may withdraw his bid by using appropriate option for bid withdrawal, before the deadline for submission of bids, however, if the bid is withdrawn, re-submission of the bid is not allowed (or allowed if specified in AITB).</p> <p>24.2 Bids requested to be withdrawn in accordance with ITB Sub-Clause 24.1 shall not be opened.</p> <p>24.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid (Technical Part and/or Financial Part) or any extension thereof.</p>
25 Public Opening of Technical Parts of Bids	<p>25.1 The Purchaser shall publicly open Technical Parts of all bids received by the deadline, at the date, time and place specified in the AITB, in the presence of Bidder's designated representatives and anyone who chooses to attend, and this could also be viewed by the bidders online. The Financial Parts of the bids shall remain unopened in the e-procurement system, until the subsequent public opening, following the evaluation of the Technical Parts of the Bids. In all cases, original documents submitted as specified in ITB 12.3 shall be first scrutinized, and Bids that do not comply with the provisions of ITB 12.3 will be declared non-responsive and will not be opened. Thereafter, bidder's names, and such other details as the Purchaser may consider appropriate will be notified online as Technical Part</p>

	<p>bid opening summary.</p> <p>In the event of the specified date of bid opening being declared a holiday for the Purchaser, the bids will be opened at the appointed time and location on the next working day.</p> <p>25.2 The electronic summary of the bid opening will be generated and uploaded online. The Purchaser will also prepare minutes of the Bid opening, including the information disclosed and upload the same for viewing online. Only Technical Parts of Bids, alternative bids - Technical Parts if permitted in ITB 13 that are opened at Bid opening shall be considered further for evaluation.</p>
	<p>E. Evaluation of Bids – General Provisions</p>
<p>26 Confidentiality</p>	<p>26.1 Information relating to the examination, evaluation, comparison, and post-qualification of bids, and recommendation of contract award, shall not be disclosed to bidders or any other persons not officially concerned with such process until information on Contract Award is communicated to all Bidders in accordance with ITB 42.</p> <p>26.2 Any effort by a Bidder to influence the Purchaser in the examination, evaluation, comparison, and post-qualification of the bids or contract award decisions may result in the rejection of its Bid.</p> <p>26.3 Notwithstanding ITB Sub-Clause 26.2, from the time of bid opening to the time of Contract Award, if any Bidder wishes to contact the Purchaser on any matter related to the bidding process, it should do so in writing.</p>
<p>27 Clarification of Bids</p>	<p>27.1 To assist in the examination, evaluation, comparison of the bids and post-qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its Bid including breakdown of prices in the Activity Schedule, and other information that the Employer may require. Any clarification submitted by a Bidder in respect to its Bid, that is not in response to a request by the Purchaser shall not be considered. The Purchaser’s request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Purchaser in the Evaluation of the bids, in accordance with ITB Clause 35.</p> <p>27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Purchaser’s request for clarification, its bid may be rejected.</p>

<p>28 Deviations, Reservations, Omissions</p>	<p>28.1 During the evaluation of bids, the following definitions apply:</p> <ul style="list-style-type: none"> (a) “Deviation” is a departure from the requirements specified in the Bidding Documents; (b) “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Documents; and (c) “Omission” is the failure to submit part or all of the information or documentation required in the Bidding Documents.
<p>29 Nonconformities, Errors and Omissions</p>	<p>29.1 Provided that a Bid is substantially responsive, the Purchaser may waive any nonconformities or omissions in the Bid which do not constitute a material deviation, reservation or omission.</p> <p>29.2 Provided that a Bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Such omission shall not be related to any aspect of the price or substance of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.</p> <p>29.3 Provided that a Bid is substantially responsive, the Purchaser shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified in the AITB.</p>
<p>30 Evaluation of Technical Parts</p>	<p>30.1 In evaluating the Technical Parts of each Bid, the Purchaser shall use the criteria and methodologies listed in ITB 31, ITB 32, and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted.</p>
<p>31 Determination of Responsiveness</p>	<p>31.1 The Purchaser’s determination of a bid’s responsiveness is to be based on the contents of the bid itself as defined in ITB 11.</p> <p>31.2 A substantially responsive Bid is one that meets the requirements of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:</p> <ul style="list-style-type: none"> (a) If accepted, would <ul style="list-style-type: none"> (i) affect in any substantial way the scope, quality, or performance of the Non- Consulting Services

	<p style="padding-left: 40px;">specified in the Contract; or</p> <p style="padding-left: 20px;">(ii) limit in any substantial way, inconsistent with the Bidding Documents, the Purchaser’s rights or the Bidder’s obligations under the Contract; or</p> <p style="padding-left: 20px;">(b) If rectified would unfairly affect the competitive position of other bidders presenting substantially responsive bids.</p> <p>31.2.1 Bids from Agents, without proper authorization from the manufacturer as per Section IV, shall be treated as non-responsive.</p> <p>31.3.1 The Purchaser shall examine the bids to confirm that all documents and technical documentation requested in ITB Clause 11 have been provided, and to determine the completeness of each document submitted.</p> <p>31.3.2 The Purchaser shall examine the bid to confirm that the Bidder has accepted all terms and conditions specified in GCC and the SCC without material deviations or reservations. Deviations from or objections or reservations to critical provisions such as those concerning Performance Security (GCC Clause 3.9). Correction of Defects and Lack of Performance Penalty (GCC Clause 7.1), Force Majeure (Clause 2.5), Applicable law (GCC Clause 1.2) and Taxes & Duties (GCC Clause 1.8) will be deemed to be a material deviation. The Purchaser’s determination of a bid’s responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.</p> <p>31.4 If a bid is not substantially responsive to the Bidding Documents, it shall be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.</p>
<p>32 Qualification of the Bidders</p>	<p>32.1 The Purchaser shall determine, to its satisfaction, whether all eligible Bidders, who’s Bids have been determined to be substantially responsive to the bidding document, meet the Qualification Criteria specified in Section III, Evaluation and Qualification Criteria.</p> <p>32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder’s qualifications submitted by the Bidder, pursuant to ITB 17. The determination shall not take into consideration the qualifications of other firms such as the Bidder’s subsidiaries, parent entities, affiliates, subcontractors (other</p>

	<p>than specialized subcontractors if permitted in the bidding document), or any other firm(s) different from the Bidder.</p> <p>32.3 If a Bidder does not meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria, its Bid shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.</p> <p>32.4 Only Bids that are both substantially responsive to the bidding document, and meet all Qualification Criteria shall have the Financial Parts of their Bids opened at the second public opening</p>
<p>33 Public Opening of Financial Parts</p>	<p>33.1 Following the completion of the evaluation of the Technical Parts of the Bids, and approval of Competent authority, the Purchaser shall notify in writing those Bidders who have failed to meet the Qualification Criteria and/or whose Bids were considered non-responsive to the requirements in the bidding document, advising them of the following information:</p> <ul style="list-style-type: none"> (a) their Technical Part of Bid failed to meet the requirements of the bidding document; (b) their Financial Part of the Bid shall not be opened; and (c) notify them of the date and time for public opening of the Financial Parts of the Bids. Financial Parts of the bids shall not be opened earlier than seven (7) days from the communication of technical evaluation results to the bidders. <p>33.2 The Purchaser shall, simultaneously, notify in writing those Bidders whose Technical Parts have been evaluated as substantially responsive to the bidding document and met the Qualification Criteria, advising them of the following information:</p> <ul style="list-style-type: none"> (a) their Bid has been evaluated as substantially responsive to the bidding document and met the Qualification Criteria; (b) their Financial Part of Bid will be opened at the public opening of Financial Parts; (c) Notify them of the date and time of the second public opening of the Financial Parts of the Bids, as specified in the AITB.

	<p>33.3 The opening date should allow Bidders sufficient time to make arrangements for attending the opening. The Financial Part of the Bid shall be opened publicly in the presence of Bidders’ designated representatives and anyone who chooses to attend, and this could also be viewed by the bidders online. The bidder’s names, the Bid prices, the total amount of each bid, including any discounts and Alternative Bid – Financial Part, and such other details as the Purchaser may consider appropriate will be notified online by the Purchaser at the time of bid opening.</p> <p>In the event of the specified date of bid opening being declared a holiday for the Purchaser, the bids will be opened at the appointed time and location on the next working day.</p> <p>33.4 The electronic summary of the bid opening will be generated and uploaded online. The Purchaser will also prepare minutes of the Bid opening, including the information disclosed and upload the same for viewing online. Only Financial Part of Bids, Financial Parts of Alternative Bids and discounts that are opened and read out at Bid opening shall be considered further for evaluation.</p>
<p>34 Evaluation of Financial Parts</p>	<p>34.1 To evaluate the Financial Part of each Bid, the Purchaser shall consider the following:</p> <ul style="list-style-type: none"> (a) evaluation will be done for Items or Lots (contracts), as specified in the AITB; and the Bid Price as quoted in accordance with ITB 14; (b) Not used; (c) price adjustment due to discounts offered in accordance with ITB 14.4; (d) Not used; (e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 29.3; and (f) the additional evaluation factors specified in the AITBas per ITB 34.5 from amongst those set out in Section III, Evaluation and Qualification Criteria. <p>34.2 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.</p> <p>34.3 If this bidding document allows Bidders to quote separate prices</p>

	<p>for different lots (contracts), the methodology to determine the lowest evaluated cost of the lot (contract) combinations, including any discounts offered in the Letter of Bid - Financial Part, is specified in Section III, Evaluation and Qualification Criteria.</p> <p>34.4 Not used</p> <p>34.5 The Purchaser's evaluation of a Bid may require the consideration of other factors, in addition to the Bid price quoted in accordance with ITB 14. These factors may be related to the characteristics, performance, and terms and conditions of procurement of Service. The effect of the factors selected, if any, shall be expressed in monetary terms to facilitate comparison of Bids, unless otherwise specified in the AITB from amongst those set out in Section III, Evaluation and Qualification Criteria. The criteria and methodologies to be used shall be as specified in ITB 34.1 (f).</p> <p>34.6 Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors, which are in excess of the requirements of the bidding documents or otherwise result in unsolicited benefits for the Employer will not be taken into account in Bid evaluation.</p>
<p>35 Correction of Arithmetical Errors</p>	<p>35.1 The e-procurement system automatically calculates the total amount from unit rates and quantities and the system also automatically populates the amount in words from the amount in figures and therefore there is no scope of discrepancy and need for arithmetic correction.</p>
<p>36 Conversion to Single Currency</p>	<p>36.1 Not applicable.</p>
<p>37 Preference</p>	<p>37.1. From time to time, the Government of India lays down procurement policies to help inclusive national economic growth by providing long-term support to small and medium enterprises and disadvantaged sections of society and to address environmental concerns. The Procurement Policy for Micro and Small Enterprises, 2012 has been notified by the Government in exercise of the powers conferred in Section 11 of the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006. The Purchaser reserves the right to give the price preference or purchase preference to small-scale sector, start-ups or central public sector undertakings, as per the instruction of Govt. of India in vogue while evaluating, comparing and ranking the responsive Bids.</p> <p>37.2. Ministry of Electronics and Information Technology (MeitY)</p>

	<p>had notified a policy (subsequently revised) for Preferential Market Access (PMA) in Government procurement for Domestically Manufactured Electronic Products (DMEP), having a specified minimum domestic Value Addition (VA) for notified items of Electronics and Networking. To avail benefits of the domestic preference under ‘DMEP’ policy under notification no. F.No. 33(3)/2013-IPHW Dated 22nd may.2014, bidder may prefer details in as specified in the AITB.</p>
38 Comparison of Financial Parts	38.1 The Purchaser shall compare the evaluated prices of all substantially responsive bids to determine the lowest-evaluated bid, in accordance with ITB Clause 34.
39 Purchaser’s Right to Accept Any Bid, and to Reject Any or All Bids	39.1 The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all documents submitted and specifically, bid securities, shall be promptly returned to the Bidders.
F. Award of Contract	
40 Award Criteria	40.1 Subject to ITB 39.1, the Purchaser shall award the Contract to the Bidder whose bid has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
41 Purchaser’s Right to Vary Quantities at Time of Award	<p>41.1 At the time the Contract is awarded, the Purchaser reserves the right to increase or decrease the quantity originally specified in Section V, Schedule of Requirements, provided this does not exceed the percentages specified in the AITB, and without any change in the unit prices or other terms and conditions of the bid and the Bidding Documents.</p> <p>41.2 If the quantity has not been increased at the time of the awarding the contract, the purchaser reserves the right to increase, the quantity originally specified in Section V. Schedule of Requirements, provided this does not exceed the percentages specified in the AITB, and without any change in the unit prices or other terms and conditions of the bid and the Bidding Documents, during the currency of the contract.</p>

<p>42 Notification of Award, Publication of Award & Recourse to Unsuccessful Bidders</p>	<p>42.1 Prior to the expiration of the period of bid validity, the Purchaser shall notify the successful Bidder, in writing, that its Bid has been accepted. The notification letter (hereinafter called “Letter of Acceptance”) shall specify the sum that the purchaser will pay in consideration of the supply of Goods (hereinafter called “the Contract Price”).</p> <p>42.2 At the same time the Purchaser shall publish in Central Public Procurement Portal https://eprocure.gov.in/cppp/) or on the Purchaser’s website with free access if available, or in the official gazette, the results identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at bid opening; (iii) name and evaluated prices of each Bid that was evaluated; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the successful Bidder, and the price it offered, as well as the duration and summary scope of the contract awarded.</p> <p>42.3 The Purchaser shall promptly respond in writing to any unsuccessful Bidder who, after Publication of contract award, requests in writing the grounds on which its bid was not selected.</p> <p>42.4 Until a formal Contract is prepared and executed, the notification of award shall constitute a binding Contract.</p> <p>42.5 Upon the successful Bidder’s furnishing of the performance security and signing the Contract Form pursuant to ITB Clause 43, the Purchaser will promptly notify each unsuccessful Bidder and will discharge its bid security, pursuant to ITB Clause 19.5</p> <p>42.6 If after notification of award, a bidder wishes to ascertain the grounds on which its bid was not selected, it should address its request to the Employer. The Employer will promptly respond in writing to the unsuccessful Bidder.</p>
<p>43 Signing of Contract</p>	<p>43.1 Promptly after notification, the Purchaser shall send the successful Bidder the Contract Agreement.</p> <p>43.2 Within twenty-one (21) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Purchaser.</p>
<p>44 Performance Security</p>	<p>44.1 Within twenty-one (21) days of the receipt of notification of award from the Purchaser, the successful Bidder, if required, shall furnish the Performance Security in accordance with the GCC, using for that purpose the Performance Security Form included in Section VIII Contract forms, or another Form acceptable to the Purchaser. Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the</p>

	<p>annulment of the award and forfeiture of the Bid Security. In that event the Purchaser may award the Contract to the next lowest evaluated Bidder, whose bid is substantially responsive and is determined by the Purchaser to be qualified to perform the Contract satisfactorily.</p>
<p>45 Adjudicator</p>	<p>45.1 Employer proposes the person named in the AITB to be appointed as Adjudicator under the Contract, at an hourly fee specified in the AITB, plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in the Bid. If, in the Letter of Acceptance, the Employer has not agreed on the appointment of the Adjudicator, the Adjudicator shall be appointed by the Appointing Authority designated in the Special Conditions of Contract at the request of either party.</p>

SECTION II - AMENDMENT TO INSTRUCTION TO BIDDER (AITB)

The following specific data for the goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

ITB Clause Reference	A. General				
ITB 1.1	The Employer is Surveyor General of India, Survey of India Hathibarkala Estate, Dehra Dun (U.K) Telephone: +91-135-2743331, +91-135-2744064 Facsimile number: +91-135-2743331, +91-135-2744064 Email: sgo.soi@gov.in				
ITB 1.1	The name and identification number of the NIT is: 773/15-J-3DTM(TEHRIGARHWAL) NMCG DATED 15/04/2021 The number, identification and names of the contract comprising this NITis: Provision of services for Acquisition, Processing and Delivery of DTM using LiDAR sensor Mounted UAS/Drone in the state of Uttarakhand as specified in Section V Schedule of Requirement and as per Sub-section 3 Technical Specification.				
	Item No.	Description of Services	Lot	Area (in Sq. Km)	Bid Security In Rs.
	1.	PROVISION OF SERVICES FOR ACQUISITION, PROCESSING AND DELIVERY OF DTM USING AIRBORNE LIDAR AND OPTICAL SENSOR IN THE STATE OF UTTARAKHAND	Lot1.	3254	400000/-

		Lot2.	657	100000/-
<p># Area figures provided above and shape file uploaded with tender document is indicative. Final area shape file will be provided to the contractor at the time of award.</p> <p>The scope of work includes:</p> <ul style="list-style-type: none"> ➤ Planning and Provision of Planimetric ground control points by Dual frequency GNSS receivers in relative static positioning mode required for LiDAR survey and Photogrammetric Branch control in Hilly and plain terrains. It includes field work, processing and computation ➤ Planning and execution of LiDAR survey with digital aerial photography <ul style="list-style-type: none"> • Obtaining flying clearances from DGCA • Flight planning • Data acquisition, Data validation, Re-flying in Gap areas, • Preprocessing and Post processing • LiDAR point classification and 0.5m RMSE DEM generation • Ortho Photo Generation • Identification of springs through terrain analysis and photo/Lidar data interpretation and Generation of Spring Shed ➤ QA/QC at each stage of work and for the whole work ➤ Data management including daily incremental backup, monthly full backup of data as per the back-up plan submitted by the Contractor and approved by the Engineer. ➤ Delivery of products (hardcopy & softcopy) as per list of deliverables and delivery instructions. <p>The Intended Completion Date is Two (2) months from the date of ‘Commencement of Service’.</p>				
ITB 1.2(a)	The Purchaser shall use the electronic-procurement system specified in AITB 7.1 to manage this Bidding process.			
ITB 2.1	The name of the Project is: Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand			
ITB 4.3	The bidders are allowed to form Joint ventures for submission of the bid. The maximum number of Partners in the J.V. can be two.			

B. Contents of Bidding Documents	
ITB 7.1	Electronic –Procurement System The Purchaser shall use the following electronic-procurement system to manage this Bidding process: CPP Portal https://eprocure.gov.in/eprocure/app
ITB 7.1 (a) Additional clause.	A pre-bid meeting will be held: No <ul style="list-style-type: none"> • A pre-bid meeting will be held: yes • A pre-bid meeting will be held on 27/04/2021 at 11:00 hours at conference room of G&RB, 17 EC Road, Survey of India, Dehradun to clarify the issues and to answer queries on any matter that may be raised at that stage. Prospective Bidders, if cannot attend pre-bid meeting, may ask clarification on the Bidding Documents through CPP portal on or before 27/04/2021 10.00 hrs. • Clarifications requested through any other mode or after said due date shall not be considered by the Purchaser. • Description of clarification sought and the response of the Purchaser shall be uploaded for information of all Bidders without identifying the source of request for clarification. Bidders are also advised to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document. Clarifications requested through any other mode or after said due date shall not be considered by the Purchaser. • Description of clarification sought and the response of the Purchaser shall be uploaded for information of all Bidders without identifying the source of request for clarification. Bidders are also advised to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document.
ITB 8.1	The addendum will appear on the e-procurement system under CPP Portal and email notification is also automatically sent to those bidders who have started working on this tender.
C. Preparation of Bids	
ITB 11.2(j)	The Bidder shall submit the following additional documents in its bid – technical part: <ol style="list-style-type: none"> 1. Certification of incorporation of the bidder. 2. As e- procurement system is being used, there is no hard copy submission of bid. Only the hard copy of written confirmation authorizing the signatory of the Bid to commit the Bidder as per ITB Clause 11.2(d) i.e. the power of attorney, EMD, original affidavit regarding correctness of information furnished with bid document. 3. The bidder shall clearly confirm that all facilities (owned or leased or by

	<p>procurement) including key and critical equipment as specified in section III exist with him for inspection and testing and these can be accessed by the Purchaser or his representative for inspection.</p> <p>4. Technical schedules of services as required by technical specifications.</p> <p>5. Qualification information including key personnel, Method Statement, Work Plan & Schedule as per section IV to meet employer technical specifications as per Section V to demonstrate substantial responsiveness of the Services.</p> <p>6. The following details shall also be provided by Indian Bidders:</p> <p>a. Name, address, PAN and ward/circle where they are being assessed of the Directors of the Bidding Company.</p> <p>b. Company's PAN and Income Tax clearance certificate and ward/circle where it is being assessed,</p> <p>c. Registration details of the company under GST, local and Central Sales Tax, and other laws as may be applicable.</p> <p>7. The bidders from outside India shall provide the corresponding details of Income Tax registration, Social Security Number, details regarding Registration under goods & services tax (as may be applicable) etc.</p> <p>8. The bidder shall disclose instance of previous past performance that may have resulted into adverse actions taken against the bidder during the last five years.</p> <p>9. All documents required in Section III: Evaluation & Qualification Criteria</p>
ITB 11.3(d)	<p>The Bidder shall submit the following additional documents in its bid – financial part:</p> <p><i>No additional document required.</i></p>
ITB 12.1 and 12.2	<p>Note for Bidders: Bidders have to submit the bids on the e-procurement portal along with the relevant required documents. For this purpose, the bidders shall fill up online, the forms that are available for online filling on the e-portal. Price schedule is available in .xls file along with bid document. Bidder need to download it, fill up necessary cells and after validation upload filled .xls file in BOQ folder of financial bid after signing it digitally. Please note that no documents related to price should be uploaded in Technical Bid. The rest of the forms shall be downloaded by the bidders and filled up. The filled up pages shall then be scanned and uploaded on the e-procurement portal along with the scanned copies of the supporting documents.</p>
ITB 12.3	<p>For submission of original documents, the Purchaser's address is: Attention: Director Address: Geodetic & Research Branch Survey of India, 17-EC Road , Survey Chowk,</p>

	City: DEHRADUN (U.K) PIN/Postal Code: 248001 Country: INDIA
ITB 13.1	Alternative Bids <i>shall not be</i> considered.
ITB 14.5	The prices quoted by the Bidder <i>shall not</i> be subject to adjustment during the performance of the Contract.
ITB 14.9	As per latest instructions of Government of India.
ITB 17.2 (b) (i)	<i>Not Applicable</i>
ITB 17.2 (b)iii	<i>Not applicable</i>
ITB 18.1	The bid validity period shall be 90 Days.
ITB 19.1	Bid shall include a Bid Security (issued by bank) included in Section IV Bidding Forms.
ITB 19.3	The amount of Bid Security shall be : For Lot1: INR 400000/- & For Lot2: 100000/- Bidder should ensure that EMD must be valid for 45 days beyond bid validity period, i.e. 135 days from date of bid opening (Technical Part). Bid security of the amount specified in the bidding document, drawn in favour of Establishment and Account Officer, G&RB, Survey of India, Dehradun along with other document as per ITB 12.3, must be submitted to following Address Address: Director, Geodetic & Research Branch Survey of India, 17-EC Road, Survey ChowkDEHRADUN (U.K), PIN-248001.
ITB 19.3 (a)	Other type of acceptable securities are: Bank Guarantee in required as per proforma in Section IV. from a Nationalized /Scheduled Bank in India
ITB 19.9	Bid security is not required to be submitted by the start-ups and MSMEs. However if such a bidder performs any of the actions prescribed in ITB 19.9 (a) or (b), they will be suspended for the 2 year date of award of penalty from being eligible to submit Bids/Proposals for contracts with the Procuring Entity.
ITB 20.1	Bids, both Technical and Financial Parts, shall be submitted online on the e-procurement system specified in AITB 7.1
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of Attorney.
	D. Online Submission and Opening of Bids
ITB 21.1	Class of DSC required is: Class III

ITB 21.2	<p>The inner and outer envelopes shall bear the following additional identification marks: <i>Not applicable because e-tendering system will take place</i></p> <p>However, the Envelope for submitting Document as per ITB 12.3 shall bear the following:</p> <p>ORIGINAL DOCUMENTS AS PER CLAUSE 12.3 for Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand.</p> <p>NIT No. is 773/15-J-3DTM(TEHRIGARHWAL) NMCG DATED 15/04/2021</p> <p>And will be submitted to following Address Address: Director, Geodetic & Research Branch Survey of India, 17-EC Road, Survey Chowk DEHRADUN (U.K), PIN-248001.</p>
ITB 22.1	<p>The deadline for uploading of bids is: Date:05/05/2021 Time:11:00 hrs</p>
ITB 24.1	<p>Re-submission of the bid is not allowed, if withdrawn.</p>
E. Public Opening of Technical Parts of Bids	
ITB 25.1	<p>The online opening of the Technical Parts of Bids shall take place at:</p> <p>Address: Geodetic & Research Branch Survey of India, 17-EC Road , Survey Chowk, City: DEHRADUN (U.K) Country: INDIA</p> <p>Date: 05/05/2021 Time: 11:30 a.m.</p>
F. Evaluation of Bids – General Provisions	
ITB 29.3	<p>The adjustment shall be based on the Average price of the item or component as quoted in other substantially responsive Bids, subject to a maximum of the estimated price of the item. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Purchaser shall use its best estimate.</p>
H. Public Opening of Financial Parts of Bids	
ITB 33.2 (c)	<p>Following the completion of the evaluation of the Technical Parts of the Bids, the Purchaser will notify all Bidders of the date and time of the public opening of Financial Parts.</p> <p>The online opening of the Financial Parts of bids (for technically qualified bidders) shall take place at:</p>

	<p>Address: Office of Director, G&RB Survey of India, 17-EC Road , Survey Chowk, City: DEHRADUN (U.K) Country: INDIA Shall be notified after completion of the evaluation of the Technical Parts of the Bids, and approval of competent authority.</p>										
	<p>I. Evaluation and Comparison of Bids</p>										
ITB 34.1(a)	<p><i>Bids will be evaluated for each lot (contract) separately and multiple Contracts will be concluded with the respective successful bidder.</i></p> <table border="1"> <thead> <tr> <th>Item No.</th> <th>Description of Services</th> <th>Lot</th> <th>Area (in Sq. Km)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">1.</td> <td rowspan="2">Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand</td> <td>Lot1.</td> <td>3254</td> </tr> <tr> <td>Lot2.</td> <td>657</td> </tr> </tbody> </table> <p><i>Bids will be evaluated lot by lot. Bidder can submit bid for one or more lots however price should be quoted for the complete requirement for goods and services specified for each lot, for which he is submitting bid, as stated in ITB clause 14.6 failing which such bids will be treated as non-responsive.</i></p>	Item No.	Description of Services	Lot	Area (in Sq. Km)	1.	Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand	Lot1.	3254	Lot2.	657
Item No.	Description of Services	Lot	Area (in Sq. Km)								
1.	Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand	Lot1.	3254								
		Lot2.	657								
ITB 34.3	<p>Bidders <i>shall</i> be allowed to quote separate prices for one or more lots. refer to Clause 2 of Section III Evaluation and Qualification Criteria, for the evaluation methodology for Multiple Contracts.</p>										
ITB 34.5	<p>Deleted</p>										
ITB 37.2	<p>Services required in scope of this RFB, do not falls under Domestically Manufactured Electronic Products. Hence Purchase preference under DMEP policy will not be applicable in this procurement.</p>										
	<p>J. Award of Contract</p>										
ITB 40.0	<p>Buyer reserve the right to split the quantity and award on two or more bidders as per the project requirement. The following norms would be adopted in case of spilt of quantity:</p> <ol style="list-style-type: none"> a. If the lowest quoting vendor is not in position to provide entire delivery of services in time period as stipulated in ACTIVITY SCHEDULE under Section III Schedule of Requirement, contract would be split between the lowest (L1) and second lowest (L2) in 										

	<p>Ratio of 70:30, at the rate & terms applicable to L1 approved vendor, in following manner</p> <ul style="list-style-type: none"> i. L1 may be awarded at least the percentage mentioned above or his spare supply capacity, whichever is lower ii. For the rest of the contract quantity, the lowest rate accepted will be counter offered to the L2 party to supply rest quantity at the rate & terms applicable to L1 approved vendor. On acceptance of the counter offer, the order will be placed to L2 for the remaining percentage. In case of non-acceptance of the counter offer by the L2 party, a similar offer shall be made to L3 and L4, and so on. <p>b. If combined capacity of L1 and L2 are not sufficient to supply tendered quantity in time period as stipulated tender document, order shall be splited amongst the lowest (L1), second lowest (L2) and third lowest (L3) in the ratio of 50:30:20 at the rate & terms applicable to L1 approved vendor, in following member</p> <ul style="list-style-type: none"> i. L1 may be awarded at least the percentage mentioned above or his spare supply capacity, whichever is lower ii. For the rest of the contract quantity, the lowest rate accepted will be counter offered to the L2 and L3 to supply rest quantity at the rate & terms applicable to L1 approved vendor. On acceptance of the counter offer, the order will be placed to L2 and L3 for the remaining percentage in ratio of "60:40" or to the spare supply capacity of L2 and rest, whichever is lower for L2. In case of non-acceptance of the counter offer by the L2 party, a similar offer shall be made to L3 and L4, and so on. <p>Micro & Small Enterprises quoting price within price band of L1+15 per cent shall also be allowed to supply a portion upto 20% of requirement by bringing down their price to L1 price where L1 is non MSEs (as per “Public Procurement Policy for Micro & Small Enterprises (MSEs) Order 2012”). If price quoted by a MSE is within L1+15% and such MSE is L4 or higher (provided L1, L2 and L3 are not the MSEs) and agrees to the rates & terms quoted/agreed by L1 bidder, then the splitting of quantities may be done as: MSE bidder: 20%, other bidders: 80% of tender/ enquiry quantity as given in above paragraph.</p>
ITB 41.1	<p>The maximum percentage by which quantities may be increased is: 25%</p> <p>The maximum percentage by which quantities may be decreased is: 25%</p>
ITB 41.2	<p>The maximum percentage by which quantities may be increased is: 25%</p>

ITB 45

The Adjudicator proposed by the Employer is _____, whose fees shall be governed by the Article 11 of 'Arbitration and Conciliation (Amendment) Act 2015' as given below:

<i>Sum in Dispute</i>	<i>Model Fee</i>
Up to Rs.5,00,000	Rs. 45,000
Above Rs.5,00,000 and Up to Rs. 20,00,000	Rs. 45,000 plus 3.5 per cent of the claim amount over and above Rs. 5,00,000
Above Rs. 20,00,000 and up to Rs. 1,00,00,000	Rs.97,500 plus 3 per cent of the claim amount over and above Rs. 20,00,000
Above Rs. 1,00,000 and up to 10,00,000	Rs. 3,37,500 plus 1 per cent of the claim amount over and above Rs. 1,00,00,000
Above Rs. 10,00,00,000 and up to Rs. 20,00,00,000	Rs.12,37,500 plus 0.75 per cent of the claim amount over and above Rs. 10,00,00,000
Above Rs. 20,00,00,000	Rs. 19,87,500 plus 0.5 per cent of the claim amount over and above Rs.20,00,00,000 with a ceiling of Rs. 30,00,000

SECTION III. EVALUATION AND QUALIFICATION CRITERIA

This Section complements the Instructions to Bidders. It contains the criteria that the Purchaser shall use to evaluate a bid and determine whether a Bidder qualifies in accordance with criteria specified in this bidding document. No other criteria shall be used.

Contents

1. Evaluation Criteria (ITB 34)
2. Multiple Contracts (ITB 30.4)
3. Qualification Requirements (ITB 32.1)

1. Evaluation Criteria (ITB 34)

The Employer shall determine the Most Advantageous Bid, which is the Bid of the Bidder whose Technical Parts have been evaluated as substantially responsive to the bidding document and met the Qualification Criteria and whose Bid has been determined to be the lowest evaluated cost after considering total prices of all items of the Services described in the in Specifications, and listed in the Activity Schedule in Section V, Schedule of Requirements and all duties, taxes, and other levies payable by the Service Provider under the Contract.

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section V, Schedule of Requirements.

2. Multiple Contracts (ITB 30.4)

The Purchaser shall award multiple contracts to the Bidder that offers the lowest evaluated combination of bids (one contract per bid) and meets the qualification criteria (this Section III, Sub-Section 3 Qualification Criteria (ITB 32.1))

The Purchaser shall:

- (a) evaluate only lots or contracts that include at least the percentages of items per lot and quantity per item as specified in ITB Sub Clause 14.6
- (b) take into account:
 - (i) the lowest-evaluated bid for each lot and
 - (ii) the price reduction per lot and the methodology for its application as offered by the Bidder in its bid”.

Qualification Criteria (ITB 32.1)

The Purchaser shall assess each Bid against the following Qualification Criteria Requirements for selection of agency for carrying out UAS/Drone mounted LiDAR Survey:

- A. The Bidder’s Assets (equipment and technically qualified manpower)
- B. Bidder’s Credentials (Turn Over & Work Experience)
- C. Methodology, Work Plan and Organization Staff Plan in response to the Terms of Reference:

A. The Bidder’s Assets

a) Instrument and Software-

- a. UAS/Drone mounted LiDAR – Minimum 1 nos for each lot (DGCA registration details, along with DAN nos. to be submitted)
Or
Aircraft/ Helicopter (minimum 01 no.)

- b. Aerial Medium Format Camera (above 50 Megapixel) (minimum 01 no.) (regarding ownership, copy of invoice in case of local purchase, copy of bill of entry in case of import in the name of agency to be enclosed).
- c. Minimum One Aerial LiDAR Scanner with range at least 120m or more from AGL and one multi spectral optical sensor, with IMU, GPS and associated Control Units as per equipment specifications (minimum 01 no. for each lot) (regarding ownership, copy of invoice in case of local purchase, copy of bill of entry in case of import in the name of agency to be enclosed)
- d. GNSS (dual frequency, at least 200 channels and above) (minimum 02 sets for each lot) (regarding ownership, copy of invoice in case of local purchase, copy of bill of entry in case of import in the name of agency to be enclosed)
- e. High End Workstations (minimum 2 nos. for each lot)
- f. Middle/Entry level Workstations: (minimum 5 nos. for each lot)
- g. Network Storage System : 1(one) no. of Minimum 20 TB for each lot
- h. Backup Device : 1(one) no. of Minimum 20 TB for each lot
- i. Servers: 1 nos.
- j. Minimum 1 nos. of each lot Software of Flight planning, Monitoring and Preprocessing & minimum 1 nos. each lot of post processing and for DEM and similar to
 - LiDAR Trajectory Pre-processing software.
 - Terrascan /Terrasolid/Point Tool/ or similar Post-Processing software.
 - Photogrammetric software for block adjustment and ortho rectification.
 - Arc GIS or similar.

b) Manpower:

The minimum Qualification and number of key- personnel proposed to be deployed in the Project should be as follows. The numbers stated are the minimum required for qualification. Bidder/Service provider shall deploy sufficient additional resources as required to meet the timelines during actual execution.

For the purpose of this Bid Document, Key Personnel shall include:

- a. Project Manager: At least 1 (one) for each lot Project Manager with minimum 5 years in LiDAR working projects of similar nature & complexity.
- b. Operator/Pilot: Minimum 2(two) for each lot Pilot with Pilot license for Drone flying from DGCA approved Training
- c. Supervisor: At least 1 (One) for each lot supervisors with minimum 5 years in LiDAR works in projects of similar nature & complexity.
- d. Operator - Pre-processing of raw data: Minimum 2 (Two) for each lot Technical Persons with minimum 5 years experience in pre-processing raw data & on-board GNSS/IMU data in projects of similar nature & complexity with use of LiDAR.
- e. Operator- Post-processing for DEM : At least 5 (Five) for each lot technical persons having minimum three year's experience in DEM post-processing in projects of similar nature & complexity with use LiDAR.
- f. Operator for block adjustment and ortho rectification: At least 2 (two) for each lot.
- g. Ground Controller: At least 2 (Two) for each lot technical persons having minimum two years experience in GNSS observations and computation/processing.
- h. System Manager cum Data Manager: At least 1 (One) for each lot technical persons having minimum 3 years of experience in system management & Data Management in Data Production Centre

- i. QA/QC Expert: At least minimum least 1 (One) for each lot persons having at least three years experience in post-processing of data in projects of similar nature & complexity with use LiDAR.

B. Bidder's Credentials:

(a) Financial Capability

The Bidder shall furnish documentary evidence that it meets the following financial requirement(s):

- a. The Minimum required annual turnover in any one of the last three(3) Financial Years i.e. 2017-18 to 2019-20 shall be INR 2.0 (Two) crore or an equivalent amount in other currency. The bidder should also submit the concerned documents in support of the above to the satisfaction of the purchaser.
- b. Should possess GST Registration. Foreign OEMs who are directly participating in bidding process are not required to have GST registration.
- c. Capacity to have a cash flow: The bidder must provide a letter from a reputed Nationalized / Scheduled Bank stating the availability of liquid assets and/or credit facilities exclusively for the contract only, of not less than INR 1.0 (one) Crore. In case of Foreign Manufactures, undertaking from OEM regarding "availability of sufficient cash flow to meet project execute contract" will be acceptable, however it should be substantially supported by financial assets and turnover shown in annual statement/report or audit report.
- d. MSME/Start UP: The Minimum required annual turnover in any one of the last three(3) Financial Years i.e. 2017-18 to 2019-20 shall be INR 1.0 (One) crore or an equivalent amount in other currency. The bidder should also submit the concerned documents in support of the above to the satisfaction of the purchaser. Capacity to have a cash flow: The bidder must provide a letter from a reputed Nationalized / Scheduled Bank stating the availability of liquid assets and/or credit facilities exclusively for the contract only, of not less than INR 1.0 (one) Crore.

Notes:

- a. The financial turnover will be taken as given under the head "Income" in audited Profit and Loss Account and excluding non-recurring income, income from other sources and stock. It is clarified that the Financial Turnover means relevant revenue as recorded in the Income side of Profit and Loss Account. It does not mean Profit.
- b. Closing stocks in whatsoever manner should not form part of turnover.
- c. The Bidder should furnish Annual Financial Turnover for each of the last 3 Financial Years in tabular form and give reference of the document (with page no.) relied upon in support of meeting the Qualification Criterion.
- d. The Bidder should submit self-attested copy of Auditor's Report along with Balance Sheet and Profit and Loss Statement along with Schedules for the relevant Financial Year in which the minimum criterion is met. Provisional audit reports or certified statements will not be accepted.

- e. If the Audited Balance Sheet for the immediately preceding year is not available in case of tender opened before 30th Sept., audited Balance Sheets, Profit and Loss Statements and other financial statements of the three Financial Years may be adopted for evaluating the credentials of the Bidder.

(b) Work Experience:

- (i) The experience required to be demonstrated by the Bidder should include as a minimum that he has executed during the last 5 years the following:

Bidder must have experience as service provider in the provision of at least one service contract in Aerial LiDAR Survey of similar nature and complexity and having a minimum value of Rs 0.5 crores over the last 5 years. The Service Contract cited must necessarily include all activities viz. acquisition of raw data by LiDAR, pre-processing of raw data and post-processing of pre-processed data for acquisition of DEM.

OR

Bidder must have experience as service provider in the provision of at least two service contracts in Aerial LiDAR Survey of similar nature and complexity and having a minimum value of Rs. 0.25 crores over the last 5 years. The two Service Contracts taken together must necessarily include all activities viz. acquisition of raw data by LiDAR, pre-processing of raw data and post-processing of pre-processed data for acquisition of DEM.

- a. MSME/Start UP: Bidders registered with DIPP as Start-Up or having MSE certificate issued by relevant authority will be exempted from past experience criteria. However, Nature of services mentioned in MSE certificate should match with scope of work of this tender.

Notes:

- a. Only such works shall be considered where physical completion of entire work is over or commissioning of work has been done, whichever is earlier.
- b. The Bidder should submit the details of such similar completed works as per the format enclosed.
- Name and address of client with contact details as email address/ Phone No.
 - Contract No. and Date.
 - Scheduled completion date and actual completion date.
 - Details of Complaint, if any, received from the purchaser about the performance of the Equipment/items.
- c. Works carried out by another Contractor on behalf of the Bidder on a back to back basis will not be considered for satisfaction of the Qualification Criterion by the Bidder.
- d. Credential certificates issued by Government Organizations / Semi Government Organizations of Central or State Government; or by Public Sector Undertakings/ Autonomous Bodies of Central/State Government or their subsidiaries / by Public Ltd. Companies listed in Stock exchange in India or Abroad or subsidiaries of such companies shall only be accepted for assessing the eligibility of a Tenderer. Certificates issued by one of the aforesaid organizations as a lead member (having equity stake of 51% or more) of a Joint Venture (JV) for a work executed for the JV, will also be

acceptable. In case of PPP projects, if the bidder has executed a work for a concessionaire who is one of the aforesaid organizations, then the certificate issued by such concessionaire or by the public authority concerned, will also be acceptable.

- e. The cutoff date shall be 31/03/2020.
- (iii) The bidder should provide profile of their company including its Infrastructure, technical manpower and their expertise.
- (iv) The bidder may be an Indian or Foreign company but must have office and firm arrangement in India to provide support as well as comprehensive management of work.
- (v) The bidder should submit the details of agreements entered into with various manufacturers/partners for the equipment and providing services and their experience to meet the qualification & experience criterion for the turn-key solution.
- (vi) In case of subcontracting work, the bidder shall be solely responsible for the deliverables from these subcontractors and under no circumstances shall transfer the sub contractor's liabilities to the employer. The subcontractor should have requisite qualification and experience to execute the job to the satisfaction of the employer. The bidder is to give the name of the subcontractor / arrangement for the job in the bid in such cases.
- (vii) The figures for each of the partners of a joint venture shall be added together to determine the Bidder's compliance with the minimum qualifying criteria of ITB however, for a joint venture to qualify the partner in charge must meet at least 70 percent of those minimum criteria for an individual Bidder and other partner at least 40% of the criteria. Failure to comply with this requirement will result in rejection of the joint venture's Bid. Subcontractors' experience and resources will be taken into account in determining the Bidder's compliance with the qualifying criteria only for activities that are permitted for sub-contracting as per viz. Activities at SINo.3(14)/Section V, provided such activities are proposed for sub-contracting in the Work Plan & Schedule /Section III submitted as part of bid.

SECTION IV BIDDING FORMS

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1A. LETTER OF BID— TECHNICAL PART

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and address.

Note: *All italicized text is for use in preparing these forms and shall be deleted from the final products.*

No alterations to the text except as provided in ITB20.2, shall be permitted and no substitutions shall be accepted except as provided in ITB 12.]

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

NIT No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Purchaser]*

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda No. issued in accordance with ITB 8: *[insert the number and issuing date of each Addenda]*;
- (b) We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) We have not been suspended nor declared ineligible by the Purchaser/any Government/Semi-Government entity in the Purchaser's country in accordance with ITB 4.2;
- (d) We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules specified in the Schedule of Requirements the following Services ***[insert a brief description of the Services]***;
- (e) Our bid shall be valid for the period of time specified in ITB Sub-Clause 18.1, from the date fixed for the bid submission deadline in accordance with ITB Sub-Clause 22, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;
- (g) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process, other than alternative bids submitted in accordance with ITB 13;
- (h) We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Survey of India or Govt of India. Further, we are not ineligible under the Purchaser's Country laws or official regulations.

- (i) We confirm that [insert name proposed by Employer in the Bidding Data] Or We propose that [name proposed by bidder alongwith details] be appointed as the Adjudicator
- (j) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (k) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive;
- (l) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption; and we will strictly observe the laws against fraud and corruption in force in India namely, "Prevention of Corruption Act 1988."
- (m) We, along with all our sub-contractors and JV Partners, undertake to abide by the Code of Integrity in public Procurement of Government of India,

Name of the Bidder ***[insert complete name of person signing the Bid]***

Name of the person duly authorized to sign the Bid on behalf of the Bidder** ***[insert complete name of person duly authorized to sign the Bid]***

Title of the person signing the Bid ***[insert complete title of the person signing the Bid]***

Signature of the person named above ***[insert signature of person whose name and capacity are shown above]***

Date signed ***[insert date of signing]*** day of ***[insert month]***, ***[insert year]***

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

1B. LETTER OF BID- FINANCIAL PART

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and address.

Note: *All italicized text is for use in preparing these forms and shall be deleted from the final products.*

No alterations to the text except as provided in ITB 20.2, shall be permitted and no substitutions shall be accepted except as provided in ITB 12.]

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

NIT No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Purchaser]*

We, the undersigned Bidder, hereby submit the second part of our Bid, the Financial Part. In submitting our Financial Part, we make the following additional declarations:

(a) Our bid shall be valid for the period of time specified in ITB Sub-Clause 18.1, from the date fixed for the bid submission deadline in accordance with ITB Sub-Clause 22, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(b) The total price of our Bid, excluding any discounts offered in item (c) below, is:

In case of only one lot, total price of the Bid **[insert the total price of the bid in words and figures];**

In case of multiple lots, total price of each lot [insert the total price of each lot in words and figures];

In case of multiple lots, total price of all lots (sum of all lots) [insert the total price of all lots in words and figures];

(c) The discounts offered and the methodology for their application are:

(i) The discounts offered are: [Specify in detail each discount offered.]

(ii) The exact method of calculations to determine the net price after application of discounts is shown below: [Specify in detail the method that shall be used to apply the discounts];
Discounts.

(d) The following commissions, gratuities, or fees have been paid or are to be paid with respect to the bidding process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*

Name of Recipient

Address

Reason

Amount

(If none has been paid or is to be paid, indicate “none.”)

- (e) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.

Name of the Bidder ***[insert complete name of person signing the Bid]***

Name of the person duly authorized to sign the Bid on behalf of the Bidder** ***[insert complete name of person duly authorized to sign the Bid]***

Title of the person signing the Bid ***[insert complete title of the person signing the Bid]***

Signature of the person named above ***[insert signature of person whose name and capacity are shown above]***

Date signed _ ***[insert date of signing]*** day of ***[insert month]***, ***[insert year]***

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

2. BIDDER INFORMATION FORM

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

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

NIT No.: *[insert number of bidding process]*

Page _____ of _____ pages

1. Bidder's Legal Name <i>[insert Bidder's legal name]</i>
2. Bidder's actual or intended Country of Registration: <i>[insert actual or intended Country of Registration]</i>
3. Bidder's Year of Registration: <i>[insert Bidder's year of registration]</i>
4. Bidder's Legal Address in Country of Registration: <i>[insert Bidder's legal address in country of registration]</i>
5. Bidder's Authorized Representative Information Name: <i>[insert Authorized Representative's name]</i> Address: <i>[insert Authorized Representative's Address]</i> Telephone/Fax numbers: <i>[insert Authorized Representative's telephone/fax numbers]</i> Email Address: <i>[insert Authorized Representative's email address]</i>
6. Attached are copies of original documents of: <i>[check the box(es) of the attached original documents]</i> <input type="checkbox"/> Articles of Incorporation or Registration of firm named in 1. <input type="checkbox"/> GST Registration. <input type="checkbox"/> Included are the organizational chart, a list of Board of Directors, and the beneficial ownership

2A. BIDDER'S JV MEMBERS INFORMATION FORM

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

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

NIT No.: *[insert number of bidding process]*

Page _____ of _____ pages

1. Bidder's Legal Name <i>[insert Bidder's legal name]</i>
2. Bidder's JV Member's Name <i>[insert JV's Member legal name]</i>
3. Bidder's JV Member's Country of Registration: <i>[insert JV Member's Country of Registration]</i>
4. Bidder's JV Member's Year of Registration: <i>[insert Bidder's JV Member's year of registration]</i>
5. Bidder's JV Member's Address in Country of Registration: <i>[insert Bidder's JV Member's address in country of registration]</i>
6. Bidder's JV Member's Authorized Representative Information Name: <i>[insert JV Member's Authorized Representative's name]</i> Address: <i>[insert JV Member's Authorized Representative's Address]</i> Telephone/Fax numbers: <i>[insert JV Member's Authorized Representative's telephone/fax numbers]</i> Email Address: <i>[insert JV Member's Authorized Representative's email address]</i>
7. Attached are copies of original documents of: <i>[check the box(es) of the attached original documents]</i> <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above. <input type="checkbox"/> GST Registration. <input type="checkbox"/> Included are the organizational chart, a list of Board of Directors, and the beneficial ownership

3. QUALIFICATION INFORMATION

1. Individual Bidders

- 1.1 Constitution or legal status of Bidder: *[attach copy]*
 Place of registration: *[insert]*
 Principal place of business: *[insert]*
 Power of attorney of signatory of Bid: *[attach]*
- 1.2 Total annual volume of Services performed in five years, in the internationally traded currency specified in the AITB: *[insert]*
- 1.3 Services performed as prime Service Provider on the provision of Services of a similar nature and volume over the last five years. The values should be indicated in the same currency used for Item 1.2 above. Also list details of work under way or committed, including expected completion date.

Project name and country	Name of employer and contact person	Type of Services provided and year of completion	Value of contract	% completed (in terms of payment received)	Payment received (Payment Certificate to be submitted in support)				
					Provision of GCP	Raw Data Acquisition using aerial LiDAR survey	Preprocessing of LiDAR data	Post processing for DEM	QA/QC

- 1.4 Major items of Service Provider's Equipment proposed for carrying out the Services. List all information requested below. Refer also to Section III 3(a).

Item of equipment	Availability Proposal				Remarks (from whom to be leased/ purchased)
	Make & Model of Equipment / Name of software	Owned/ Leased/ To be procured	Nos.	Age/ Condition	
(a) UAS/Drone or Aircraft/ Helicopter					
(b) Aerial LiDAR Scanner-range at least 120 m or more AGL with IMU, GPS and associated Control Units as per the equipment specifications in Aerial LiDAR specifications					
(c) Aerial medium format camera (above 50 Megapixel)					
(d) Dual Frequency GNSS receivers:					
(e) High end Workstations					
(f) Middle/Entry level workstation					
(g) Network Storage system					
(h) Backup Device (Minimum 30 TB)					
(i) Servers					
(j) Software of Flight Planning, Monitoring and Pre processing					
(j) Post processing software for DEM					
(k) Post processing software for Ortho-Imagery					

Note: - Pl refer Section III for minimum requirement of equipments.

1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data. Refer also to Section III 3(b) and GCC Clause 4.1.

Table 1.5(a)

Sl. No.	Title of Position	Minimum required	No of Persons proposed	Years of experience in proposed position
1	Project Manager			
2	Operatot/Pilot			
3	Supervisor			
4	Operator – Pre-processing of raw data			
5	Operator – Post-processing of DEM			
6	Operator – Post-processing of Ortho-Imagery			
7	GNSS Controller			
8	System Manager cum Data Manager			
9	Expert QA/QC			

b) Details of Proposed Positions (Names):

Table 1.5(b)

1	Title of Position: Project Manager Name:
2	Title of Position: Operator/Pilot Name:
3	Title of Position: Supervisor <i>Names of all Supervisor should be given</i>
4	Title of Position: Operator – Preprocessing of Raw – Data <i>Names of all Operator should be given</i>
5	Title of Position: Operator (Post-Processing DEM) <i>Names of all Operator should be given</i>
6	Title of Position: Operator (Post-processing of Ortho-Imagery) <i>Names of all Operator should be given</i>
7	Title of Position: GNSS Controller <i>Names of all GNSS Controller should be given</i>
8	Title of Position: System Manager cum Data Manager <i>Names of all System Manager cum Data Manager should be given</i>
8	Title of Position: QA/QC Expert <i>Names of all QA/QC Expert should be given</i>

**c) Resume of every Proposed Personnel should be enclosed as per format given below:
Table 1.5(c)**

Title Position as per Table 1.5(b): _____

[e.g. for Project Manager, Operator/Pilot, Supervisor, Operator, System Manager & QA/QC Expert etc]

Name of Bidder:		
Position:		
Personnel Information	Name:	Date of Birth:
	Professional Qualification:	
	General of Experience:	
	Experience in Proposed Position:	
Present	Name of Employer:	
	Address of Employer:	
	Telephone:	Contact (Manager/Personnel officer)
	Fax:	E-mail:
	Job Title:	Years with present employer

Summarize professional experience over the last 10 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.		
S.No.	Period (From-To)	Details of experience in LiDAR work
1		Company : Project Name : Brief description of project : Position (in which worked) : Details of work handled :
2		Company : Project Name : Brief description of project : Position (in which worked) : Details of work handled :

3		Company : Project Name : Brief description of project : Position (in which worked) : Details of work handled :
---	--	--

1.6 Proposed subcontracts and firms involved. Refer to GCC Clause 3.5 and 4.1.

Sections of the Services	Value of subcontract	Subcontractor (name and address)	Experience in providing similar Services
(a)			
(b)			

1.7 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.

1.8 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents. We certify/confirm that we comply with eligibility requirements as per Section III

1.9 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Employer.

1.10 Information regarding any litigation, current or within the last five years, in which the Bidder is or has been involved.

Other party(ies)	Cause of dispute	Details of litigation award	Amount involved
(a)			
(b)			

1.11 Statement of compliance with the requirements of ITB Sub-

Clause 4.2.

- 1.12 Proposed Program (service work method and schedule).
Descriptions, drawings, and charts, as necessary, to comply with the requirements of the bidding documents. Refer also to ITB 17.3.

2. Joint Ventures

- 2.1 The information listed in 1.1 - 1.11 above shall be provided for each partner of the joint venture.
- 2.2 The information in 1.12 above shall be provided for the joint venture.
- 2.3 Attach the power of attorney of the signatory(ies) of the Bid authorizing signature of the Bid on behalf of the joint venture.
- 2.4 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that
- (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
 - (b) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
 - (c) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

3. Additional Requirements

- 3.1 Bidders should provide any additional information required in the AITB.

4. METHOD STATEMENT

[Bidder shall provide information and write-up as per points listed below. The bidder shall furnish the sufficient details in respect of all headings/sub-headings and documentary evidences as per format given below.

1. RAW DATA ACQUISITION & PREPROCESSING

A) **Technology:** Details of Technology for LiDAR data Acquisition :

- i. Workflow showing various stages of work and their inter-dependencies.
- ii. Details of Processes at every stage viz. planning, mission/flight planning, actual execution, pre-processing
- iii. Best Practices that will be adopted at each stage
- iv. Details of manual/semi-automatic/automatic QA/QC measures to be taken during/at end of each stage.
- v. Brief write up based on information provided on above points justifying the adequacy of processes and practices to meet the technical specifications stipulated in bid document for DEM (fundamental & supplementary accuracy)

B) **Equipment:** Make, model and specifications of key equipment viz. Aircraft, On-boards GNSS, On-board IMU, Camera/Sensors for raw data acquisition, hardware & software to be used for flight planning, flight monitoring, pre-processing of raw data and justification of equipment to meet the technical specifications stipulated in bid document

C) **Details of Previous Work:**

- i. Key Specifications of similar work executed by the bidder listed in section III in which LiDAR Technology has been. References to be cited of Indian & International Projects (from bidder's own experience)
- ii. Brief write-up based on information provided above clearly bringing out how by suitable modifications(if any) to the Flying/Acquisition parameters the specifications stipulated in this bid document shall be met requirements of this Project

2. PROVISION OF GROUND CONTROL POINTS

- i. Density & distribution of Ground Stations to be established for correction to onboard GNSS
- ii. Equipment to be used for Observations
- iii. Hardware & Software to be used for computation
- iv. Description of observation methods
- v. Description of computation method
- vi. Density and distribution of check-points for Internal QA/QC, in order to meet the Fundamental & Supplemental accuracy stipulated in Section V

3. POST PROCESSING

- (i) Details of Hardware & IT Infrastructure to be set up in Production Centre justifying its adequacy to handle and store raw Data, key intermediate data, data under process and Processed Data/deliverables.
- (ii) Software to be used for Post-Processing for generating DEM
- (iii) Workflow showing various stages of Post-Processing and their interdependencies
- (iv) Details of manual/semi-automatic/automatic processes involved for vegetation correction, built-up area correction, large water-bodies etc for meeting supplemental accuracy stipulated in the bid-document
- (v) Brief write-up on identification of spring sheds through terrain analysis and/or photo/lidar data interpretation
- (vi) Best Practices that will be adopted at each stage
- (vii) Details of manual/semi-automatic/automatic QA/QC measures to be taken for DEM
- (viii) Brief write-up based on information provided above justifying the adequacy of hardware, software, methods & processes proposed to meet the specifications stipulated in the bid-document

5. WORK PLAN & SCHEDULE

[Bidder shall provide following information/details for their Work-Plan/Schedule. The information & details must be provided by the bidder as per format given below. The information shall be provided in sufficient detail in respect of all headings/sub-headings.]

1. Resource Deployment

- i. Activity wise Effort Estimate viz. Raw Data Acquisition & Pre-processing, Provision of Ground Control, Post-Processing
- ii. Activity wise expected out-turns
- iii. Manpower resources proposed based on effort estimate calculation & expected out-turns for all the activities
- iv. Details of resource deployment for Internal QA/QC by the bidder shall also be provided.
- v. Number of shifts proposed
- vi. Quantity of equipment (aircrafts fitted with on-board GNSS & IMU, Camera & sensors), instruments, hardware and software for every activity.

2. Time Schedule: Outline the time-schedule of activities, their phasing and interrelations, milestones and delivery plan.

3. In case of JV and sub-contracting for permitted activities, the division of responsibility to each member should be clearly spelt out.
4. Bidder shall provide details of resource deployment in similar services performed by them in previous projects to justify that the proposed work plan from their previous experience
5. The work-plan, schedule and resource deployment has to be submitted separately for different lots/phase clearly bringing out the details of resources/works that are clubbed (if any).

Price Schedule Forms

*[The Bidder shall fill in these Price Schedule Forms in accordance with the instructions indicated. The list of line items in column 1 of the **Price Schedules** shall coincide with the List of Goods and Related Services specified by the Purchaser in the Schedule of Requirements.]*

PROVISION OF SERVICES FOR ACQUISITION, PROCESSING AND DELIVERY OF DTM USING AIRBORNE LIDAR AND OPTICAL SENSOR IN THE STATE OF UTTARAKHAND

6. PRICE AND COMPLETION SCHEDULE - SERVICES

Lot No. 1

Date: _____

OTE No: _____

Alternative No: _____

Page No: _____ of _____

1	2	3	4	5	6	7	8	9
Service No.	Description of Services (excludes inland transportation and other services required in India to convey the goods to their final destination)	Unit	Delivery Date at place of Final destination	Quantity and physical unit	Unit price	Total Price (col 5*6)	GST and other taxes payable per item if Contract is awarded	Total Price per Service (Col. 7+8)
1	Provision of Planimetric Ground controls	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
2	Raw Data Acquisition.	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
3	Pre-processing of Raw Data	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
4	Post Processing for generation of DEM (0.5 m) and Classified LIDAR Point cloud.	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
5	Generation of Spring shed	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
6	Generation of Ortho Photo	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
Total Bid Price								

Name of Bidder [insert complete name of Bidder] Signature of Bidder [signature of person signing the Bid] Date [insert date]

NB: The cost of setting up Production Centre and mobilization, deployment and use-rate of equipment, h/w, s/w, other costs associated with Preparation of site wages/salary of manpower deployed and all other expenses incurred on items 1 to 5 shall be deemed to be included under respective items

7. PRICE AND COMPLETION SCHEDULE - SERVICES

Lot No. 2

Date: _____

OTE No: _____

Alternative No: _____

Page No: _____ of _____

1	2	3	4	5	6	7	8	9
Service No.	Description of Services (excludes inland transportation and other services required in India to convey the goods to their final destination)	Unit	Delivery Date at place of Final destination	Quantity and physical unit	Unit price	Total Price (col 5*6)	GST and other taxes payable per item if Contract is awarded	Total Price per Service (Col. 7+8)
1	Provision of Planimetric Ground controls	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
2	Raw Data Acquisition.	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
3	Pre-processing of Raw Data	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
4	Post Processing for generation of DEM (0.5 m) and Classified LIDAR Point cloud.	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
5	Generation of Spring shed	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
6	Generation of Ortho Photo	100% of area	At DehraDun 2 months from date of signing contract	(Sq km)				
Total Bid Price								

Name of Bidder [insert complete name of Bidder] Signature of Bidder [signature of person signing the Bid] Date [insert date]

NB: The cost of setting up Production Centre and mobilization, deployment and use-rate of equipment, h/w, s/w, other costs associated with Preparation of site wages/salary of manpower deployed and all other expenses incurred on items 1 to 5 shall be deemed to be included under respective items

8. BID SECURITY (BANK GUARANTEE)

[The Bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

Beneficiary: _____

Date: _____

BID GUARANTEE No.: _____

WHEREAS, _____ *[name of Bidder]*¹ (hereinafter called "the Applicant") has submitted his Bid dated _____ *[date]* or will submit his Bid for the supply of _____ *[name of Contract]* (hereinafter called "the Bid") under o
Open Tender Enquiry No.....*[insert number]* (hereinafter called "the OTE")

KNOW ALL PEOPLE by these presents that We _____ *[name of bank]* of _____ *[name of country]* having our registered office at _____ (hereinafter called "the Bank") are bound unto _____ *[name of Purchaser]* (hereinafter called "the Purchaser ") in the sum of _____² for which payment well and truly to be made to the said Purchaser the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20____.

THE CONDITIONS of this obligation are:

- (1) If after Bid opening the Applicant (a) withdraws his bid during the period of Bid validity specified in the Letter of Bid; or (b) does not accept the correction of the Bid Price pursuant to ITB 35;

or

- (2) If the Applicant having been notified of the acceptance of his bid by the Purchaser during the period of Bid validity:
 - (a) fails or refuses to execute the Contract Agreement in accordance with the Instructions to Bidders, if required; or
 - (b) fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders.

¹*In the case of a JV, the bidder should be stated as "a Joint Venture consisting of, and".*

²*The Applicant should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 19.1 of the Instructions to Bidders.*

we undertake to pay to the Purchaser up to the above amount upon receipt of his first written demand, without the Purchaser having to substantiate his demand, provided that in his demand the Purchaser will note that the amount claimed by him is due to him owing to the occurrence of one or any of the four conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date _____³ days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Purchaser, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

[signature, name, and address]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

³ _____
45 days after the end of the validity period of the Bid.

9. PROFORMA FOR PERFORMANCE STATEMENT

[Please see ITB Clause 36.2 and Section III-Evaluation and Qualification Criteria]

Proforma for Performance Statement (for a period of last five years)

Bid No. _____ Date of opening _____ Time _____ Hours
 Name of the Firm _____

<u>Order placed by (full address of Client)</u>	<u>Order No. and date</u>	<u>Description of services and quantity of ordered in terms of area</u>	<u>Value of order</u>	<u>Date of completion of service</u>		<u>Remarks indicating reasons for late delivery, if any</u>	<u>Attach a certificate from the concerned employer for satisfactory performance of service contract</u>
				As per contract	Actual		
1	2	3	4	5	6	7	8

Signature and seal of the Bidder _____

Note:

1. In support of having completed above works, attach self-attested copies of the completion certificate from the owner/client or Executing Agency / Consultant appointed by owner / Client indicating the name of work, the description of work done by the Bidder, date of start, date of completion (contractual & actual) and contract value as awarded and as executed by the Bidder. "Contract Value" shall mean gross value of the completed work including cost of materials supplied by the owner/client but excluding those supplied free of cost.
2. Credential certificates issued by Government Organizations/ Semi Government Organizations of Central or State Government; or by Public Sector Undertakings/Autonomous Bodies of Central/State Government or their subsidiaries / by Public Ltd. Companies listed in Stock exchange in India or Abroad shall only be accepted for assessing the eligibility of a Tenderer. Certificates issued by one of the aforesaid organizations as a lead member (having equity stake of 51% or more) of a Joint Venture (JV) for a work executed for the JV, will also be acceptable. In case of PPP projects, if the bidder has executed a work for a concessionaire who is one of the aforesaid organizations, then the certificate issued by such concessionaire or by the public authority concerned, will also be acceptable.
- 3 Information must be furnished for works carried out by the Bidder in his own name or proportionate share as member of a Joint Venture. In the latter case details of contract value including extent of financial participation by partners in that work should be furnished.
- 4 If a Bidder has got a work executed through a Subcontractor on a back to back basis, the Bidder cannot include such a work for his satisfying the Qualification Criterion even if the Client has issued a Completion Certificate in favour of that Bidder.
- 5 Use a separate sheet for each partner in case of a Joint Venture.
- 6.Only similar works completed during the last 5 years prior to the last stipulated date for submission of Bid, which meet the Qualification Criterion need be included in this list.

PART 2 - SUPPLY REQUIREMENTS

SECTION V – SCHEDULE OF REQUIREMENTS

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1.LIST OF GOODS AND DELIVERY SCHEDULE

Deleted

2. ACTIVITY SCHEDULE

Service	Description of Service	Quantity ¹	Physical Unit	Place where Services shall be performed	Final Completion Date(s) of Services
<i>[insert Service No]</i>	<i>[insert description of Related Services] [Insert after modifying as appropriate deleting inapplicable items from the following:]</i>	<i>[insert quantity of items to be supplied]</i>	<i>[insert physical unit for the items]</i>	<i>[insert name of the Place]</i>	<i>[insert required Completion Date(s)]</i>
1	Provision of Planimetric Ground controls	100% of area	Sq. Km	at DehraDun	2 months from date of signing contract
2	Raw Data Acquisition.	100% of area	Sq. Km	at DehraDun	2 months from date of signing contract
3	Pre-processing of Raw Data	100% of area	Sq. Km	at DehraDun	2 months from date of signing contract
4.	Post Processing for generation of DEM (0.5 m) and Classified LIDAR Point cloud.	100% of area	Sq. Km	at DehraDun	2 months from date of signing contract
5	Generation of Spring shed	100% of area	Sq. Km	at DehraDun	2 months from date of signing contract
6	Generation of Ortho Photo	100% of area	Sq. Km	at DehraDun	2 months from date of signing contract

3. TECHNICAL SPECIFICATIONS

1. General:

Airborne LiDAR Survey shall be carried out for the Tehri District in state of Uttarakhand. Data will be captured with reference to control network already established by CORS Network in State of Uttarakhand. To achieve the required accuracy, the bidder will have to establish additional ground control points prior to flying.

The following data will be provided to the contractor:

- Area of Interest (AOI) in shp and kmz format
- Coordinates of ground control points
- Sketches of ground control points
- Static Observation Data of Reference stations for post processing

Broadly, the contractor would need to provide the following services:

- (i) Provision of Ground controls as per requirements of project to achieve the required accuracy.
- (ii) Procuring necessary clearances from DGCA & Ministry of Defense, Government of India, and other agencies for flying over the AOI to acquire raw LiDAR data, Imagery etc.
- (iii) Compliance of Requirements for Operation of Civil Remotely Piloted Aircraft System (RPAS) issued by DGCA and amendment issued to it time to time.
Or
- (iv) Compliance of requirements for operation as non scheduled operator for performing aerial survey work issued by DGCA/MOCA. Compliance of Aircraft rules 2010 and amendments issued to it time to time.
- (v) Preparation of flight plan
- (vi) Acquiring and pre-processing LiDAR data and integration of Geoid model for obtaining orthometric heights for each point
- (vii) Post-processing of LiDAR data to produce the following:
 - a. DSM
 - b. DEM
 - c. DTM
 - d. Inventory of springs
 - d. Spring Shed
- (viii) Block adjustment and ortho rectification
- (ix) Conducting Quality Control/Quality Assurance (QC/QA) to establish correctness of flight operations
- (x) Validating horizontal and vertical accuracy through independent means
- (xi) Compliance with other product requirements such as file naming, datum and projection, units, etc
- (xii) Delivery of raw data, other products and supporting reports

2. Scope of Work

a. Clearances for flying

The contractor is responsible to obtain necessary clearances from Director General of Civil Aviation, Ministry of Defense, Government of India, and other agencies as may be

required to complete the job of flying over the AoI, acquire LiDAR and digital camera data etc. The client would provide necessary documentation; however, getting clearance would be the entirely the responsibility of the contractor. Scope of this activity shall also include performing responsibilities of Rule 15A and Rule 133A of the Aircraft Rules, 1937 and of obtaining Unique Identification Number (UIN), Unmanned Aircraft Operator Permit (UAOP) and other operational requirements for civil Remotely Piloted Aircraft System (RPAS).

For manned aircraft flying, Scope of this activity shall also include performing responsibilities of Non-Scheduled Operator for performing Aerial Work as required for performing the services. Valid Non-Scheduled Operator's Permit (NSOP) should be held by the firm (as single entity or JV) or its subcontractor, granted by the Central Government under sub-rule (2) of rule 134A of Aircraft (2nd Amendment) Rules, 2010, published in the Gazette of India vide Ministry of Civil Aviation Notification No. 423 dated 29th July 2010. The bidder may perform the duties of NSOP by itself or may subcontract it to firm which is NSOP holder.

b. Flight Planning

The flight path shall cover the study area completely including enough cross flight lines to eliminate shadowing and allow for proper quality control. Flight line overlap should be 30% or greater, as required, to ensure that there are no data gaps between the usable portions of the swaths. Data collections in high relief terrain should have greater overlap. Any data with gaps between the geometrically usable portions of the swaths will be rejected.

The contractor shall generally avoid missions during inclement weather which have been known to degrade the accuracy of laser return data. The contractor must document mission date, time, flight altitude, airspeed, scan angle, scan rate, laser pulse rates, and other information deemed pertinent.

c. Sensor Calibration

The contractor must provide calibration certificate of sensor issued by the manufacturer. In addition, the contractor must submit evidence that the total LiDAR system was calibrated prior to current project initiation, for the purposes of identifying and correcting systematic errors. Proper system calibration requires repetitive over-flight of terrain features of known and documented size and elevation using flight paths similar to those that will be used in the AoI.

d. Ground Control Survey

The contractor must use ground control network already established SOI CORS Network or extended (to be established by contractor using GNSS) with reference to existing ground control network. The details of existing control network will be provided prior to commencement of work. GNSS used for this exercise should be dual frequency (L1 and L2) and multi-channel capability with on-the-fly ambiguity resolution and be able to log GPS data at 1-second epochs or better. For the purpose of the aerial LiDAR survey, at any point of time during aerial operation, 1 GNSS control point should be available within 30 km range from Aircraft. To ensure redundancy two GNSS points should be setup. Such a point would be transferred on a flat surface and clearly marked out for visibility from the aerial LiDAR platform. The horizontal accuracy of the above work after processing of

data and network adjustment will be 1:100,000 or better. Fixing of GNSS control points will be carried out as per specification mentioned in Section V 3(14). During data collection, two DGPS base stations will simultaneously be used during the mission.

e. Pre-Processing

The raw LiDAR data should be assembled for clipping, filtering, and processing. The elevation data may then be examined and compared to known values and control. Because of the reflective nature of light, it is common for errors to be recorded because of the reflectivity, or lack thereof, from surfaces within the project area. Though a few points within each mission are indeed identified as discrepant, it is an insignificant percentage (usually less than 5%) that should be removed from the data.

f. Post-Processing

The contractor will provide high-resolution, high-accuracy, "bare-earth" ground elevation data at regular spacing (DEM), irregular spacing with mass points and break-lines (DTM), and the elevation data of all top surfaces (DSM) from raw/pre-processed data. To restrict data to ground elevations only, the contractor must remove elevation points on bridges, buildings, and other structures and on vegetation, from the LIDAR-derived data. In addition to randomly spaced LIDAR points, before and after removal of data associated with structures and vegetation, the contractor must produce a bare-earth DEM of 0.5m accuracy. The contractor must use Triangular Irregular Network (TIN) linear interpolation procedures, including break lines, when validating the vertical accuracy of the data models. The contractor will set up Production Centre at G&RB, Survey of India (SoI) at Dehra Dun which would include setting up LAN and mobilization of adequate storage systems, servers, workstations, software, peripherals etc to handle/store raw data, intermediate data, data under process and processed data/deliverables. Post processing shall include integration of Geoid model supplied by SOI with the DEM on ellipsoidal heights, generated by contractor, to yield DEM on MSL heights. The contractor will ensure Proper versioning, file naming and management of data in various Production Cycles.

g. Quality Control/ Quality Assurance

Quality Control/Quality Assurance (QC/QA) of the LIDAR and/or LiDAR derived data at various stages of Project including validating horizontal and vertical accuracy as per specifications laid down in RFB will be the responsibility of the contractor. The client may perform additional QC/QA testing. This shall include (a) Carrying out corrections as per Quality Audit Report and security vetting report provided by SOI (b) Facilitating quality audit, stage approvals, security vetting and final acceptance tests by SOI (c) Carrying out corrections after security vetting as pointed out by concerned agencies.

3. General LiDAR Specification:

1	Fundamental Spatial Accuracy Requirements	Fundamental spatial accuracy of the survey must conform to the following: a. Fundamental Vertical Accuracy (FVA) * i) $\leq \pm 10$ cm 95% confidence interval (1.96 x RMSE) b. Fundamental Horizontal Accuracy (FHA)
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		ii). \leq +/- 15cm 95% confidence interval (1.96 x RMSE)
	Supplemental Spatial Accuracy Requirements	<p>Supplemental spatial accuracy of the survey must conform to the following:</p> <p>a. Supplemental Vertical Accuracy (SVA)*</p> <p>i).\leq +/- 15 cm. 95% confidence interval (1.96 x RMSE) for terrain with low crop/low weeds</p> <p>ii).\leq +/- 25 cm. 95% confidence interval (1.96 x RMSE) for terrain with tall crop/tall weeds/tall scrub/dense forest/thick vegetation</p> <p>b. Supplemental Horizontal Accuracy (SHA)</p> <p>i).\leq +/- 15 cm. 95% confidence interval (1.96 x RMSE) for terrain with low crop/low weeds</p> <p>ii).\leq +/- 25 cm. 95% confidence interval (1.96 x RMSE) for terrain with tall crop/tall weeds/tall scrub/dense forest/thick vegetation</p>
2	Map Projection	Universal Transverse Mercator projection.
3	Datum	<p>Vertical datum: Survey of India Vertical datum MSL /Geoid of +/- 30 cm accuracy within or adjacent to the project extent.</p> <p>Horizontal datum: The World Geodetic Datum 84 (WGS84)</p>
4	Adjustment to local vertical datum	Adjustment to “local” Survey of India vertical datum (MSL) is to be done using Geoid Model provided by purchaser.
5	Survey Control	<ol style="list-style-type: none"> 1. All survey control data used or derived from this contract must be supplied to ensure independent Quality Assurance (QA) of the survey operations, and for possible inclusion in the Survey of India survey control infrastructure. It is therefore essential that all primary ground stations are permanently marked in accordance with the appropriate SoI standards. 2. The primary ground control and check point surveys must be referenced to the survey of India local vertical datum specified above comprising Survey of India Bench marks. 3. Survey to establish new primary control shall use techniques to achieve a minimum standard of twice the accuracy of Survey of India’s Phase I & II GCPs ie +/- 6 cms. This will be mentioned in the Project Plan and Project Report submitted to client. 4. Elevation data must be validated and corrected for systematic errors to ensure accuracy specifications are met. Documentation must describe how this has been achieved.
6.	Airborne platform Considerations	Airborne platform should be able to provide efficient operations for sensors up to 6000m above sea level; they should offer endurance

		of 60 min or more in hilly terrain and having capability to operate at temperature range 0 ⁰ C to 40 ⁰ C.
7.	Operating Altitude	120m or higher above AGL
8.	Sensor Requirements	The sensor must be capable of: <ol style="list-style-type: none"> a. Detecting multiple discrete returns, with a minimum of 4 potential returns or more for each outbound laser pulse. b. Recording the intensity of each return. Full waveform collection is both acceptable and welcomed; however, waveform data is regarded as supplemental information. The requirement for deriving and delivering multiple discrete returns remains in force in all cases.
9	Data Density	8 Points/m ² (minimum after discarding unusable points)
10.	Collection Requirements	<ol style="list-style-type: none"> 1. The survey design must plan on: <ol style="list-style-type: none"> a. recording a minimum Nominal Post Density (NPD) of eight (8) outbound pulses per square meter b. a scan angle not exceeding 40° Total FOV (+/- 20° from nadir) 2. An across/along track point spacing ratio not exceeding 2/3. Note: This requirement is primarily applicable to oscillating mirror LIDAR systems. Other instrument technologies may be exempt from this requirement. 3. Flight line overlap must be 30% or greater, as required to ensure there are no data gaps between the usable portions of the swaths. Collections in high relief terrain are expected to require greater overlap. Any data with gaps between the geometrically usable portions of the swaths will be rejected. 4. Data Voids ** Should the deliverable fail this test, multiple passes with airborne sensor and/or Ground Measurements shall be done by the Service Provider (with void areas =>4xNPS²), measured using 1st-returns only within a single swath are not acceptable, except: <ol style="list-style-type: none"> a. where caused by water bodies b. where caused by areas of low near infra-red (NIR) reflectivity such asphalt or composition roofing c. where appropriately filled-in by another swath 5. The spatial distribution of geometrically usable points is expected to be uniform and free from clustering in order to ensure consistent data densities throughout the project area. <ul style="list-style-type: none"> • A regular grid, with cell size equal to the design NPSx4 will be laid over the data.

		<ul style="list-style-type: none"> • At least 90% of the cells in the grid shall contain at least 32 lidarpoint. Assessment to be made against single swath, first return data located within the geometrically usable center portion (typically ~90%) of each swath. • Acceptable data voids identified previously in this specification are excluded. <ol style="list-style-type: none"> 6. Environmental conditions for data capture. <ol style="list-style-type: none"> a. Cloud and fog free between the UAS/Drone and the ground. b. Preferably, during leaf off season c. Flights should not be undertaken during periods of heavy smoke haze. 7. Every effort shall be made to avoid breaks within individual flight lines. Where breaks within a flight line are necessary, the entire flight line composed of the resulting segments shall meet all of the requirements set forth in specifications. 8. Survey area: Collection Area: The identified Area, buffered by a minimum of 100 meters
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*The Vertical Accuracies mentioned above ie. FVA & SVA refer to Ellipsoidal Heights

** Should the deliverable fail this test, multiple passes with airborne sensor and/or Ground Measurements shall be done by the Service Provider

4. **LiDAR POINT CLOUD (data) SPECIFICATIONS**

Sl. No.	Deliverables	Specifications
1.	Data	<p>a. Each LiDAR LAS file (per tile) produced should contain the following elements, as a minimum, for each return:</p> <ul style="list-style-type: none"> i. The return number for each signal ii. Horizontal and Vertical Position (x,y,z) in the specified horizontal and vertical datum iii. Intensity return values for each return signal iv. GPS Timestamp of capture for each point (the timestamp should be unique for each laser pulse) v. Geo-reference information included in the LAS header <p>b. LiDAR data from different flight lines will be consistent across flight lines with a maximum 7-10 cm vertical offset between adjacent flight lines. This is referred to as the relative accuracy.</p> <p>c. No data voids due to system malfunctions or lack of overlap.</p> <p>d. Dense vegetation data voids minimized by automatic removal process.</p> <p>e. The lineage (metadata), positional, content (completeness), attribution, and logical consistency accuracies of all digital elevation data produced will conform to the specifications.</p> <p>f. Product Accuracy Information Reporting: Product accuracy information will be reported according to NSSDA guidelines. At a minimum, statements concerning source materials and</p> <p>g. Production processes used will be provided in the metadata sufficient to meet the requirement of the Accuracy Standards.</p> <p>h. LiDAR data will be classified correctly with limited artifacts or misclassifications remaining in the dataset.</p> <p>i. LiDAR processing and editing will be consistent.</p> <p>j. Statistics run on 100% of the data will verify file</p>

		formatting, projection information, classes used, scan angles, returns per pulse, and nominal point density
2	Unclassified Point Cloud	<ol style="list-style-type: none"> 1. All returns, all collected points, fully calibrated and adjusted to specified vertical datum, by swath. 1 file per swath, 1 swath per file, (file size not to exceed 2GB). 2. Fully compliant LAS v1.2 (or v1.3), point record format with all standard attributes including: <ol style="list-style-type: none"> a. Intensity values (native radiometric resolution). b. Return number. c. Georeferencing information in all LAS file headers. d. GPS times recorded as adjusted GPS time, at a precision sufficient to allow unique timestamps for each pulse. 3. LAS v1.3 deliverables with waveform data are to use external “auxiliary” files with the extension “.wdp” for the storage of waveform packet data. See the LAS v1.3 specification for additional information). 4. Data is to be provided in the following Vertical Datums: <ol style="list-style-type: none"> a. Orthometric (Survey of India Vertical Datum) b. Ellipsoidal (WGS-84). 5. File naming
3	Classified Point Cloud	<ol style="list-style-type: none"> 1. All returns, all collected points, fully calibrated and adjusted to specified vertical datum, and classified as specified below. 2. Fully compliant LAS v1.2 (or v1.3), point record format with all standard attributes including: <ol style="list-style-type: none"> a. Intensity values (native radiometric resolution). b. Return number. c. Geo- referencing information in all LAS file headers. d. GPS times recorded as adjusted GPS time, at a precision sufficient to allow unique timestamps for each pulse. e. ALL points not identified as “Withheld” are to be classified. 3. LAS v1.3 deliverables with waveform data are to use external “auxiliary” files with the extension “.wdp” for the storage of waveform packet data. See the LAS v1.3 specification for additional information)

		<p>4. Data is to be provided in the following Vertical Datums:</p> <ol style="list-style-type: none"> Orthometric (Survey of India Vertical Datum) Ellipsoidal (WGS-84). <p>5. Tiled delivery, as per Data Supply and Reporting Specifications at 10.3 below.</p> <p>6. File naming</p>																																													
4	LiDAR Point Cloud Classification Scheme	<p>1. All classified point cloud data must adhere to the following classification scheme. (The ASPRS scheme of classification can be seen for reference)</p> <p>2. The minimum number of point classes to be delivered according to this scheme is defined by the Classification Level specified below.</p> <table border="1"> <thead> <tr> <th>Number</th> <th>Point Class</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Unclassified</td> <td>Created, never created</td> </tr> <tr> <td>1</td> <td>Default</td> <td>Unclassified</td> </tr> <tr> <td>2</td> <td>Ground</td> <td>Bare ground</td> </tr> <tr> <td>3</td> <td>Low vegetation</td> <td>0 – 0.3m (essentially sensor ‘noise’)</td> </tr> <tr> <td>4</td> <td>Medium vegetation</td> <td>0.3 – 2m</td> </tr> <tr> <td>5</td> <td>High vegetation</td> <td>>2m</td> </tr> <tr> <td>6</td> <td>Buildings, structures</td> <td>Buildings, houses, sheds, silos etc</td> </tr> <tr> <td>7</td> <td>Low/high points</td> <td>Spurious high/low point returns (unusable)</td> </tr> <tr> <td>8</td> <td>Model key points</td> <td>Reserved for ‘model key points’ only</td> </tr> <tr> <td>9</td> <td>Water</td> <td>Any point in water</td> </tr> <tr> <td>10</td> <td>Bridge</td> <td>Any bridge or overpass</td> </tr> <tr> <td>11</td> <td>Not used</td> <td>Reserved for future definition</td> </tr> <tr> <td>12</td> <td>Overlap points</td> <td>Flight line overlap points</td> </tr> <tr> <td>13-31</td> <td>Not used</td> <td>Reserved for future definition</td> </tr> </tbody> </table> <p>3. Class 8 “model key points” should be a subset of class 2.</p>	Number	Point Class	Description	0	Unclassified	Created, never created	1	Default	Unclassified	2	Ground	Bare ground	3	Low vegetation	0 – 0.3m (essentially sensor ‘noise’)	4	Medium vegetation	0.3 – 2m	5	High vegetation	>2m	6	Buildings, structures	Buildings, houses, sheds, silos etc	7	Low/high points	Spurious high/low point returns (unusable)	8	Model key points	Reserved for ‘model key points’ only	9	Water	Any point in water	10	Bridge	Any bridge or overpass	11	Not used	Reserved for future definition	12	Overlap points	Flight line overlap points	13-31	Not used	Reserved for future definition
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5	LiDAR Point Cloud Classification Levels	<p>LiDAR data to be delivered are Level 0 and Level 2</p> <p>Level 0 - Undefined Classification</p> <p>Accuracy Required: No accuracy level being specified for Level 0 data.</p> <p>Level 1. Automated and Semi-Automated Classification.</p> <p>Fully or semi-automated, batch processing of the point cloud data into the following classes: 3-5 (vegetation), 6 (buildings/structures), 7 (low/high points and noise), 9 (water). At Level 1, some of these classes such as water</p>																																													

		<p>(9) might be derived with the assistance of masking or other semi-automated techniques</p> <p>Classification Accuracy Required: 95% for Ground points (minimum), and other classes as specified.</p> <p>Level 2 -Ground surface improvement.</p> <p>Fully or semi-automated, batch processing of the point cloud data into the following classes: 2 (ground),8 (Model Key Point). This data is to be further enhanced, using automated and manual methods, by the removal of significant anomalies which remain in the ground class (2). Classification Accuracy Required: 98% for Ground points (minimum), and other classes as specified .Please refer point 2 of Quality assurance specification for Lidar</p>																																																																																																													
6	<p>Required Point Cloud Classification Level</p>	<p>The following point cloud classification levels are required:</p> <table border="1" data-bbox="727 779 1453 1476"> <thead> <tr> <th rowspan="2">Number</th> <th rowspan="2">Point Class</th> <th rowspan="2">Required Classes</th> <th colspan="4">Classification Level Required</th> </tr> <tr> <th>L1</th> <th>L2</th> <th>L3</th> <th>L4</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Unclassified</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>1</td> <td>Default</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>2</td> <td>Ground</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> 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checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	Ground	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	Low vegetation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	Medium vegetation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	High vegetation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6	Buildings, structures	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7	Low/high points	<input checked="" 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5. **LIDAR DERIVATIVE DATA SPECIFICATIONS**

Intensity Image	<ol style="list-style-type: none"> 1. 0.50 m grid intensity image 2. Mosaic generated using average laser intensity values from “first return” LiDAR points. 3. Uncompressed GeoTiff format. 4. Tiled delivery
Digital Surface Model	<ol style="list-style-type: none"> 1. 0.50 m grid intensity image 2. The DSM should be generated from the “first return” LIDAR mass point data. This will include ground and non-ground points such as vegetation and buildings. 3. The DSM generation should employ a Point to TIN and TIN to Raster process with Natural Nearest Neighbour interpolation. 4. Void areas (i.e., areas outside the project boundary but within any tiling scheme) shall be coded using a unique “NODATA” value. 5. Raw datasets and LIDAR system data, including orthometric heights for each point, in comma-delimited ASCII files in x, y, and z format, and DSM in ESRI floating point GRID format and Interleaved by Line (BIL) format.

<p>Digital Elevation Model</p>	<ol style="list-style-type: none"> 1. 0.5m grid bare earth Digital Terrain Model (DTM) 2. The DTM should be generated from the LIDAR mass point data classified as ‘Ground only’, so that it defines the ‘bare earth’ ground surface. 3. The DTM generation should employ a Point to TIN and TIN to Raster process with Natural Nearest Neighbor interpolation. 4. Hydro flattening will be undertaken for natural and manmade water bodies and water courses; Data producers should use their best professional judgment. <ol style="list-style-type: none"> (a) Sizeable water bodies and water courses (b) Flat and level bank-to-bank with a gradient following the immediate terrain. (c) Water courses should break at road crossings and bridges. (d) Sinks must not be filled. (e) The entire water surface edge must be at or immediately below the surrounding terrain. (f) Any additional data layers created for the purposes of hydro flattening such a masks or breaklines must be provided as shapefiles. The Contract Authority must be provided with all necessary data to re-produce the DTM from the mass point data. 5. The methodology used for hydrological enforcement is at the discretion of the data producer. 6. Void areas (i.e., areas outside the project boundary but within any tiling scheme) shall be coded using a unique “NODATA” value 7. Raw datasets and LIDAR system data, including orthometric heights for each point, in comma-delimited ASCII files in x, y, and z format, and DTM in ESRI floating point GRID format and Interleaved by Line (BIL) format. 8. Tiled delivery; DEM tiles will show no edge artifacts or mismatch. A quilted appearance in the overall project DEM surface, whether caused by differences in processing quality or character between tiles, swaths, lifts, or other non-natural divisions, will be cause for rejection of the entire DEM deliverable. 9. File naming as per requirements of and in consultation SoI
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6. **Ortho photo old tender GENERAL ORTHO-PHOTOGRAPH SPECIFICATIONS**

	Description	Specifications
1	Coverage	Same as for LiDAR data
2	Date of Capture	Aerial photographs to be acquired concurrently with LiDAR data.
3	GSD	12 cm
4	Bands	RGB (Three band natural color imagery)
5	End Overlap	60% minimum
6	Side Overlap	30% minimum
7	Collection condition	Same as LiDAR with following additional conditions: - <ol style="list-style-type: none"> 1. Sun angle no less than 30 degree to minimize shadow 2. The project site has high relief changes therefore photograph should be captured at high sun angle to avoid shadows due to these high relief formations. 3. Cloud free with minimal smoke, smog, fog and dust. 4. Minimum soil moisture and after sufficient gap after rainfall. 5. Every effort shall be made to avoid breaks within individual flight lines. Where necessary, the entire flight line composed of the resulting segments shall meet all of the requirements set forth in these specifications. Where breaks occur, these shall have an overlap of at least four frames to ensure a stereo model of overlap or tie.
8	Image format	Uncompressed GeoTIFF
9	Horizontal accuracy	<= +/- 15cm 95% confidence interval (1.96 x RMSE)
10	Imagery Product	Seamless mosaic covering the project area and non-overlapping, edge matched tiles.
11	Radiometric Resolution	Minimum 8 bit per band in accordance with chosen image format
12	Delivery Dates	As per the project timeframe . Raw photograph to be submitted with Raw LiDAR data and processed orthophotograph with final delivery of classified LiDAR point cloud.
13	Horizontal Datum	The World Geodetic Datum 84 (WGS-84)
14	Map Projection	The coordinate system for all deliverables is the Universal Transverse Mercator (UTM).
15	Vertical Datum	Orthometric: All deliverables specified below as orthometric will be referenced to the Survey of India Vertical Datum (MSL) Ellipsoid: All deliverables specified below as ellipsoidal will be in terms of the WGS-84 reference frame. The source of the ellipsoidal height control shall be explained in the "Post-Survey Spatial Accuracy Report".
16	Survey Control	<ol style="list-style-type: none"> 1. Orthophoto generation to use GPS/IMU and ground control information. 2. It is expected that GPS and ground control established for LiDAR component be used for controlling the orthophoto production. If supplemental ground control is obtained the consultant should submit that with client for independent check.

		<ol style="list-style-type: none"> 3. All raw survey control data used or derived from this contract must be supplied to client to ensure independent Quality Assurance (QA) of the survey operations, and for possible use in other surveys requiring these. It is therefore essential that all primary ground stations are permanently marked in accordance with the Survey of India standards. 4. The primary ground control and check point surveys must be referenced to the survey of India local vertical datum specified above comprising Survey of India Bench marks. 5. Survey to establish new primary control shall use techniques to achieve a minimum standard of Survey of India for Densification of geodetic survey or equivalent in international standards. This will be mentioned the Project Plan and Project Report submitted to Client. 6. Any systematic bias in elevation data must be corrected and must be reported to client.
17	Orthorectification	<ol style="list-style-type: none"> 1. The digital elevation data required for this process shall be provided by the LiDAR deliverables specified in this RFP. 2. The rectification process shall use the cubic convolution resampling technique to ensure high accuracy and image quality. 3. The mosaicking process shall minimize image distortions and smearing and produce a seamless edge-matched product. 4. Processes will be used during orthophoto production to avoid the presences of warped and misaligned above ground transportation features. 5. Orthorectified Image tiles shall be tonally balanced prior to generation of an image mosaic. Relative join (misalignment) of transportation features between adjacent image chips/tiles shall be within the tolerance defined by the horizontal positional accuracy requirement set out above. 6. The rectification process shall involve a solution of the appropriate photogrammetric equations for each pixel in the output image. It is not preferable to solve photogrammetric equations at anchor points only and then warp the content of the original image between the anchor points. 7. The consultant will describe its approach for ortho-rectification and get it approved from client.
18	Radiometry	<ol style="list-style-type: none"> 1. All images should be clear and sharp in detail with no light streaks, static marks, scratches, or other noticeable blemishes. The imagery should be free

		<p>from defects, such as out-of-focus imagery, and should not contain inconsistencies in tone and/or density between individual orthos and/or adjacent sheets. To ensure consistency, the imagery should be radiometrically and geometrically corrected to enable adjacent files to be displayed simultaneously without obvious distinctions between them.</p> <p>2. The Contractor will describe their technical approach to producing radiometry balance and get it approved from SOI.</p>
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7. DATA SUPPLY SPECIFICATIONS

	Description	Specifications
1	File naming	File naming per requirements of Survey of India (Sol)
2	Coordinate origins for Gridded Data	The origin of all gridded data must be placed on a whole metre coordinate value that will align with the zero (0) origin of the corresponding UTM Zone.
3	Data Tiling	<ol style="list-style-type: none"> 1. All standard data sets should be supplied as single files where possible and tiled to manageable file sizes if necessary as below: <ol style="list-style-type: none"> a. 1km x 1km tiles based on UTM coordinates with origins that align with the zero (0) origin of the UTM Zone. b. The origin of the tile must be placed on a whole metre coordinate value of the south west corner of each tile. 2. A Tile Index is to be provided by the contractor in ESRI shape file format. The tile name as specified above must be included as an attribute in the Tile Index file. 3. File naming
4	GPS Data for occupations of base-stations	<ol style="list-style-type: none"> 1. GPS data for all base station occupations in excess of 6 hours is to be provided in RINEX V1.2 format (Receiver Independent Exchange Format). 2. GPS observation log sheets should include the following details: <ol style="list-style-type: none"> a. Survey mark id b. Occupation time & date c. Antenna height measurements d. Instrument /antenna types & serial numbers <p>The GPS observation log sheets should be provided in pdf format or Excel spreadsheet if data is captured digitally.</p>
5	Data Delivery Reports	<ol style="list-style-type: none"> 1. A delivery report describing the contents of the data supplied with every data delivery (interim, staged, final). The delivery report must also contain reference to the metadata supplied within the

		delivery.
6	Metadata	<ol style="list-style-type: none"> 1. No metadata standard is being specified. However, the contractor will chose any standard metadata style which confirms to international standards ISO 19115 2005 and ISO 19139 2007, and report the same along with their bid. 2. For each supplied data product a complete metadata statement consistent with the chosen system must be provided in XML format. 3. Metadata must be provided with every delivery including interim, partial and final deliveries. 4. The job will not be completed until the metadata is satisfactorily supplied.
7	Delivery Media	<ol style="list-style-type: none"> 1. Data should be delivered on External Hard Drive (USB or FireWire). External hard drives will be retained by SOI. 2. Data deliveries should be clearly labelled with name of Service Provider, date of supply and list of contents.
8	Report Formats	All reports are to be provided in Word (.doc/.docx) format, Excel spreadsheet (.xls/.xlsx) or appropriate digital format approved by SOI.

8. ORTHOPHOTO Supply Specification

	Description	Specifications
1	Flight Plans	<p>otographs will be captured with LiDAR data both will have the same flight plan.</p> <p>actor should submit the results for complete flight planning prior to project execution along with the Project Plan report.</p> <p>otographs it should have information on projected flight lines, approximate number of exposures, image centres.</p>
2	Calibration Report	Camera and digital sensor calibration reports along with a product characterization report shall be provided
4	Digital Ortho Image	<ol style="list-style-type: none"> (a) Seamless mosaic at anticipated 20 cm pixel resolution. (b) Edge-matched, non-overlapping tiles at anticipated 20 cm pixel resolution.
5	Metadata	<ol style="list-style-type: none"> (d) No metadata standard is being specified. However, the contractor will chose any standard metadata style which conforms to international standards ISO 19115 2005 and ISO 19139 2007, and report the same along with their bid. (e) For each supplied data product a complete metadata statement consistent with the chosen system must be provided in XML format. (f) Metadata must be provided with every delivery including interim, partial and final deliveries.

	(g) The job will not be accepted by client until the metadata is satisfactorily supplied.
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9. PROJECT PLANNING AND REPORTING SPECIFICATIONS AND QUALITY ASSURANCE SPECIFICATIONS

Quality Control/Quality Assurance (QC/QA) of the LIDAR and DC derived data is primarily the responsibility of the contractor. The process shall include reviews of flight alignments and completeness of supporting data (e.g., cross sections, profiles). The Survey of India may perform additional QC/QA testing if needed. Pragmatic QA specifications would need be agreed by the contractor with the Survey of India (SoI) in regard to intermediate steps of flight operations, LIDAR and DC data acquisition and pre-processed LIDAR data. The derived products will be evaluated for spatial accuracy and general conformation to prescribed requirements.

1	Project Plan	<p>Project plan detailing work breakdown structure, agreed data capture plans, project milestones and delivery schedules, progress reporting schedules etc within 10 days after effective contract date.</p> <p>A LIDAR and DC system data report; The LIDAR and DC system data report must include discussions of: data processing methods to be used, including the treatment of artifacts; final LIDAR pulse and scan rates; scan angle; capability for multiple returns from single pulses; accuracy and precision of the LIDAR data acquired; a digital index showing the orientation of all data tiles within the project site with tile labels corresponding to the external hard disc identification numbers/file names, accuracy and precision of the LIDAR data acquired, accuracy of the topographic surface products; companion imagery if any, any other data deemed appropriate.</p> <p>Prior to data collection, the consultant must submit:</p> <ol style="list-style-type: none"> 1. A map (SoI maps are desirable for this purpose) showing the study area boundaries and flight path, at a medium scale (1:50,000) or small scale (1:250,000); 2. Documentation specifying altitude, airspeed, scan angle, scan rate, LIDAR pulse rates, and other flight and equipment information deemed appropriate;
2	Fundamental Spatial Accuracy Validation (FSA)	<p>Vertical Accuracy Validation</p> <ol style="list-style-type: none"> 1. Specify fundamental vertical accuracy of the point cloud dataset using check points located in open and flat terrain. 2. The vertical accuracy of the point cloud dataset is to be tested using a TIN surface constructed from bare-earth LiDAR points compared against ground survey check points. 3. Check points are to be surveyed independently of any LiDAR GPS operations. 4. The number of check points (locations) is dependent on the extent of the survey. The following strategy should be used as a guide: <ol style="list-style-type: none"> a. Check points must be established to adequately cover the full extent of the survey area, and be representative

		<p>of the project area landscape.</p> <p>b. A minimum of 20 check points (locations), then 1 per 50km² where LiDAR coverage exceeds 400km². When 20 points are tested, the 95 percent confidence interval would generally allow 1 point to fail the threshold given in product specifications</p> <p>5. The proposed check point survey design must be submitted with the Project Plan, and approved by client prior to implementation. Acceptance of the post-survey spatial accuracy report discussed above will depend on the quality, number and distribution of these check points.</p> <p>6. If additional independent validation is required, data should be assessed in accordance with mutually agreeable terms.</p> <p>Horizontal Accuracy Validation</p> <p>1. The onus for reaching the required accuracy lies with the data supplier. Independent accuracy assessments may also be carried out by SOI.</p> <p>2. Contractor is required to report on the expected horizontal accuracy of elevation products as determined from system and sensor calibration studies. This must be got approved from SOI before actual flying.</p> <p>3. In the above circumstances a “compiled to meet” statement of horizontal accuracy at 95 percent confidence should be reported.</p> <p>4. The contractor may use feature based horizontal accuracy measures to report horizontal accuracy and should notify the approach in post survey spatial accuracy report.</p> <p>If additional independent validation is required, data should be assessed in accordance with mutually agreeable terms.</p>								
3	Classification Accuracy Validation	<p>1. The contractor should pay due diligence in the classification process to produce datasets that meet the required classification accuracies according to the specified LiDAR Point Cloud Classification Levels and specified classes. It is expected that the data will meet the following tests within any 1km x 1km area:</p> <table border="1" data-bbox="636 1465 1432 1690"> <thead> <tr> <th>Classification level</th> <th>Demonstrated erroneous classification values for specified classes</th> </tr> </thead> <tbody> <tr> <td>Level 0-Unclassified</td> <td>Unspecified</td> </tr> <tr> <td>Level 1-Automated Classification</td> <td><=5%</td> </tr> <tr> <td>Level 2 Ground Surface Improvement</td> <td><=2%</td> </tr> </tbody> </table> <p>SOI should be informed if in some areas it is difficult to achieve these accuracies.</p> <p>2. Contractor should submit 10 profiles of classified point cloud of minimum 200m length spread in the entire</p>	Classification level	Demonstrated erroneous classification values for specified classes	Level 0-Unclassified	Unspecified	Level 1-Automated Classification	<=5%	Level 2 Ground Surface Improvement	<=2%
Classification level	Demonstrated erroneous classification values for specified classes									
Level 0-Unclassified	Unspecified									
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Level 2 Ground Surface Improvement	<=2%									

		<p>project area to demonstrate the accuracy of classified data. These profiles should consist of data from at least two swaths. The profiles have to be at 1:1 scale for screen resolution so that full scale view can be seen. The profiles are to be submitted as .jpg and a shape file showing their location on the data.</p> <p>Classification accuracy tests should be presented in the form of an error matrix for each specified class reporting errors of omission and commission generated from randomly selected points.</p>
4	Classification Consistency Validation	Point classification is to be consistent across the entire project. Noticeable variations in the character, texture, or quality of the classification between tiles, swaths, lifts, or other non-natural divisions will be cause for rejection of the entire deliverable.
5	Spatial Distribution of points validation Modify as per above specification	<p>1. In order to ensure uniform densities throughout the data set the following test is to be conducted and results submitted to Client:</p> <ol style="list-style-type: none"> A regular grid, with cell size equal to the design NPS*4 to be laid over the data. Check how many percent cells in the grid contain at least 16 32 LiDAR point. This should not be less than 90%. Above assessment is to be made against single swath, first return data located within the geometrically usable center portion (i.e. ~90%) of each swath. <p>Acceptable data voids identified previously in this specification are excluded.</p>
6	Interpolation Consistency Validation	All products derived from the LiDAR mass point data as tiles will show no edge artefacts or mismatch. A quilted appearance in the overall project surfaces, whether caused by differences in processing quality or character between tiles, swaths, lifts, or other non-natural divisions, will be cause for rejection of the entire deliverable.
7	Pre-Survey Assurance Plan Quality	<p>1. The Consultant shall prepare and submit to the Contracting Authority a Quality Assurance Plan that conforms to standard practices and generally complies with ISO 9001. The plan must address the organization and management of the project, work procedures, environmental considerations, safety and risk control and test procedures. The plan must also detail the procedures to be used in verifying that the deliverables meet the required specification including:</p> <ul style="list-style-type: none"> The procedures and methodologies to be used to verify that the deliverables meet the required specifications. Details of proposed calibration checks and methodology to be used to establish both reference stations and ground test sites. <p>2. A system calibration report.</p> <p>The Project Plan must be submitted and accepted prior to commencement of the survey.</p>
8	Post-flight report	A flight report: The flight report must document mission date, time, flight

		<p>altitude, airspeed, and other information deemed pertinent. The report must include information about GPS-derived flight tracks, provide a detailed description of final flight line parameters and GPS controls (i.e., benchmarks), and include ground truth and complementary reference data.</p> <p>A ground control report: The report must include, at a minimum, all pertinent base station information and mission notes, including information on GPS station monument names and stability.</p>
9	Post-Survey Spatial Accuracy Report	<p>Acceptance of the Post-Survey Spatial Accuracy Report and related information is required before point classification and other product derivation is to proceed.</p> <p>The absolute and relative accuracy of the data, both horizontal and vertical, and relative to known control, shall be verified prior to classification and subsequent product development.</p> <p>This validation is limited to the Fundamental Spatial Accuracy (defined below), measured in clear, open areas. A detailed report of this validation is a required deliverable.</p> <p>The report will include the following:</p> <ul style="list-style-type: none"> • Flight trajectories as specified below. • Details of system calibration checks. • Results of relative (flight run) matching and details of any adjustments made. • Source of primary ellipsoidal height control. • Details of ellipsoid to orthometric corrections applied including any final adjustment to local SoI datum supplemental to the standard Geoid correction. • Results of vertical and horizontal accuracy validation. • All survey control coordinates, site id and check point comparisons in both Excel spreadsheet and ESRI shape file formats. • Digital photographs of all survey and check sites, with the site Id included in the filename. The bearing of the photo direction should also be included. • Other related information
10	AT Report	<ol style="list-style-type: none"> 1. A detailed narrative of the adjustment process and quality checks for accuracy. 2. A description of the software and equipment used to perform the adjustments. 3. A listing of the final adjusted coordinates in a spreadsheet or format agreed upon during contract negotiations.
11	Flight Trajectories	<p>All flight trajectories used for the capture of the delivered LIDAR data will be supplied in ESRI Shape files. The shape file table's must include the date of capture, local start time, local end time and which reference station was used for each trajectory.</p>
12	Project completion report	<ol style="list-style-type: none"> 1. Ellipsoid model used as part of the collection, geoid model used to compute orthometric heights 2. Data processing procedures for selection of postings, and all orthometric values of x, y, and z coordinates for LIDAR returns. Elevations shall be orthometric heights; and. 3. Report detailing the procedures, datum and projection, units, QC/QA report detailing spatial accuracy and general

		conformation to prescribed requirements, and description of digital products for delivery, and compliance statement on conforming to contract specifications as per para 13.
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10. QUALITY ASSURANCE REPORT SPECIFICATIONS FOR PHOTOGRAPH

	Description	Specifications
1	Horizontal accuracy and GSD	(a) Horizontal accuracy shall be 1:1000 or better (b) GSD 25cm
2	Flight	(a) Crab (roll, pitch, roll) $\leq 5^0$ between any two successive exposure (b) Tilt $<3^0$ for any single exposure $<4^0$ relative and $<1^0$ overall average.
3	Check points	Check points covering area minimum 30sq km
4	Procedure	1. Visual inspection of geometry to be performed to remove seams and edge mis-matches. 2. Visual inspection of the mosaic to correct blurred imagery, improper colour balancing, colour bleeding and shadow details. 3. Random geometric checks to be done for position accuracy between tiles. 4. Visual inspection for judging the minimum overlap of 60% and 30% in forward and side direction is met and features are not obscured due to high relief.

11. DELIVERY OF DIGITAL DATA

In addition to the pre and post-project deliverables described above, the contractor must submit the following:

- (a) One set of unclassified LAS files for specifications refer 4.1 and 4.2 above
- (b) One set of classified LAS files in accordance with the tiling schema (to be decided in consultation with Survey of India) – for specifications refer 4.3 and 4.4 above.
- (c) DEM's (hydro flattened bare earth) of 0.5 m accuracy (on ellipsoidal heights) at regular spacing of 0.5metredelivered in ESRI floating point GRID format and Interleaved by Line (BIL) format in GeoTIFF file format. The DEM's must also be delivered in the project tiling and required naming schema.
- (d) DEM (on MSL heights) after integration with SOI developed Geoid model.
- (e) One set of 0.5 meter intensity imagery in GeoTIFF file format.
- (f) 25 cm GSD Ortho Photo
- (g) Inventory of springs and Spring Shed
- (h) One set of Metadata for each data deliverable.
- (i) DSM as per detailed specifications mentioned in Annex-V.
- (j) Breaklines in dwg format. Breakline files must contain a flag record that identifies them as breakline features and identifies their source and accuracy.
- (k) The contractor must deliver raw datasets and LIDAR system data, including orthometric heights for each point above MSL datum, in comma-delimited ASCII files in x, y, and z format. The consultant also must flag raw datasets from sidelap and overlap areas of separate

flight lines. The consultant must submit raw datasets in project tiling or data models matching those of the DEM and DSM. The contractor must also deliver Raw data captured by various sensors and instruments.

- (l) All Ground control points (GCPs) provided/used for Data Acquisition & Processing.
- (m) Contours at 5 meter vertical interval.

All deliverables must conform to the projection, datum, and coordinate system specified in the contract. File sizes cannot exceed 1 gigabyte, unless otherwise specified by the client. Each file must be organized to facilitate data manipulation and processing.

12. REPORTS

a. Collection Report :

A collection report detailing mission planning and flight logs will be submitted.

b. Survey Report:

A survey report detailing the collection of all ground control including the following will be submitted:

- Control points used to calibrate and process the LiDAR and derivative data
- Check points used to validate the LiDAR point data or any derivative product

c. Processing Report:

A processing report detailing calibration, classification and product generation procedures including methodology used for breakline collection and hydro-flattening will be submitted.

d. QA/QC Report:

A QA/QC report, detailing procedures for analysis, accuracy assessment and validation of the following will be submitted.

- Point data (Absolute vertical accuracy/relative vertical accuracy)
- Bare earth surface (absolute vertical accuracy)

d. LIDAR Project Report:

A LiDAR project report must be delivered at the end of the processing along with the final delivered products. The project report serves as the master report for the entire project and includes detailed explanation on the processing and qualitative assessment performed on the data. The quantitative analysis and the accuracy results must be clearly demonstrated and information on all survey points used for the accuracy analysis must be included. Breakline production procedures should be well defined including the production methodology, qualitative assessment and topology rules used for the project. A data dictionary defining the horizontal and vertical datum, coordinate system and projection used for this project and all breakline feature definitions for streams and rivers, and inland lakes and ponds should be clearly defined. The DEM production methodology and QA/QC assessment on the DEMs must be clearly explained. Table of Contents of a sample project report is placed below:

Table of Contents:

Executive Summary

The Project Team Date of LiDAR

Survey Datum

Reference Lidar Vertical Accuracy

Project Deliverables

Project Tiling Footprint

LiDAR Acquisition Report

LiDAR Acquisition Details

LiDAR Control Airborne

GPS Kinematic Generation and Calibration of Laser Points (raw data)
Absolute and Relative accuracy
Preliminary Vertical Accuracy Assessment
Final Swath Vertical Accuracy Assessment
LiDAR Processing & Qualitative Assessment
Data Classification and Editing
Qualitative Assessment
Analysis
Derivative LiDAR Products
Model Key Points
Bare-Earth LiDAR
First Return LiDAR
Last Return LiDAR
Survey Vertical Accuracy Checkpoints
LiDAR Horizontal & Vertical Accuracy Statistics & Analysis
Background
Horizontal Accuracy Test Procedures
Horizontal Accuracy Testing Steps
Horizontal Accuracy Results
Vertical Accuracy Test Procedures
Vertical Accuracy Testing Steps
Vertical Accuracy Results
Breakline Production & Qualitative Assessment Report
Breakline Production Methodology
Breakline Qualitative Assessment
Breakline Topology Rules
Breakline QA/QC Checklist
Data Dictionary
Horizontal and Vertical Datum
Coordinate System and Projection
DEM Production & Qualitative Assessment
DEM Production Methodology
DEM Qualitative Assessment
DEM Vertical Accuracy Results
DEM QA/QC Checklist
Block Adjustment Report
Ortho Rectification report old tender
Spring Identification methodology
Spring Shed Production Methodology
Breakline Qualitative Assessment
Breakline Topology Rules
Breakline QA/QC Checklist

13. PROVISION OF GROUND CONTROL POINT

SINo.	Description	Specifications
1.	DGPS Control Point	<p>1. Installation of Control Points for LiDAR Survey</p> <p>Using existing ground control network of CORS Network, extension of horizontal and vertical controls in the form of Newly established Survey Control Points NSCP shall be established. Density of these control points will be finalized by contractor in consultation with Survey of India to achieve stipulated accuracy of LiDAR survey.</p> <p>The following points shall be kept in mind while selecting NSCP locations:</p> <ul style="list-style-type: none"> • Clear of HT/LT lines, radio / mobile towers, high frequency dish antennas, radar etc. • Free from multipath problems associated with tall features in the vicinity. • Free from foliage • Free from major obstructions / obstacles • Easily accessible to the survey team. • Open to sky with a clear view towards sky at 15-degree angle with horizontal plain. • NSCP must be located on pillars/permanent structures, which should be easily identifiable in data procured through LiDAR Survey. • Marker numbering scheme shall be finalized in consultation with Survey of India before start of work.
		<p>2. Scheme and schedule of observation</p> <p>The contractor shall prepare a scheme i.e network of NSCPs in advance and get it approved from Survey of India. The network shall be presented on satellite imagery. This should also contain description of proposed NSCPs.</p> <p>When observation scheme containing location of NSCPs which is adequately connecting Existing ground control points forming a network is approved by Survey of India, the contractor shall submit schedule of observation indicating tentative date and time of observation at NSCPs specifying their locations.</p>
		<p>3. Observation of NSCPs/Existing control points</p> <p>Necessary jungle clearance and approach to site for proper execution of work wherever required shall have to done by the contractor at no extra cost.</p> <p>A minimum of 6 healthy satellites should be available during entire duration of observation. Dual frequency DGPS receivers with the required accessories and software are to be used for observations. The DGPS receivers should not be older than three years from the date of award of contract.</p>

		<p>Compatible DGPS instrument and accessories of LEICA /Trimble/ASTECH/Spectraprecision/Topcon/Hemisphere or of any other reputed brand having similar specifications only shall be used so as to achieve the required accuracy. Chinese models of any brand shall not be allowed to use. The DGPS sets used shall be multi channels. The horizontal accuracy of the above work after processing of data and network adjustment will be 1:100,000 or better. Observations taken with Geometric Dilution of Precision (GDOP) exceeding 4 should not be considered. During observations, satellite mask angle should be above 15 degree.</p>
		<p>4. Establishment of NSCPs</p> <ol style="list-style-type: none"> 1. Utilizing existing Ground Control Points provided by Survey of India whose adjusted coordinates are available, DGPS team will be deployed to make observations of NSCPs in Network 2. NSCPs shall be engraved neatly for their identification and will be painted by filling of engraving with contrast color paint. Unique ID of Point and date information are to be engraved. 3. Using digital camera of at least 10 mega pixels, contractor shall take photograph of each NSCPs after finalizing writing etc. and submit it to Survey of India in digital form with proper indexing and labeling.

14. RESPONSIBILITIES

Contractor Responsibilities

- a) The contractor will have the responsibility for obtaining clearance from GoI agencies for flying over the survey area, acquiring and processing LIDAR and DC data including QA/QC, and delivery of raw and processed products to Survey of India.
- b) The contractor shall set up a local office in Dehra Dun for coordinating flying and data acquisition, and processing, and interaction with the SoI. Necessary infrastructure for office and technical work will be created in the local office.
- c) The contractor will have the responsibility to ensure compliance of DGCA issued guidelines for Requirements for Operation of Civil Remotely Piloted Aircraft System (RPAS)

Employer Responsibilities

- Provide necessary documentation for obtaining clearance from GoI agencies if needed.
- Facilitation of interactions with GoI agencies and with state agencies if needed.
- The employer(Survey of India) shall provide Static observation data of CORS network for Ground Control and Geoid model to transform Ellipsoidal heights to Orthometric heights
- Release of funds and review of reports according to the agreed schedule.

- Constitution of a Technical Committee to support for interaction with the contractor on technical issues through the contract period, and in reviewing reports and recommending follow-on actions, QA/QC and for evaluating digital products prior to acceptance.
- Nominated Survey of India Official shall be at the place where LiDAR data is being captured with Operator/pilot during the flying for security reasons.
- The Survey of India shall nominate suitable officer to coordinate the activities, and provide necessary interaction at appropriate times to avoid any disturbance and loss of time for carrying out the assignment.
- Notification for entry to the land for surveying & authorization letter to civil authorities shall be given to the contractor.
- Any other facilities mutually agreed upon by employer and the contractor.

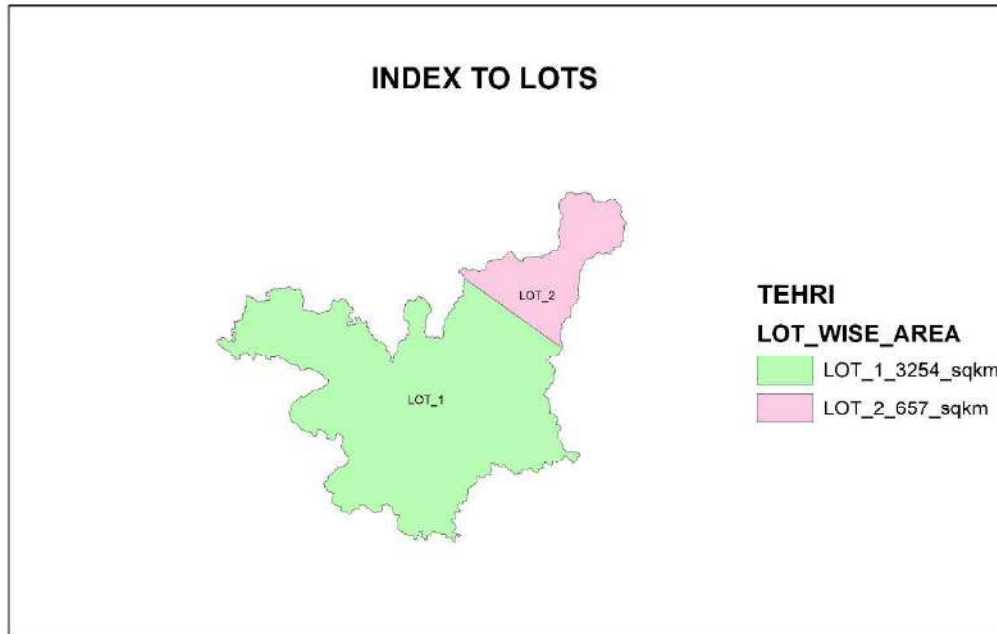
4. DRAWINGS

(Design of LiDAR specific ground targets needs to be erected before the commencement of flying is to be given by bidder along with their technical bid. Density of these targets needs to be finalized by contractor to achieve stipulated accuracy of LiDAR survey)

5. INSPECTIONS AND TESTS

(Refer to Section VI Clause 7)

6. TENTATIVE AREA OF PROJECT SURVEY



PART 3 – CONTRACT

SECTION VI – GENERAL CONDITIONS OF CONTRACT

Section VI. General Conditions of Contract

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Section VI. General Conditions of Contract

1. General Provisions

1. Definitions	<p>Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:</p> <ul style="list-style-type: none">(c) The Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in Sub-Clause 8.2 hereunder.(d) “Activity Schedule” is the priced and completed list of items of Services to be performed by the Service Provider forming part of his Bid;(e) “Completion Date” means the date of completion of the Services by the Service Provider as certified by the Employer(f) “Contract” means the Contract signed by the Parties, to which these General Conditions of Contract (GCC) are attached, together with all the documents listed in Clause 1 of such signed Contract;(g) “Contract Price” means the price to be paid for the performance of the Services, in accordance with Clause 6;(h) “Dayworks” means varied work inputs subject to payment on a time basis for the Service Provider’s employees and equipment, in addition to payments for associated materials and administration.(i) “Employer” means the party who employs the Service Provider(j) “Foreign Currency” means any currency other than the currency of the country of the Employer;(k) “GCC” means these General Conditions of Contract;(l) “Government” means the Government of the India;(m) “Local Currency” means the currency of India;(n) “Member,” in case the Service Provider consist of a joint venture of more than one entity, means any of these entities; “Members” means all these entities, and “Member in
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	<p>Charge” means the entity specified in the SC to act on their behalf in exercising all the Service Provider’ rights and obligations towards the Employer under this Contract;</p> <p>(o) “Party” means the Employer or the Service Provider, as the case may be, and “Parties” means both of them;</p> <p>(p) “Personnel” means persons hired by the Service Provider or by any Subcontractor as employees and assigned to the performance of the Services or any part thereof;</p> <p>(q) “Service Provider” is a person or corporate body whose Bid to provide the Services has been accepted by the Employer;</p> <p>(r) “Service Provider’s Bid” means the completed bidding document submitted by the Service Provider to the Employer</p> <p>(s) “SCC” means the Special Conditions of Contract by which the GCC may be amended or supplemented;</p> <p>(t) “Specifications” means the specifications of the service included in the bidding document submitted by the Service Provider to the Employer</p> <p>(u) “Services” means the work to be performed by the Service Provider pursuant to this Contract, as described in Appendix A; and in the Specifications and Schedule of Activities included inthe Service Provider’s Bid.</p> <p>(v) “Subcontractor” means any entity to which the Service Provider subcontracts any part of the Services in accordance with the provisions of Sub-Clauses 3.5 and 4.</p>
<p>1.2 Applicable Law</p>	<p>The Contract shall be interpreted in accordance with the laws of the Employer’s country, unless otherwise specified in the Special Conditions of Contract (SCC).</p>
<p>1.3 Language</p>	<p>This Contract has been executed in the language specified in the SCC, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract.</p>
<p>1.4 Notices</p>	<p>Any notice, request, or consent made pursuant to this Contract shall be in writing and shall be deemed to have been made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telex, telegram, or facsimile or e-mail to such Party at the address specified in the SCC.</p>

1.5 Location	The Services shall be performed at such locations as are specified in Section V in the specifications and, where the location of a particular task is not so specified, at such locations, whether in the Government of India or elsewhere, as the Employer may approve.
1.6 Authorized Representatives	Any action required or permitted to be taken, and any document required or permitted to be executed, under this Contract by the Employer or the Service Provider may be taken or executed by the officials specified in the SCC .
1.7 Inspection and Audit	Inspection and Audit shall be carried out as per provisions of GFR 2017
1.8 Taxes and Duties	The Service Provider, Subcontractors, and their Personnel shall pay such taxes, duties, fees, and other impositions as may be levied under the Applicable Law, the amount of which is deemed to have been included in the Contract Price.
2. Commencement, completion, modification and termination of contract	
2.1 Effectiveness of Contract	This Contract shall come into effect on the date the Contract is signed by both parties and such other later date as may be stated in the SCC .
2.2 Commencement of Services	
2.2.1 Program	Before commencement of the Services, the Service Provider shall submit to the Employer for approval a Program showing the general methods, arrangements, order and timing for all activities. The Services shall be carried out in accordance with the approved Program as updated.
2.2.2 Starting Date	The Service Provider shall start carrying out the services thirty (30) days after the date the Contract becomes effective, or at such other date as may be specified in the SCC .
2.3 Intended Completion Date	Unless terminated earlier pursuant to Sub-Clause 2.6, the Service Provider shall complete the activities by the Intended Completion Date, as is specified in the SCC . If the Service Provider does not complete the activities by the Intended Completion Date, it shall be liable to pay liquidated damage as per Sub-Clause 3.8. In this case, the Completion Date will be the date of completion of all activities
2.4 Modification	Modification of the terms and conditions of this Contract, including any modification of the scope of the Services or of the Contract Price, may only be made by written agreement between the Parties and shall not be effective until the consent of competent authority in Government of India, has been obtained.

2.5 Force Majeure	
2.5.1 Definition	<p>For the purposes of this Contract, “Force Majeure” (FM) means extraordinary events or circumstance beyond human control such as an event described as an Act of God (like a natural calamity) or events such as war, strike, riots, crimes (but not including negligence or wrong-doing, predictable/seasonal rain and any other events specifically excluded in the clause). An FM clause in the contract frees both parties from contractual liability or obligation when prevented by such events from fulfilling their obligations under the contract. An FM clause does not excuse a party’s nonperformance entirely, but only suspends it for the duration of the FM. The firm has to give notice of FM as soon as it occurs and it cannot be claimed ex-post facto. There may be a FM situation affecting the purchase organization only. In such a situation, the purchase organization is to communicate with the supplier along similar lines as above for further necessary action. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of FM for a period exceeding 90 (Ninety) days, either party may at its option terminate the contract without any financial repercussion on either side.</p>
2.5.2 No Breach of Contract	<p>The failure of a Party to fulfill any of its obligations under the contract shall not be considered to be a breach of, or default under, this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event (a) hastaken all reasonable precautions, due care and reasonable alternative measures in order to carry out the terms and conditions of this Contract, and (b) has informed the other Party as soon as possible about the occurrence of such an event.</p>
2.5.3 Extension of Time	<p>Any period within which a party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.</p>
2.5.4 Payments	<p>During the period of their inability to perform the Services as a result of an event of Force Majeure, the Service Provider shall be entitled to continue to be paid under the terms of this Contract, as well as to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of the Services and in reactivating the Service after the end of such period.</p>
2.6 Termination	<p>The Employer may terminate this Contract, by not less than thirty (30)</p>

	<p>generally accepted professional techniques and practices, and shall observe sound management practices, and employ appropriate advanced technology and safe methods. The Service Provider shall always act, in respect of any matter relating to this Contract or to the Services, as faithful adviser to the Employer, and shall at all times support and safeguard the Employer’s legitimate interests in any dealings with Subcontractors or third parties.</p>
<p>3.2 Conflict of Interests</p> <p>3.2.1 Service Provider Not to Benefit from Commissions and Discounts</p> <p>3.2.2 Service Provider and Affiliates Not to be otherwise Interested in Project</p> <p>3.2.3 Prohibition of Conflicting Activities</p>	<p>The remuneration of the Service Provider pursuant to Clause 6 shall constitute the Service Provider’s sole remuneration in connection with this Contract or the Services, and the Service Provider shall not accept for their own benefit any trade commission, discount, or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations under the Contract, and the Service Provider shall use their best efforts to ensure that the Personnel, any Subcontractors, and agents of either of them similarly shall not receive any such additional remuneration.</p> <p>The Service Provider agree that, during the term of this Contract and after its termination, the Service Provider and its affiliates, as well as any Subcontractor and any of its affiliates, shall be disqualified from providing goods, works, or Services (other than the Services and any continuation thereof) for any project resulting from or closely related to the Services.</p> <p>Neither the Service Provider nor its Subcontractors nor the Personnel shall engage, either directly or indirectly, in any of the following activities:</p> <ul style="list-style-type: none"> (a) during the term of this Contract, any business or professional activities in the Government’s country which would conflict with the activities assigned to them under this Contract; (b) during the term of this Contract, neither the Service Provider nor their Subcontractors shall hire public employees in active duty or on any type of leave, to perform any activity under this Contract; (c) after the termination of this Contract, such other activities as may be specified in the SCC.
<p>3.3 Confidentiality</p>	<p>The Service Provider, its Subcontractors, and the Personnel of either of them shall not, either during the term or within two (2) years after the expiration of this Contract, disclose any proprietary or confidential</p>

	information relating to the Project, the Services, this Contract, or the Employer's business or operations without the prior written consent of the Employer.
3.4 Insurance to be Taken Out by the Service Provider	The Service Provider (a) shall take out and maintain, and shall cause any Subcontractors to take out and maintain, at its (or the Subcontractors', as the case may be) own cost but on terms and conditions approved by the Employer, insurance against the risks, and for the coverage, as shall be specified in the SCC; and (b) at the Employer's request, shall provide evidence to the Employer showing that such insurance has been taken out and maintained and that the current premiums have been paid.
3.5 Service Provider's Actions Requiring Employer's Prior Approval	The Service Provider shall obtain the Employer's prior approval in writing before taking any of the following actions: (a) entering into a subcontract for the performance of any part of the Services, (b) appointing such members of the Personnel not listed by name in Appendix C ("Key Personnel and Subcontractors"), (c) changing the Program of activities; and (d) any other action that may be specified in the SCC
3.6 Reporting Obligations	The Service Provider shall submit to the Employer the reports and documents specified in Appendix B in the form, in the numbers, and within the periods set forth in the said Appendix.
3.7 Documents Prepared by the Service Provider to Be the Property of the Employer	All plans, drawings, specifications, designs, reports, and other documents and software submitted by the Service Provider in accordance with Sub-Clause 3.6 shall become and remain the property of the Employer, and the Service Provider shall, not later than upon termination or expiration of this Contract, deliver all such documents and software to the Employer, together with a detailed inventory thereof. The Service Provider may retain a copy of such documents and software. Restrictions about the future use of these documents, if any, shall be specified in the SCC .
3.8 Liquidated Damages 3.8.1 Payments of Liquidated Damages	The Service Provider shall pay liquidated damages to the Employer at the rate per day stated in the SCC for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the SCC . The Employer may deduct liquidated damages from payments due to the Service Provider. Payment of liquidated damages shall not affect the Service Provider's liabilities. If the Intended Completion Date is extended after liquidated damages

<p>3.8.2 Correction for Overpayment</p> <p>3.8.3 Lack of performance penalty</p>	<p>have been paid, the Employer shall correct any overpayment of liquidated damages by the Service Provider by adjusting the next payment certificate. The Service Provider shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in SubClause 6.5.</p> <p>If the Service Provider has not corrected a Defect within the time specified in the Employer’s notice, a penalty for Lack of performance will be paid by the Service Provider. The amount to be paid will be calculated as a percentage of the cost of having the Defect corrected, assessed as described in Sub-Clause 7.2 and specified in the SCC.</p>
<p>3.9 Performance Security</p>	<p>The Service Provider shall provide the Performance Security of amount as specified in the SCC to the Employer no later than the date specified in the Letter of acceptance. The Performance Security shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. The performance Security shall be valid until a date 28 days from the Completion Date of the Contract in case of a bank guarantee, and until one year from the Completion Date of the Contract in the case of a Performance Bond.</p>
<p>4. Service Provider Personnel</p>	
<p>4.1 Description of Personnel</p>	<p>The titles, agreed job descriptions, minimum qualifications, and estimated periods of engagement in the carrying out of the Services of the Service Provider’s Key Personnel are described in Appendix C. The Key Personnel and Subcontractors listed by title as well as by name in Appendix C are hereby approved by the Employer.</p>
<p>4.2 Removal and/or Replacement of Personnel</p>	<p>a. Except as the Employer may otherwise agree, no changes shall be made in the Key Personnel. If, for any reason beyond the reasonable control of the Service Provider, it becomes necessary to replace any of the Key Personnel, the Service Provider shall provide as a replacement a person of equivalent or better qualifications.</p> <p>b. If the Employer finds that any of the Personnel have (i) committed serious misconduct or have been charged with having committed a criminal action, or (ii) have reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Service Provider shall, at the Employer’s written request specifying the grounds thereof, provide as a replacement a person with qualifications and experience acceptable to the Employer.</p> <p>c. The Service Provider shall have no claim for additional costs arising out of or incidental to any removal and/or replacement of Personnel.</p>

	5. Obligation of the Employer
5.1 Assistance and Exemptions	The Employer shall use its best efforts to ensure that the Government shall provide the Service Provider such assistance and exemptions as specified in the SCC.
5.2 Change in the Applicable Law	If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost of the Services rendered by the Service Provider, then the remuneration and reimbursable expenses otherwise payable to the Service Provider under this Contract shall be increased or decreased accordingly by agreement between the Parties, and corresponding adjustments shall be made to the amounts referred to in Sub-Clauses 6.2 (a) or (b), as the case may be.
5.3 Services and Facilities	The Employer shall make available to the Service Provider the Services and Facilities listed as stated in SCC. 6.Payment to the Service Provider
6.1 Lump-Sum Remuneration	The Service Provider’s remuneration shall not exceed the Contract Price and shall be a fixed lump-sum including all Subcontractors’ costs, and all other costs incurred by the Service Provider in carrying out the Services described in Appendix A. Except as provided in SubClause 5.2, the Contract Price may only be increased above the amounts stated in Sub-Clause 6.2 if the Parties have agreed to additional payments in accordance with Sub-Clauses 2.4 and 6.3.
6.2 Contract Price	(a) The price payable in local currency is set forth in the SCC. (b) The price payable in foreign currency is set forth in the SCC.
6.3 Payment for Additional Services, and Performance Incentive Compensation	6.3.1 For the purpose of determining the remuneration due for additional Services as may be agreed under Sub-Clause 2.4, a breakdown of the lump-sum price is provided in Appendices D and E. 6.3.2 If the SCC so specify , the service provider shall be paid performance incentive compensation as set out in the Performance Incentive Compensation appendix.
6.4 Terms and Conditions of Payment	Payments will be made to the Service Provider according to the payment schedule stated in the SCC. Unless otherwise stated in the SCC , the advance payment (Advance for Mobilization, Materials and Supplies) shall be made against the provision by the Service Provider of a bank guarantee for the same amount, and shall be valid for the period stated in the SCC. Any other payment shall be made after the

	conditions listed in the SCC for such payment have been met, and the Service Provider have submitted an invoice to the Employer specifying the amount due.
6.5 Interest on Delayed Payments	If the Employer has delayed payments beyond fifteen (15) days after the due date stated in the SCC , interest shall be paid to the Service Provider for each day of delay at the rate stated in the SCC .
6.6 Price Adjustment	<p>8.6.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the SCC. If so provided, the amounts certified in each payment certificate, after deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type indicated below applies to each Contract currency:</p> $P_c = A_c + B_c L_{mc}/L_{oc} + C_c I_{mc}/I_{oc}$ <p>Where: P_c is the adjustment factor for the portion of the Contract Price payable in a specific currency “c”.</p> <p>A_c, B_c and C_c are coefficients specified in the SCC, representing: A_c the nonadjustable portion; B_c the adjustable portion relative to labor costs and C_c the adjustable portion for other inputs, of the Contract Price payable in that specific currency “c”; and</p> <p>L_{mc} is the index prevailing at the first day of the month of the corresponding invoice date and L_{oc} is the index prevailing 28 days before Bid opening for labor; both in the specific currency “c”.</p> <p>I_{mc} is the index prevailing at the first day of the month of the corresponding invoice date and I_{oc} is the index prevailing 28 days before Bid opening for other inputs payable; both in the specific currency “c”.</p> <p>If a price adjustment factor is applied to payments made in a currency other than the currency of the source of the index for a particular indexed input, a correction factor Z_o/Z_n will be applied to the respective component factor of p_n for the formula of the relevant currency. Z_o is the number of units of currency of the country of the index, equivalent to one unit of the currency payment on the date of the base index, and Z_n is the corresponding number of such currency units on the date of the current index.</p> <p>8.6.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment</p>

	made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.
6.7 Dayworks	<p>6.7.1 If applicable, the Daywork rates in the Service Provider’s Bid shall be used for small additional amounts of Services only when the Employer has given written instructions in advance for additional services to be paid in that way.</p> <p>6.7.2 All work to be paid for as Dayworks shall be recorded by the Service Provider on forms approved by the Employer. Each completed form shall be verified and signed by the Employer representative as indicated in Sub-Clause 1.6 within two days of the Services being performed.</p> <p>6.7.3 The Service Provider shall be paid for Dayworks subject to obtaining signed Dayworks forms as indicated in Sub-Clause</p> <p style="text-align: center;">7. Quality Control</p>
7.1 Identifying Defects	The principle and modalities of Inspection of the Services by the Employer shall be as indicated in the SCC . The Employer shall check the Service Provider’s performance and notify him of any Defects that are found. Such checking shall not affect the Service Provider’s responsibilities. The Employer may instruct the Service Provider to search for a Defect and to uncover and test any service that the Employer considers may have a Defect. Defect Liability Period is as defined in the SCC .
7.2 Correction of Defects, and Lack of Performance Penalty	<p>(a) The Employer shall give notice to the Service Provider of any Defects before the end of the Contract. The Defects liability period shall be extended for as long as Defects remain to be corrected.</p> <p>(b) Every time notice a Defect is given, the Service Provider shall correct the notified Defect within the length of time specified by the Employer’s notice.</p> <p>(c) If the Service Provider has not corrected a Defect within the time specified in the Employer’s notice, the Employer will assess the cost of having the Defect corrected, the Service Provider will pay this amount, and a Penalty for Lack of Performance calculated as described in Sub-Clause 3.8.</p> <p style="text-align: center;">8. Settlement of Disputes</p>
6.2 Amicable Settlement	The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation
8.2 Dispute Settlement	8.2.1 If any dispute arises between the Employer and the Service Provider in connection with, or arising out of, the Contract or

	<p>the provision of the Services, whether during carrying out the Services or after their completion, the matter shall be referred to the Adjudicator within 14 days of the notification of disagreement of one party to the other.</p> <p>8.2.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.</p> <p>8.2.3 The Adjudicator shall be paid by the hour at the rate specified in the BDS and SCC, together with reimbursable expenses of the types specified in the SCC, and the cost shall be divided equally between the Employer and the Service Provider, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator’s written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator’s decision will be final and binding.</p> <p>8.2.4 The arbitration shall be conducted in accordance with the arbitration procedure published by the institution named and in the place shown in the SCC.</p> <p>8.2.5 Should the Adjudicator resign or die, or should the Employer and the Service Provider agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator will be jointly appointed by the Employer and the Service Provider. In case of disagreement between the Employer and the Service Provider, within 30 days, the Adjudicator shall be designated by the Appointing Authority designated in the SCC at the request of either party, within 14 days of receipt of such request.</p>
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SECTION VII. SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

GCC 1.1 (a)	The Adjudicator is To be inserted
GCC 1.1 (d)	The contract name is Provision of services for Acquisition, Processing and Delivery of DTM using Airborne LiDAR And Optical sensor in the state of Uttarakhand. Approx Area: 3911 sq km
GCC 1.1 (h)	The Employer is Surveyor General of India, Survey of India, Dehra Dun.
GCC 1.1 (p)	The Service Provider is _____
GCC 1.2	The Applicable Law is: Laws of Union of India.
GCC 1.3	The language is English
GCC 1.4	The addresses are: Employer: Surveyor General of India(SGI), Survey of India, Hathibarkala Estate, Dehradun, Uttarakhand, India, PIN: 248001 e-Mail: sgo.soi@gov.in Facsimile: +91-135-2747623 Service Provider: Attention: e-Mail: Facsimile:
GCC 1.5	Location of Service will be Uttarakhand State.
GCC 1.6	The Authorized Representatives are: For the Employer: As nominated by Surveyor General of India, Survey of India For the Service Provider:
GCC 2.1	The date on which this Contract shall come into effect is date of signing of Contract by both the parties.
GCC 2.2.1	The Service Provider shall divide work awarded to them into three phase/sub lots according to the categories as specified by employer in AITB to ITB 1.1. These sub-lots shall be the units of processing & delivery. Program submitted should contain Implementation Level Details showing timelines, resource deployment (backed by out-turn calculations) and delivery dates for each of the sub lots/phase. It should update the Program for the actual 'Start Date'. The updated Program should be consistent with the Method Statement, Work Plan, & Time Schedule submitted in Section IV as part of this RFB. However, the bidder is may be permitted to re-deploy his resources and re-schedule the delivery plans during program update as per SCC 2.2.1, to prioritize

	submission of lots as per the categories as specified by employer in AITB to ITB 1.1, but without changing the final completion
GCC 2.2.2	The Starting Date for the ‘Commencement of Services’ shall be the earlier of following dates: i.30 days from date of signing of contract ii . date of issue of necessary security & flight clearances, However the service provider will be allowed to start the activities which are not related to above clearances immediately after signing of the contract.
GCC 2.3	The Intended Completion Date is 2 months from date of commencement of services. If the ‘actual area’ increases beyond that specified in Section V, the Project duration shall be extended beyond 2 months on pro rata basis by an explicit communication by SOI.
GCC 3.2.3	Activities prohibited after termination of this Contract are: Use or transmit in any form of maps/data supplied by employer or data/services generated by the contractor/service provider during the Project. The Service Provider will not use, transfer, propagate any of the deliverables, information etc.
GCC 3.4	The risks and coverage by insurance shall be: (i) Aviation insurance to protect against Third Party property and bodily damage claims during Aerial Work (In accordance with the statutory requirements applicable to India) (ii) Personal injury or death insurance for Contractor’s Employees (In accordance with the statutory requirements applicable to India) (iii) Loss or damage to equipment and data till project completion (Minimum Cover Contract Price)
GCC 3.5(a)	Sub-Contracting is permitted only for activity ‘Provision of Ground Controls’
GCC 3.5(d)	The other actions are: None
GCC 3.7	Restrictions on the use of documents prepared by the Service Provider are: All data, documents, reports generated during the Contract shall be exclusive property of Employer and the Service Provider shall have no claims over it. The Service Provider shall be bound by restrictions imposed by Security Classification of such data, documents and reports.
GCC 3.8.1	Delay in completion of the work due to reasons attributable to the contractor shall attract Liquidated Damages @1.5% of tendered value per month of delay to be computed on per day basis. The maximum amount of liquidated damages for the whole contract is Ten percent of the final Contract Price. Pursuant to SCC 2.3, if the project duration is extended, LD clause shall not apply in the extended period. However, LD clause shall resume for delay beyond the extended period
GCC 3.8.3	The delivery pertaining to the lot in which defects have been detected and/or which have failed the Acceptance Test as per Section V, shall be returned to the Service Provider for further QA. In effect, Employer will pass responsibility to the service provider to provide adequate and

	<p>clear internal Quality Audits to identify the extent and cause of the problems so established. The service provider will be expected to rectify these problems, and (where necessary to comply with the specification) make new products at his own cost. Redelivery of products will be followed by a further independent check on a new sample of the products. This procedure will continue until the products become finally acceptable under the terms above. The acceptance report (Pass /Fail) shall be given by the Employer within 4 weeks of each delivery/re-delivery of the data made by the contractor.</p> <p>If delivery of a lot fails the acceptance test of the Employer, it shall be construed as ‘Lack of Performance’ and the 100% of cost towards Acceptance Test by the Employer @ INR 1,00,000 for each subsequent delivery shall be imposed on Service Provider towards penalty for ‘Lack of performance’.</p>
GCC 3.9	the amount of the Performance Security shall be of 10% of contract value.
GCC 5.1	The Employer shall use its best efforts to ensure that the Government shall provide the Service Provider
GCC 5.3	<p>Following data, Service and facilities will be provided to the Service Provider after award of Contract:</p> <p>(i) <i>Maps/proofs of the area on 1:50,000 scale or 1:25,000 scale (as available)</i></p> <p>(ii) <i>Description and co-ordinates of plan metric ground control points in and around the Project area on WGS 84 datum (as available)</i></p> <p>(iii) <i>Geoid Model</i></p> <p><i>Production Site:</i></p> <p><i>The Contractor will be responsible for setting up secure and high performance Production Centre at Dehradun. The production centre should be adequate to handle and store raw Data, key intermediate data, data under process and Processed Data/deliverable. Survey of India will not be responsible for providing space or any other facility for production centers</i></p>
GCC 6.2	All payments shall be made in Indian Rupees
GCC 6.1	<p>The incidence, extent and area of lots provided in IFB & Section V of this RFB are limited by scale and accuracy (spatial & temporal) of existing maps on 1:50K scale. Considering this aspect, the payments made to the Service Provider shall be on the basis of ‘actual area of the lots’ and ‘area surveyed’.</p> <p>DEM raster generated by the Contractor shall be used to measure and ascertain the actual area of lot completed by the Service Provider.</p> <p>All submissions of deliverables shall be accompanied by ‘area polygons’ in .shp format, prepared with the help of above mentioned DEM.</p> <p>However, if the ‘actual area’ comes out to be more than that mentioned in IFB & Section V of this RFB, approval of competent authority shall be taken before making payment beyond the ‘Contract Price’ mentioned at 6.2(a) and 6.2(b).</p>

GCC 6.3.2	The performance incentive paid to the Service Provider shall be: Not Applicable.
GCC 6.4	<p>Payments shall be made according to the following schedule:</p> <ul style="list-style-type: none"> • Advance for Mobilization: 5% percent of the Contract Price shall be paid against the submission of unconditional bank guarantee for the same. To be drawn before end of 20% of Contract period. • Payment Milestones: Project area shall be divided into multiple sub lots as per phase Section V. <p>Thesesublots/phase shall be the units of processing and submission of deliverables listed at Section V. sublots shall also be units of payment. Submission of ‘all the deliverables’ pertaining to the lot shall be the ‘payment milestone’ for concerned lot. Progress payment shall be released according to above milestone, subject to certification by the Employer that services have been rendered satisfactorily.</p> <p>Only 75% of payment’ due for the subplot shall be released on delivery. Rest 25% final payment will be released after acceptance of final deliverables of the complete subplot and after incorporations of corrections pointed out by authorized vetting agencies.</p> <p>Acceptance test shall be carried out by Employer according to principle, modalities laid down in SCC Clause 7.1 &Section V of this RFB which shall form the basis of certification mentioned above.</p> <p>Should the certification (satisfactory or unsatisfactory) not be provided, by the employer within ‘one’ months of the date of the milestone, or of the date of receipt of the corresponding invoice(whichever is later), the certification will be deemed to have been provided, and the progress payment will be released at such date.</p> <p>The amortization of the Advance mentioned above shall commence when the progress payments have reached 25% of the contract price and be completed when the progress payments have reached 75% of the contract price as per schedule below:</p> <ol style="list-style-type: none"> a. On 2nd payment Stage: 50% of the Advance payment b. On 3rd payment Stage: 50% of the Advance payment <p>The bank guarantee for the advance payment shall be released when the advance payment has been fully amortized.</p> <ul style="list-style-type: none"> • “Payment of Local Taxes such as GST will be against valid Invoice as per GST ACT & Rules and submission of GST Registration Certificate along with declaration that GST

	Registration is valid and all liabilities towards GST have been discharged by the vendor. GST amount will be paid after 30 days of submission of valid Invoice and all required documents and declaration by vendor”.
GCC 6.5	Payment shall be made within 45 days of receipt of the invoice and the relevant documents specified in Sub-Clause 6.4, and within 60 days in the case of the final payment. No Interest shall be payable
GCC 6.6.1	Price adjustment is not to be applied in accordance with Sub-Clause 6.6.
GCC 7.1	<p>The principle and modalities of inspection of the Services by the Employer are as follows: The responsibility of Quality assurance that would include adoption of best practices, processes and sets of approaches leading to outcomes of quality specified in this Contract shall rest with the Service Provider.</p> <p>As part of Quality Assurance, the Service Provider shall submit quality control (or check) measures detailing clearly specified tasks that scrutinizes all, or a sample, of the items issuing during and/or at the end of various stages of processing in order to ensure that the final product is of satisfactory quality. The scrutiny involves review, inspection or quantitative measurement, against well defined pass/fail criteria.</p> <p>The Service Provider shall systematically lodge Quality Control Records (QCRs) which may take various forms like Computer Generated Reports, Inspection notes, Stage Approvals etc. Service Provider shall ensure that every such QCR :</p> <ul style="list-style-type: none"> • marked with a date • uniquely identifies the item, operation or product to which it relates • identifies the operator who generated the QCR • Is countersigned by a supervisor or other independent inspector (for important records) • is stored in a well defined and predictable location so that it can be found easily by others. <p>The responsibility for maintaining necessary versions of data during the</p>

	<p>QA/QC cycle till its final acceptance by Employer shall also rest with Service Provider.</p> <p>Employer will carry out Quality Audit as per Section V to ensure that that plan/methodology/ QA/QC measures etc. detailed are being properly followed. Employer shall also audit to ensure that the QCRs are being properly maintained.</p> <p>In addition following ‘Final Acceptance’ tests shall be carried out by the Employer on the delivery made by Service Provider.</p> <p>DEM</p> <p>(i) The point cloud obtained after pre-processing of raw data shall be classified into (i) Ground Points (ii) Non-ground Points. A grid of size 2m x 2m will be superimposed on ‘directly measured points in bare-earth DTM’ i.e. the points classified as ‘Ground Points’. 90% of the superimposed grids should meet the point-density and maximum void size the specifications stipulated in SNo. 3 & 4/ Table-2 (Specifications of DEM) /Section V (Activity Schedule). It is expected that the Service Provider has necessary automatic/semi automatic modules for above checks in their internal QA&QC.</p> <p>(ii) DEM shall be checked for Fundamental and Supplemental Spatial Accuracies mentioned in Section V.</p> <p>Checking will be done on every sub-lot submitted by the contractor. Minimum 20 points shall be checked for each of land cover categories representative of geographical area under check. When 20 points are tested, the 95 percent confidence level allows one point to fail the threshold given in product specifications. The category of landcover will be decided by employer.</p> <p>The check-points will be well distributed across the dataset. However, checkpoints may be distributed more densely in the vicinity of important features and more sparsely in areas that are of little or no interest.</p> <p>Datasets failing the ‘Acceptance Test’ mentioned in SCC 7.1 shall be returned to the Service Provider for further action in accordance with procedures mentioned at SCC 3.8.3.</p> <p>The checkpoints will be selected preferably on flat terrain, or on uniformly sloping terrain for x-meters in all directions from each checkpoint, where "x" is the nominal spacing of the DEM or mass points evaluated. Whereas flat terrain is preferable, this is not always possible. Whenever possible, terrain slope steeper than a 20 percent grade will not be selected because horizontal errors will unduly influence the vertical RMSE calculations. Furthermore, checkpoints will not be selected near severe breaks in slope, such as bridge abutments or edges of roads, where subsequent interpolation might be performed with inappropriate TIN or DEM points on the wrong sides of the break lines.</p> <p>It is to be noted that SOI will conduct GNSS Observations in above test areas in offset/radial mode with respect to known stable GCP/CORS station of SOI on bare earth. Processed ellipsoidal heights of bare earth in test areas will be compared with that of corresponding points in DEM (on ellipsoidal heights).</p>
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	<p>Orthophotos delivered will be checked by Visual Inspection for Cloud, smoke, smog, fog and dust covers, seams and edge mis-matches, blurred imagery, improper colour balancing, colour bleeding and shadow details Visual inspection for judging the minimum overlap of 60% and 30% in forward and side direction is met and features are not obscured due to high relief. Random geometric checks to be done for position accuracy between tiles.</p> <p>The Defects Liability Period is <i>co-terminus with completion of Contract</i></p>														
GCC 8.2.3	<p>The Adjudicator proposed by the Employer is _____, whose fees shall be governed by the Article 11 of ‘Arbitration and Conciliation (Amendment) Act 2015’ as given below:</p> <table border="1"> <thead> <tr> <th><i>Sum in Dispute</i></th> <th><i>Model Fee</i></th> </tr> </thead> <tbody> <tr> <td>Up to Rs.5,00,000</td> <td>Rs. 45,000</td> </tr> <tr> <td>Above Rs.5,00,000 and Up to Rs. 20,00,000</td> <td>Rs. 45,000 plus 3.5 per cent of the claim amount over and above Rs. 5,00,000</td> </tr> <tr> <td>Above Rs. 20,00,000 and up to Rs. 1,00,00,000</td> <td>Rs.97,500 plus 3 per cent of the claim amount over and above Rs. 20,00,000</td> </tr> <tr> <td>Above Rs. 1,00,000 and up to 10,00,000</td> <td>Rs. 3,37,500 plus 1 per cent of the claim amount over and above Rs. 1,00,00,000</td> </tr> <tr> <td>Above Rs. 10,00,00,000 and up to Rs. 20,00,00,000</td> <td>Rs.12,37,500 plus 0.75 per cent of the claim amount over and above Rs. 10,00,00,000</td> </tr> <tr> <td>Above Rs. 20,00,00,000</td> <td>Rs. 19,87,500 plus 0.5 per cent of the claim amount over and above Rs.20,00,00,000 with a ceiling of Rs. 30,00,000</td> </tr> </tbody> </table>	<i>Sum in Dispute</i>	<i>Model Fee</i>	Up to Rs.5,00,000	Rs. 45,000	Above Rs.5,00,000 and Up to Rs. 20,00,000	Rs. 45,000 plus 3.5 per cent of the claim amount over and above Rs. 5,00,000	Above Rs. 20,00,000 and up to Rs. 1,00,00,000	Rs.97,500 plus 3 per cent of the claim amount over and above Rs. 20,00,000	Above Rs. 1,00,000 and up to 10,00,000	Rs. 3,37,500 plus 1 per cent of the claim amount over and above Rs. 1,00,00,000	Above Rs. 10,00,00,000 and up to Rs. 20,00,00,000	Rs.12,37,500 plus 0.75 per cent of the claim amount over and above Rs. 10,00,00,000	Above Rs. 20,00,00,000	Rs. 19,87,500 plus 0.5 per cent of the claim amount over and above Rs.20,00,00,000 with a ceiling of Rs. 30,00,000
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GCC 8.2.4	Provisions of Arbitration and Conciliation Act 2015 will apply.														
GCC 8.2.5	The designated Appointing Authority for a new Adjudicator is President, Institution of Engineers, New Delhi.														
Additional Clause 9.0	<p>Add the following as GCC clause 9.0 :</p> <p>9. Security to be reviewed as per new guidelines</p> <p>Security instructions for raw data acquisition and pre-processing shall be as follows:</p> <p>(a) Aerial data- acquisition/photography/survey is to be strictly confined</p>														

	<p>to the exact area for which permission obtained. Moreover, the undertakings given in the application shall be strictly adhered to.</p> <p>(b) No sensor, other than those mentioned in the application should be used.</p> <p>(c) The date of survey is to be intimated to ATC in advance indicating specific date and time to enable them to issue necessary clearance</p> <p>(d) The Contractor should be ready to offer his UAS/Drone/Aircraft/Helicopter for inspection by the service agencies of MoD, MHA, DGCA to check survey equipment /sensor before undertaking aerial surveys.</p> <p>(e) The data should not be taken out of the UAS/Drone/Aircraft/Helicopter to any place other than directed by Employer.</p> <p>(f) After completion of survey, no data should be left in storage in the equipment fitted in the UAS/Drone/Aircraft/Helicopter.</p> <p>(g) At the end of each day operation, the data discs should be removed and handed over to designated officer of Employer or the security officer, as directed by the Employer.</p> <p>(h) 'Top Secret' security classification will be given to the data products/discs before security vetting. The data will be suitably classified to appropriate security classification after security vetting. The data is to be handled by the Contractor accordingly.</p> <p>(i) <u>The data should be processed by Indian experts in India at the designated places within SoI complex. In case a foreign expert is required for processing the data, the Contractor shall be responsible for obtaining necessary clearances/permissions as per the latest government of india guidelines on geospatial products and services, to handle data ensuring the storage of data within India.</u></p> <p>(j) Whenever Security Officer is placed with drone flying team, it will be mandatory on the part of Operator to provide the following documents for his perusal:-</p> <p>(i) Copy of valid DGCA permit and ATC clearance.</p> <p>(ii) Copy of valid MOD clearance.</p> <p>(iii) Proof of Insurance cover.</p> <p>(l) Any change/addition and equipment/sensors at any stage of work, can be made only after obtaining prior MoD clearance.</p> <p>(m) Fortnightly progress report is to be submitted to the Employer.</p> <p>(n) All UAS/Drone permits Drone permits and clearances (DGCA permit, ATC clearance, valid MoD clearance) will be the responsibility of the Contractor and all operations will be undertaken in accordance with Indian Air Safety Regulations.</p> <p>(o) Pre-Processing of data acquired by aerial survey will be carried out inside the secure premises of nearest Survey of India office/camp. Necessary equipments/infrastructure should be installed at the premises by the successful bidder. The data acquired/intermediately or final products will not be permitted to be taken elsewhere. Proper account of daily production and distribution should be maintained.</p> <p>(p) Post Processing of data acquired by aerial survey will be carried out</p>
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	<p>inside the secure premises of G&RB, 17 EC Road, Survey of India, Dehradun. Necessary equipment/infrastructure should be installed at the premises by the successful bidder. The data acquired/intermediately or final will not be permitted to be taken elsewhere. Proper account of daily production and distribution should be maintained.</p> <p>The Security instructions to be followed by the Contractor during the Post Processing of Data at the Production Centre shall be as follows: (a) No Data storage devices or electronic devices including mobile phones, laptops , CD , pen drives etc should be allowed inside the Production Centre except for specific clearances to be taken from Security Officer of Survey of India in exceptional circumstances arising out of any requirements.</p> <p>(b) No data should be allowed to be taken outside the Production Centre by the Contractor</p> <p>(c) Systems and storage in Production Centre should not be connected to internet.</p> <p>(d) All the personnel working inside the Production Centre should have valid Identity card of the company. Any foreign national working inside the Production center should have valid visa and other documents verified by Ministry of External Affairs and permission from Ministry of Defense. Identity card of the company will be checked by the Security staff every day before the employee enters the Production Centre. Surprise checks for the same will also be carried out by the Security Officer of Survey of India during the working hours.</p> <p>(e) Work should only be executed inside Production Centre only in the Presence of SOI officials.</p> <p>(f) All the hardcopy plots and printouts, other Project related materials are to be kept in Almirahs whose key will be with SOI officials.</p> <p>(g) “Top Secret” security classification will be given to the data products / discs before Security vetting. The data will be suitably classified to appropriate Security Classification after security vetting. The data should be handled by the contractor accordingly.</p> <p>(h) Any foreign national will not be allowed access to any SOI map/data without clearance from MOD.</p> <p>(i) The Survey of India Security Officer reserves the right to frisk the working personnel every day / during surprise check.</p> <p>(j) There should be two separate segments in the Production centre, one for administrative and other for the production / processing.</p> <p>(k) The Production centre should strictly adhere to the security measures in terms of entry and exit to Production centre (preferably Biometric methods etc), accessing data (Administrator /user passwords , Networking etc) , disabling USB ports for theft of data , authorising persons to handle the data , log books , CCTV cameras , fire and smoke protection , lock and key system etc.</p> <p>(l) Storage disks of network storage, servers, workstations etc used at production centre shall not be allowed to be taken outside of production center.</p>
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<p>Additional Clause 10.0</p>	<p>Add the following as GCC clause 10.0 :</p> <p>Salient Features of Major Labour Laws in India applicable to Establishments is given below. The law as current on the date of bid opening will apply</p> <p>a) Workmen Compensation Act 1923: The Act provides for compensation in case of injury by accident arising out of and during the course of employment.</p> <p>b) Payment of Gratuity Act 1972: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.</p> <p>c) Employees P.F. and Miscellaneous Provision Act 1952 (since amended): The Act Provides for monthly contributions by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are :</p> <p>(i) Pension or family pension on retirement or death, as the case may be.</p> <p>(ii) Deposit linked insurance on the death in harness of the worker.</p> <p>(iii) payment of P.F. accumulation on retirement/death etc.</p> <p>d) Maternity Benefit Act 1951: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.</p> <p>e) Contract Labour (Regulation & Abolition) Act 1970: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.</p> <p>f) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Constructions of Buildings, Roads, Runways are scheduled employments. Wage Code: to be included</p> <p>g) Payment of Wages Act 1936: It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.</p> <p>h) Equal Remuneration Act 1979: The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.</p> <p>i) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3500/-per month</p>
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	<p>or less. The bonus to be paid to employees getting Rs.2500/- per month or above upto Rs.3500/- per month shall be worked out by taking wages as Rs.2500/-per month only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.</p> <p>j) Industrial Disputes Act 1947: The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.</p> <p>k) Industrial Employment (Standing Orders) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.</p> <p>l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.</p> <p>m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.</p> <p>n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upto the establishment and bank etc.</p> <p>o) The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996: All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.</p>
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	<p>p) Factories Act 1948: The Act lays down the procedure for approval at plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.</p> <p>q) Code of Wages 2019 (implemented from 1st April, 2021)</p>
<p>Additional Clause 11.Non-Disclosure Obligations</p>	<p>The Service Provider will ensure that complete data (Raw, Geotagged, GPS observed, logs etc) is handed over to the SoI representative and do not copy in any form & in any media for any other purpose without explicit approval/consent of the Service consumer will be kept by Service provider after completion of data capturing & pre-QC and final acceptance of the data by Service consumer.</p>

SECTION VIII – CONTRACT FORMS

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1. LETTER OF ACCEPTANCE

[Letterhead paper of the Purchaser]

[date]

To: *[name and address of the Supplier]*

Subject: **Notification of Award Contract No.**

This is to notify you that your Bid dated ...*[insert date]*...for execution of the *[insertname of the contract and identification number, as given in the SCC]*for the Accepted Contract Amount of *[insert amount in numbers and words in Rupees]*, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the of the Performance Security Form included in Section VIII, Contract Forms, of the Bidding Document.

Authorized Signature: _____
Name and Title of Signatory: _____
Name of Agency: _____

Attachment: Contract Agreement

2. CONTRACT AGREEMENT

LUMP-SUM REMUNERATION

This CONTRACT (hereinafter called the “Contract”) is made the [day] day of the month of [month], [year], between, on the one hand, [name of Employer] (hereinafter called the “Employer”) and, on the other hand, [name of Service Provider] (hereinafter called the “Service Provider”).

[Note: In the text below text in brackets is optional; all notes should be deleted in final text. If the Service Provider consist of more than one entity, the above should be partially amended to read as follows: “...(hereinafter called the “Employer”) and, on the other hand, a joint venture consisting of the following entities, each of which will be jointly and severally liable to the Employer for all the Service Provider’s obligations under this Contract, namely, [name of Service Provider] and [name of Service Provider] (hereinafter called the “Service Provider”).]

WHEREAS

- (a) the Employer has requested the Service Provider to provide certain Services as defined in the General Conditions of Contract attached to this Contract (hereinafter called the “Services”);
- (b) the Service Provider, having represented to the Employer that they have the required professional skills, and personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract at a contract price of.....;
- (c) the Employer has received intends to apply part of the funds received from Uttarakhand Government towards the cost of the Services and intends to apply a portion of the proceeds of this fund to eligible payments under this Contract, it being understood (i) that such payments will be subject, in all respects, to the relevant Government of India rules in GFR 2017;

NOW THEREFORE the parties hereto hereby agree as follows:

- 1. The following documents shall be deemed to form and be read and construed as part of this Agreement, and the priority of the documents shall be as follows:
 - (a) The letter of Acceptance
 - (b) The Service Provider’s Bid
 - (c) The Special Conditions of Contract
 - (d) The General Conditions of Contract
 - (e) Technical Requirements (including Schedule of Requirements and Technical Specifications and deliverables as per Section V)
 - (f) The Price Activity Schedule; and
 - (g) [Add here any other document(s) as part of contract]

3. The mutual rights and obligations of the Employer and the Service Provider shall be as set forth in the Contract, in particular:
 - a. the Service Provider shall carry out the Services in accordance with the provisions of the Contract; and
 - b. the Employer shall make payments to the Service Provider in accordance with the provisions of the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of *[insert the name of the Contract governing law country]* on the day, month and year indicated above.

For and on behalf of the Purchaser

Signed: *[insert signature]*
in the capacity of *[insert title or other appropriate designation]*
in the presence of *[insert identification of official witness]*

For and on behalf of the Supplier

Signed: *[insert signature of authorized representative(s) of the Supplier]*
in the capacity of *[insert title or other appropriate designation]*
in the presence of *[insert identification of official witness]*

3.PERFORMANCE SECURITY - BANK GUARANTEE

[Guarantor letterhead or SWIFT identifier code]

Performance Guarantee No.....*[insert guarantee reference number]*

Date.....*[insert date of issue of the guarantee]*

To: _____ *[name of Purchaser]*

_____ *[address of Purchaser]*

WHEREAS _____ *[name and address of Supplier⁴]* (hereinafter called "the Applicant") has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ *[name of Contract and brief description of Goods and related Services]* (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Applicant shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Applicant such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Applicant, up to a total of _____ *[amount of guarantee⁵]* _____ *[in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Applicant before presenting us with the demand.

⁴ *In the case of a JV, insert the name of the Joint Venture*

⁵ *An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract and denominated in Indian Rupees.*

We further agree that no change or addition to or other modification of the terms of the Contract or of the Goods and related Services to be supplied thereunder or of any of the Contract documents which may be made between you and the Applicant shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until (i.e.) 60 days following the Completion date of the Contract including any warranty obligations⁶, and any demand for payment under it must be received by us at this office on or before that date.

Signature and seal of the guarantor _____

Name of Bank _____

Address _____

Date _____

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

⁶ Completion date as described in GC Clause 18.4

4.ADVANCE PAYMENT SECURITY

Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Advance Payment Guarantee No.....*[insert guarantee reference number]*

Date.....*[insert date of issue of the guarantee]*

To: _____ *[name of Purchaser]*

_____ *[address of Purchaser]*

_____ *[name of Contract]*

Gentlemen:

In accordance with the provisions of the Conditions of Contract, Clause 16 ("Terms of Payment") of the above-mentioned Contract, _____ *[name and address of Supplier⁷]* (hereinafter called "the Applicant") shall deposit with _____ *[name of Purchaser]* a bank guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of _____ *[amount of guarantee⁸]* _____ *[in words]*.

We, the _____ *[bank or financial institution]*, as instructed by the Applicant, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to _____ *[name of Purchaser]* on his first demand without whatsoever right of objection on our part and without his first claim to the Applicant, in the amount not exceeding _____ *[amount of guarantee]* _____ *[in words]*.

We further agree that no change or addition to or other modification of the terms of the Contract or of Goods and related Services to be supplied thereunder or of any of the Contract documents which may be made between _____ *[name of Purchaser]* and the Applicant, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

⁷ In the case of a JV, insert the name of the Joint Venture

⁸ An amount shall be inserted by the bank representing the amount of the Advance Payment, and denominated in Indian Rupees.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until _____ [*name of Purchaser*] receives full repayment of the same amount from the Applicant. Consequently any demand for payment under this guarantee must be received by us at this office on or before that date.

Yours truly,

Signature and seal: _____

Name of Bank: _____

Address: _____

Date: _____

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.