

Request for Proposal

Geospatial database generation and Field Survey Services

*National Remote Sensing Centre
Dept. of Space, ISRO
Hyderabad – 500037*

**Pre-bid Meeting date and time: On 9th March 2017 @ 14.30 hrs
at NDC front Office, NRSC. Vendors should communicate
their participation in Pre-bid meeting before 16.30 hrs on
07.03.2017 by e-mail to purchase@nrsc.gov.in or
hpsd@nrsc.gov.in or by fax to 040-2387 8695**

**Closing Date and Time for Proposal submission: On or before
@16.30 hrs on 17th April 2017.**

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1. Introduction

The National Remote Sensing Centre (NRSC) is one of the centre's under Indian Space Research Organisation (ISRO), Dept. of Space, Govt. of India with expertise in data acquisition using Airborne / Satellite, processing and geospatial data generation. As NRSC takes up many National projects, it closely works with private firms in generating output which are essential for users in GIS environment. This RFP is to find suitable firms to be part of empanelment with NRSC based on the expertise, capacity and experience in preparation of Geospatial Databases and Field survey activities.

1.1. Scope of the RFP

This RFP is divided into two sections i.e., Geospatial database processing services and Field Survey services sections.

The scope of the Geospatial database generation services section includes generation of planimetry & topographic map for both two dimensional and three dimensional ranging from 1:500 to 1: 10,000 scale using image data such as stereo aerial digital data, LiDAR and high resolution satellite data. The scope also includes 3D editing of high resolution Digital elevation Model (DEM) from the above sources.

The scope of the Field Survey services section is to collect Ground Control Points (GCPs) using GNSS, DT Levelling, ground contouring, terrestrial data acquisition, mobile mapping and field attribute data collection.

1.2. Purpose of the RFP

The purpose of the RFPs is to facilitate the firms to participate in the empanelment process by providing the necessary information and submission of the application forms as per the RFP guidelines. This details of the activities pertaining to two section's is given below :

1.2.1. Geospatial database generation services

Generation of data using Airborne Digital Camera / LiDAR and High Resolution Satellite data

1. High resolution DEMs
2. Digital orthoimages
3. 2D feature extraction from Digital Orthoimages
4. 3D feature extraction from stereo images
5. 3D / 2D large scale geospatial database photogrammetrically
6. Updation of digital maps and linking Attribute data

The detailed list of activities for this service is enclosed as

1. 3D / 2D Geospatial database generation services (Annexure-1),

1.2.2. Field survey services

1. Collection of very accurate and precise Ground Control Points (GCPs) using survey grade Geodetic GPS / GLONASS / IRNSS receivers/SBAS GAGAN (refer GPS Survey services Annexure – 2 for detailed list of activities).
2. Determination of height points using Digital Levels (refer Leveling Field Survey services Annexure – 3 for detailed list of activities).
3. Attribute data collection & Verification (refer Field data collection & verification services Annexure – 4 for detailed list of activities).
4. Terrestrial Photogrammetry survey(refer Annexure – 5 for detailed list of activities)
 - a. Mobile mapping using Digital Camera / LiDAR sensors
Geospatial data collection from a mobile vehicle using remote sensing sensors such as digital camera, LiDAR etc,. The mobile system mounted with the remote sensing sensors should have time synchronization with the navigation sensors.

The data acquisition shall be carried out using Terrestrial LiDAR and Digital camera simultaneously (without any gaps) as per route/path defined in the georeferenced map. The input data and deliverables are defined in the Annexure-5.

2. Guidelines for RFP submission

The content of the RFP along with the guidelines for the submission of the application by the vendor / firm is briefed in this section. Evaluation of the RFP is done in two part bid namely Technical and Financial / Commercial. The following requirements should be fulfilled by the firms before submission of the application form.

2.1. General guidelines for both the services

1. Project specific guidelines prepared by NRSC shall be followed by the empanelled firms.
2. Manpower with relevant domain expertise should be positioned at NRSC for the carrying out the work.
3. In addition, a dedicated Quality Control Manager should be positioned exclusively for Internal Quality check before submitting the output data to NRSC officials.
4. The firms can apply for any one or both the services as mentioned in Annexure-1, 2, 3, 4 and 5 of this RFP.

5. The validity of the empanelment shall be for the duration of 3 years from the date of rate contract empanelment.
6. The firms shall submit relevant proof for the following (appropriate to the services mentioned in clause 3.2 of this RFP document) in Technical bid submission of Annexure-6.
 - a. Existence in the relevant field for the past three years (2013-16)
 - b. Relevant work experience
 - c. Availability of the required number of high end computer systems
 - d. Standard relevant processing latest version software including name of the software along with the license & invoice details etc.,
 - e. Registered as per the company act and IT returns for the past three years (2013-16).

2.2. Technical guidelines for both the services

1. Input data & Deliverables

The basic input data and the deliverables pertaining to both the services are provided in Annexure–1, 2, 3, 4 and 5 of this RFP document.

2. Quality Control process

Methodology for the Quality control process pertaining to both the services should have both IQC and EQC in place. The requirements for IQC and EQC are given below:

a. Internal Quality Check (IQC) – by respective firms

Essentially IQC should be carried out by the Quality Control Manager (QCM) of the respective firm. The firm should follow intensive QC procedures for which necessary QC documents shall be provided to NRSC in advance. The QCM of the firm should certify the quality of the output data before submitting the data for EQC. The report pertaining to the quality of the data with respect to the quality parameters should be submitted to EQC team. Features captured through stereo compilation shall be edge matched between the models & firms. The edge matching should be within the stipulated acceptable limits (as per the project specifications that will be consistent with the work allotment). In case a part of a large block is awarded to multiple firms, edge matching with adjacent data of other firms must also be carried out.

b. External Quality Check(EQC) – by NRSC QA team

EQC is carried out by the NRSC Quality Assurance team. Standard QC procedures and assessment will be followed on the quality of the output data provided by the firm. If the quality of the output data is not meeting the project requirements or found not satisfactory, then the work needs to be corrected and submitted. . The final data acceptance will be will be carried out by EQC team.

3. Periodic performance of the firms

The firm's performance will be evaluated periodically by NRSC through its internal process. The evaluation will be in terms of quality of work, limiting number of iterations of work, infrastructure & resources, efficiency in prompt submission of output data and sticking to allotted time schedule etc., The performance of the firm will be rated in a scale of 0 to 10 and any firm whose score is less than 6 will be removed from the empanelment.

2.3. Requirements for Geospatial database generation services

1. As per NRSC procedures, the empanelled firms are required to position their technical manpower, furniture, computer systems, peripherals along with the standard software's within NRSC campus for execution of the works.
2. Necessary upgrades and modifications to their computer systems are the responsibility of the empanelled firm.
3. Maintenance of the computer systems have to be carried out by the empanelled firms at their own cost. Hard disks or any other storage media will be not be permitted to be taken out of NRSC campus.

3. Proposal evaluation and selection process

3.1. Pre-bid meeting

A Pre-bid meeting will be arranged by NRSC for vendors / firms to brief about the purpose of the RFP and the procedure involved in the empanelment of the firms for Geospatial database generation and Field Survey services.

Vendors who are interested may kindly attend the pre-bid meeting and NRSC will clarify any of the queries put up by the firms. Based on the discussions in the pre-bid meeting, modifications if any upon acceptance by NRSC will be amended in the RFP, which can be viewed / seen in the NRSC website.

3.2. Technical evaluation process & criteria's

Proof of experience of the relevant work or activities (work orders/ instruments / software & hardware) shall be in the name of the firm only who are submitting this proposal. The technical evaluation of the firm shall be based on the criteria's mentioned below.

The criteria's for the technical evaluation of the firms for the two services are given below:

3.2.1. Geospatial database generation services

1. During the past three years(2013-16), the firm should have carried out

- a. A project of 1: 1000 scale 3D geospatial database generation works or DEM editing by photogrammetric techniques using airborne data with height accuracy of better than 0.5m for minimum of 500 sq.km.
- b. Generation of Digital Elevation Model (DEM) better than 4m height accuracy in case of satellite or 1m in case of airborne data for minimum area of 2500 sqkms using Airborne LiDAR/digital camera and High Resolution stereo satellite data
- c. 1: 5000 scale or better 2D geospatial database generation works using aerial / HR satellite digital orthophotos atleast for minimum area of 2500 sqkms.

NOTE: It is mandatory for the firms to apply for all activities in geospatial database generation services given in Annexure-1.

2. The firm should be able to position at least 10 Nos. (maximum of 15 Nos.) high end Photogrammetry systems with requisite manpower for processing airborne LiDAR / LFDC / HR Satellite data along with the equivalent standard photogrammetry / LiDAR data processing software and 2D drafting package for feature extraction in two shift operations.

3.2.2. Field Survey services

1. GPS survey services
 - a. The firm should have at least
 - ✓ 10 geodetic grade dual frequency GPS receivers.
 - ✓ 10 GAGAN SBAS GPS receivers PDA / tablet for rapid GCP collection.
 - ✓ 5 Geo-tagged digital cameras with minimum 12 Mega Pixels
 - ✓ 5 Laser range finders for distance measurement
 - b. During the past three years (2013-16), the firm should have carried out collection of at least 500 ground control points (GCPs) using GPS observations and processing of the GCPs for subsequent use in the geospatial data processing.

2. Leveling & Total station survey services
 - a. The firm should have at least
 - ✓ 5 digital levels with auto storing facility
 - ✓ 5 Total stations (1 arc second).
 - ✓ 5 Geo-tagged digital cameras with minimum 12 Mega Pixels
 - ✓ 5 Laser range finders for distance measurement
 - b. During the past three years (2013-16), the firm should have carried out leveling survey of at least 1000 line kms and Total station survey of 500 sqkms.

3. Field data collection & verification services
 - a. The firm should have at least
 - ✓ 10 GAGAN SBAS GPS receivers PDA / tablet for data collection.
 - ✓ 5 Geo-tagged digital cameras with minimum 12 Mega Pixels
 - ✓ 5 Laser range finders for distance measurement
 - b. During the past three years (2013-16), the firm should have carried out collection of attribute information from the field for digital maps with scales ranging from 1: 1000 to 1: 10,000.
4. Terrestrial photogrammetry survey services
 - a. The firms should have carried out at least one project for
 - ✓ Mobile mapping using remote sensing sensors such as Digital Camera, Terrestrial LiDAR etc., mounted with navigation sensors for the collection of geospatial database.

NOTE: For four different Field Survey services mentioned above, the firms can apply for any one or combination of services for empanelment.

4. Commercial bid evaluation procedure

The firms who are qualified based on the technical criteria's as mentioned in the 3.2 clause i.e., '*Technical Evaluation Process & Criteria's*' shall be considered for the commercial bid evaluation process.

The following is the procedure in the determination of the unit price for each activity based on the quoted prices received from the firms / vendors.

1. Each firm has to submit the unit rate price for each activity listed in Annexure-1, 2, 3, 4 and 5.
2. The price bid of the technically qualified firms / vendors only will be opened for evaluation.
3. Space along with the power and air conditioning will be provided by NRSC at no cost to the firms to position their systems for Geospatial services only.
4. The lowest bid among the technically qualified firm for each activity will be considered. If the lowest quote is found unreasonable when compared to NRSC estimate, negotiation will be done with the firms who has given lowest quote to determine the lowest price for each activity.
5. All the other technically qualified firms will be given a counter offer with approved price for each activity and who shall agree to work with the approved unit rate will be considered for empanelment with NRSC for Geospatial database generation and Field Survey services.
6. Once accepted by the firms, the approved unit rate of all the activities will be valid for the period of empanelment.

4.1. Submission of application forms

The interested firms may fill up the details in the application form attached as Annexure-6. The firm should fill separate form for Geospatial database generation services and Field survey services by mentioning the name of the service on the envelope. Each page of the proposal shall be attested by the authorized representative of the firm along with the official seal and date.

The firm should submit the filled up Technical (Envelope – 1) & Commercial bid (Envelope – 2) application form along with necessary documents in an envelope subscribed as below may be sent to the address mentioned below.

“Proposal for Geospatial database generation & Field Survey services”

Name of the Service applied: ‘ _____ ’

*Addressed to: Head, Purchase & Stores Division
National Remote Sensing Centre (NRSC),
Dept. of Space, ISRO
Govt. of India, Balanagar, Hyderabad – 500 037
Telangana State, India*

5. Terms & conditions

The following are the terms & conditions for which the firms should adhere with during the rate contract empanelment.

1. In the case of Field survey services, the firms should collect input data from NRSC and execute the work as per the work order.
2. All the empanelled firms should follow all the applicable security rules including rules regarding media / data handling.
3. Intellectual Property Rights (IPR) & ownership for data (input, intermediate and outputs) in all the forms (hard & soft copies) will vest solely with NRSC.
4. It is the responsibility of the firms to arrange to submit attested copies of character and antecedents verification reports issued by the concerned local police station of their employees who are to be deployed for doing the allotted work at NRSC.

5. Payment for the work completed will be made within 30days after QC acceptance which will take a maximum of 30 days. Final payment (last payment) against the Purchase order will be released only after obtaining Performance Bank Guarantee as indicated in SI No.13.
6. In case of the work getting delayed beyond the delivery schedule, Liquidated Damages (LD) shall be levied at the rate of 0.5% of the Purchase Order value of work per week or part thereof subject to a maximum of 10% of the value of Purchase Order.
7. NRSC reserves the right to allot the work to one or more firms on equitable basis for the first time and subsequent work will be awarded based on the completion of the previous work (after QC acceptance & performance certificate).
8. Delivery schedule of the end products will be as per the Work Order placed against the Rate Contract.
9. NRSC reserves the right to enter into parallel rate contract simultaneously or at any time during the period of the rate contract with one or more firms.
10. Project specific guidelines will be issued along with the work order, once the work is allotted to the firms.
11. The input data shall be issued only after the acceptance of the work order and submission of the Performance Bank Guarantee from any scheduled bank for 10% of the work order value by the firms towards Security Deposit valid for a period of sixty days beyond the date of completion of the work order. In case the company / firm/entrepreneur fails to execute the order as per the terms and conditions, the Performance Bank Guarantee received towards Security Deposit will be forfeited.
12. If the vendor / entrepreneur does not accept the job and not collected the necessary data etc., from NRSC within 7- 15 days from the date of receipt of work order, the firm/company will be delisted from the empanelled lists and will not be permitted to participate in future tenders as well as performance bank guarantee will be forfeited.
13. The firm should give assurance/warranty for a period of one year to the product deliverables and undertake modifications / corrections, if any, on the executed work at free of cost. If

corrections/modifications are not carried out within one year, the bank guarantee will be invoked.

14. Once the firm is empanelled, the vendor / firm should be executing the work till the validity period of empanelment. Otherwise BG will be invoked.
15. Hard disks or any other storage media will be not be permitted to be taken out of NRSC campus.
16. Fall Clause: The prices charged for the work under this contract should in no event exceed the lowest price at which the firm executes the work of identical description to any other person / firm during the period of the contract. If at any time, the prices are reduced, the same shall be notified to NRSC and shall stand correspondingly reduced.
17. The firm is solely responsible for the safety of work force employed & infrastructure against all hazards and shall take care of all welfare measures.
18. Any loss or damage caused by the work force to the properties of NRSC during the execution of work shall be made good by the firm.
19. The firm shall be solely responsible in complying with Minimum wages, ESI and EPF to their employees and submission of Necessary documents to NRSC as and when required.
20. The firm should adhere to the NRSC's standing orders, shift timings, security checks inclusive of antecedents of persons engaged.
21. Any communication between the firm and NRSC will be through Head Purchase & Stores Division, NRSC only. Person independent official postal address / e-mail to be provided by the firm for smooth correspondence.
22. Request for change in name and address shall be avoided as far as possible. In case, change in name and address in the purchase order becomes unavoidable communication should be made to the Head Purchase & Stores Department, NRSC within one week with all relevant documents such as registration details, TIN No. etc., to enable us to issue PO amendment accordingly.

23. In the event of any dispute or difference between the parties hereto, such disputes of differences shall be resolved by mutual consultation. If such resolution is not possible, then the unresolved disputes or differences shall be referred to Arbitration of the Sole Arbitrator to be appointed by the Director, National Remote Sensing Centre, Department of Space, Hyderabad. The provisions of Arbitration and Conciliation Act, 1996 (No. 26 of 1996) shall be applicable to the arbitration. The venue of such arbitration shall be at Hyderabad or any other place in India, as may be decided by the arbitrator. The language of arbitration proceedings shall be English. The arbitrator shall make a reasoned award (the "Award"), which shall be final and binding on the parties. The cost of the arbitration shall be shared equally by the parties to the contract. However, expenses incurred by each party in connection with the preparation, presentation shall be borne by the party itself.

Pending the submission of and/or decision on a dispute, difference or claim or until the arbitral award is published, the Parties shall continue to perform all of their obligations under this contract without prejudice to a final adjustment in accordance with such award.

24. Service Tax extra as applicable on the prices mentioned in the Rate Contract and Income Tax shall be deducted at Source (TDS) as per the Government of India rules from time to time. Copy of PAN Number allotted to the firm may be attached with the 1st payment. However, the claim must be indicated with PAN & Service Tax Nos. etc., without which IT will be deducted @20% or as applicable.

25. The Empanelled firm cannot sub-contract or allot the work to any other firms.

26. NRSC reserves the right for Termination of Contract without assigning any reason.

27. The firm should not be insolvent, in receivership, bankrupt or being wound up, not have its affairs administered by court or judicial officer, not have its business activity suspended and must not be the subject of legal proceedings for any of the foregoing reasons.

28. The firm should not currently have been blacklisted by any Govt. department / PSU or under a declaration of ineligibility fraudulent or corrupt practices or inefficient performance.

29. The firms applying for empanelment shall submit Earnest Money Deposit for an amount of Rs.50,000 through Demand Draft in favour of Pay and Accounts Officer, NRSC and payable at Hyderabad. The EMD shall be submitted along with the Techno-Commercial envelope – 1. Any offer received without EMD shall be treated as invalid and rejected. EMD of the firms

shall be forfeited if the firm withdraws or amends their offer or deviates from the offer in any respect within the validity of the offer. EMD shall be refunded to the unsuccessful vendor, without any interest, within 30 days after empanelment for the services. The EMD of the successful firm shall be returned, without any interest, after empanelment and receipt of Performance Bank Guarantee for 10% of PO value. Failure to submit PBG by the successful firm will result in forfeiture of EMD.

6. Annexures

The following annexures are included in the RFP document:

- Annexure-1: 3D/2D Geospatial Database Generation Services
- Annexure-2: GPS Survey Services
- Annexure-3: Levelling Field Survey Services
- Annexure-4: Field data collection & verification Services
- Annexure-5: Terrestrial Photogrammetry Survey Services
- Annexure-6: Application Form
- Annexure-7: Undertaking form

6.1. Annexure-1: 3D/2D Geospatial Database Generation Services

	S. No.	Type of Work	Components	Type of Terrain	Input photo scale	Output map scale	Unit rate per Sq. km(in ₹)
A E R I A L (Scanned Film) / L F D C	1	Utility Mapping	3D Mapping with 3D Modelling (floor wise)	Metropolitan cities	1: 4000 to 6000	1: 500 to1000	
			DEM with Contours (0.5m CI)				
	2	Large scale Mapping with DEM	3D Mapping (without floorwise)	Densely Built - up	1: 8000 to10000	1: 2000 to 2500	
				Medium Built - up			
				Sparse Built - up			
			DEM generation	Densely Built - up	1: 8000 to 10000	DEM with Contours (1.0m CI)	
				Medium Built - up			
				Sparse Built - up			
	3	DEM Without Mapping	DEM generation	Hilly	1: 4000 to 6000	DEM with Contours (0.5m CI)	
				Rolling			
				Plain			
			DEM generation	Hilly	1: 8000 to 10000	DEM with Contours (1.0m CI)	
				Rolling			
				Plain			
			DEM generation	Hilly	1: 15000	DEM with Contours (2.5 / 5.0m CI)	
				Rolling			
	Plain						
4	DEM editing (DSM to DTM generation) using LFDC	<ul style="list-style-type: none"> • Auto classification • Manual Editing • Breakline addition • Interpolation of DEM data 	Hilly	<ul style="list-style-type: none"> • Automatic DSM generated from LFDC • EO parameters • LFDC images 	<ul style="list-style-type: none"> • All Intermediate files • Final Interpolated DEM 		
	Rolling						
	Plain						

	S. No.	Type of Work	Components	Type of Terrain	Input photo scale / GSD	Output map scale	Unit rate per Sq. km(in ₹)
	5	Large scale Mapping without DEM	3D Mapping	Densely Built - up	HRS data of 2.5m spatial resolution and better	1: 10000	
				Medium Built - up			
				Sparse Built - up			
	6	Large scale Mapping without DEM	3D Mapping	Densely Built - up	HRS data of 1.0 m spatial resolution and better	1: 5000	
				Medium Built - up			
				Sparse Built - up			
	7	DEM Without Mapping	DEM with Contours (5.0 m CI)- Manual	Hilly	HRS data of 1.0 m spatial resolution and better		
				Rolling			
				Plain			
				Hilly			
				Rolling			
				Plain			
DEM with Contours (5.0 m CI)- Automatic			Hilly	HRS data of 2.5m spatial resolution and better			
			Rolling				
			Plain				
DEM with Contours (10.0 m CI) - Automatic			Hilly	HRS data of 2.5m spatial resolution and better			
			Rolling				
			Plain				
DEM with Contours (10.0 m CI) - Manual	Hilly	HRS data of 2.5m spatial resolution and better					
	Rolling						
	Plain						

	S. No.	Type of Work	Components	Type of Terrain	Input photo scale / GSD	Output map scale	Unit rate per Sq. km(in ₹)
L I D A R - D C	8	DSM to DTM generation (LiDAR)	<ul style="list-style-type: none"> • LiDAR data classification • Project definition with logical blocks • Auto classification • Preliminary Coarse Ortho generation • DEM editing manually • Addition of Breaklines (as per specifications) • Transformation of DEM using geoid parameters (supplied by the indentor) • Interpolation of grid • Contours generation (CI defined in the specification) 	Hilly	<ul style="list-style-type: none"> • Airborne LiDAR preprocessed data (.las file) 	<ul style="list-style-type: none"> • All Intermediate files 	
				Rolling	<ul style="list-style-type: none"> • Digital Camera images 	<ul style="list-style-type: none"> • Final Interpolated DEM 	
				Plain	<ul style="list-style-type: none"> • EO parameters 	<ul style="list-style-type: none"> • Contours 	
					<ul style="list-style-type: none"> • Transformation parameter file 		

	S. No.	Type of Work	Components	Type of Terrain	Input photo scale / GSD	Output map scale	Unit rate per Sq. km(in ₹)
AERIAL (Scanned film) /HR SATELLITE / LIDAR-DC / LFDC	9	Large Scale Mapping	2D mapping from HR Satellite	Densely Built - up	HR satellite Digital Orthophoto	1: 5000 / 10000	
				Medium Built - up			
				Sparse Built - up			
			2D Mapping from LiDAR-DC	Densely Built - up	LiDAR-DC Digital Orthophoto	1: 5000	
				Medium Built - up			
				Sparse Built - up			
			2D Mapping from LFDC	Densely Built - up	LFDC Digital Orthophoto	1: 1000 / 3000	
				Medium Built - up			
				Sparse Built - up			
	10	Digital Orthophoto (LiDAR)	Orthophoto generation	All types of terrain	<ul style="list-style-type: none"> DEM / DTM 	<ul style="list-style-type: none"> Seamless Digital Orthophoto 	
	11	Digital Orthophoto (LFDC)	Orthophoto generation	Densely Built - up	<ul style="list-style-type: none"> Digital Images 	<ul style="list-style-type: none"> Radiometrically & Geometrically corrected 	
				Medium Built - up			
Sparse Built - up							
12	Digital Orthophoto (HR-Satellite)	Orthophoto generation	All types of terrain	<ul style="list-style-type: none"> DEM / DTM Digital images with 2.5m and better 	<ul style="list-style-type: none"> Seamless Digital Orthophoto 		
			All types of terrain	<ul style="list-style-type: none"> DEM / DTM Digital images with 1.0m and better 	<ul style="list-style-type: none"> Radiometrically & Geometrically corrected 		

6.2. Annexure-2: GPS Survey Services

	S. No.	Type of Work	Components	Type of Terrain	Input	Output	Units	Unit rate (in ₹)	Unit Rate (in ₹) for North Eastern and J&K States
GPS SURVEYS	1	Control survey using Geodetic Dual Frequency GPS receivers	GCP collection using Single Receiver Positioning (non-DGPS approach) with a min. of 4 hrs observation (eg. Precise Point Positioning approach)	All types of terrain	Aerial / Satellite image chips	<ul style="list-style-type: none"> • Raw GPS observation data and RINEX data • Post pointing on the image data 	GCP		
			GCP collection for Sparsely spaced points (10 - 50 km apart) using DGPS technique with baseline observation of min. 2 hrs duration			<ul style="list-style-type: none"> • Field sketches of GCP in AutoCAD dwg format • GCP description • Field photographs using Digital camera in four directions • Field survey report 	GCP		
			GCP collection for Densely spaced points (5 - 10 km apart) using DGPS technique with baseline observation of min. 1 hr duration			<ul style="list-style-type: none"> • Real time corrected GPS observations in Raw data format as well as in RINEX format • Post pointing on the image data • Field sketches of GCP in AutoCAD dwg format • GCP description • Field photographs using Digital camera in four directions • Field survey report 	GCP		
			GCP collection with real time corrected GPS data logging for a min. duration of 30 minutes using 1. GAGAN real time corrections or 2. Online DGPS services like Omnistar				GCP		
	2	Monumentation	Construction of Monument for GCP (2'x2'x2' dimension) (Specifications enclosed - Annexure to GPS Survey Services)	All types of terrain	Location details on a map	<ul style="list-style-type: none"> • Constructed Monument • Field photographs using Digital Camera • Sketch in AutoCAD dwg format. • Location Description 	Monument		

6.3. Annexure-3: Levelling Field Survey Services

	S. No.	Type of Work	Components	Type of Terrain	Input	Output	Units	Unit rate (in ₹)	Unit Rate (in ₹) for North Eastern and J&K States
ETS SURVEYS	1	Total Station Surveying	Detailed Surveying using Electronic Total Station (ETS)	Hilly / Urban	Study area details & relevant maps / Images	<ul style="list-style-type: none"> Large Scale map on 1:1000 scale in both softcopy (AutoCAD dwg/dxf or ArcGIS .shp format) & hardcopy. ETS Survey records 	Sq. km		
				Plain / Rural			Sq. km		
L E V E L I N G	2	Leveling	Double Tertiary (DT) Leveling using Digital Levels	Hilly / Urban		<ul style="list-style-type: none"> DT Leveling data using Digital Levels (soft copy in excel format and hard copy in bounded volumes) DT Leveling network map in AutoCAD dwg/dxf or ArcGIS .shp format MSL Heights and handheld GPS coordinates for TBMs and Photo Points Field photographs in four directions with North using Digital Cameras for TBMs / Photo Point locations. 	Line km		
				Plain / Rolling			Line km		
			Ground Contouring using Digital Levels	Hilly / Urban		<ul style="list-style-type: none"> Contours (0.5 / 1.0 m) along with spotheight information in AutoCAD dwg/dxf or ArcGIS .shp format DT Leveling data using Digital Levels (soft copy in excel format and hard copy in bounded volumes), Field photographs in four directions with North using Digital Cameras for TBMs / Photo Point locations. 	Sq.km		
				Plain / Rolling			Sq.km		

6.4. Annexure-4: Field data collection & verification Services

	S. No.	Type of Work	Components	Type of Terrain	Input	Output	Units	Unit rate (in ₹)	Unit Rate (in ₹) for North Eastern and J&K States
FIELD DATA COLLECTION & VERIFICATION	1	Field Data Collection & Verification	Draft map verification & Field data Collection	Dense	Input data is Draft maps / Aerial photos/ satellite images, (Work involves Verification of the draft maps in the field & Collection of names for important landmarks such as name of Govt. buildings, religious features, tourist places, cinema halls, hotels, hospitals etc.)	<ul style="list-style-type: none"> List of features duly marked on input data (Maps/ Images). Field photographs using Digital Cameras for the important landmark features. 	Sq.km		
				Medium			Sq.km		
				Sparse			Sq.km		
	2	Utility Attribute data collection	Metropolitan cities	> 50 Lakhs population	Input Data is Maps / Aerial photos/Satellite images. (Work involves collection of attributes for a) Linear features such as roads, railways, drainage, rivers, canals etc. b) Polygon features such as water bodies, residential & commercial buildings namely name of building, ownership, No. of floors etc. c) Point features such bus stop, electrical pole, telephone pole etc.)	<ul style="list-style-type: none"> Attribute data in excel/Access format Labeling on the maps/images supplied Linking of Non-spatial data to spatial data. Field photographs using Digital Cameras 	Sq.km		
			Non-Metropolitan cities	<50 Lakhs & > 10 Lakhs population			Sq.km		
				<10 Lakhs population			Sq.km		

6.5. Annexure-5: Terrestrial Photogrammetry Survey Services

S. No.	Type of Work	Components	Type of Terrain	Input	Output	Units	Unit rate (in ₹)	Unit Rate (in ₹) for North Eastern and J&K States
1	Mobile Mapping with Terrestrial LIDAR & Digital Camera	Terrestrial LiDAR / Digital Camera / GPS- IMU	Density of 100 points / m ² and 5cm resolution	Input data is digital georeferenced base map with route / path of survey defined with Area of Interest	<ul style="list-style-type: none"> • ASPRS LAS format / 3ds object / dae / skp file format • Standard image formats like: TIFF, JPG2000 etc. 	Sq. m		
			Density of 50 points / m ² and 10 cm resolution			Sq. m		
			Density of 30 points / m ² and 20 cm resolution			Sq. m		

6.6. Annexure-6: Application Form (Geospatial database generation / Field Survey Services)

The format of the application form to be submitted for rate contract empanelment for both the services is given below. All the interested vendors / firms are requested to kindly fill the application form.

I. Technical bid submission

1. Name of the service applied by the firm:
2. Name and Address of the firm:
(Contact telephone / Fax Nos. & e-mail id)
3. Firm overview of the activities
4. Firm registration details:
5. List of Technical staff with qualifications & experience:
(Enclose list of technical staff as separate document)
6. List of computer hardware / standard relevant software / other equipments:
(Name of the hardware / software with version, No. of licenses & invoice details etc.,)
7. List of Work Orders executed:
(Name of the user, Work Order reference, Area & Period of work etc.,)
Enclose the proof of documents
8. Turnover in past three years(2013-16):
(Enclose the PAN / TAN Nos, Service Tax, IT returns and firm turnover per annum – CA certified report with CA's registration number & seal shall be attached)
9. The firm should submit the undertaking form as given in Annexure –7.
10. All the documents mentioned above should be submitted in a sealed envelope subscribed on the envelope with the following:

Envelope – 1

Technical bid submission for Geospatial database generation & Field Survey services

Name of the Service applied for:

Name of the firm:

II. Commercial bid submission

1. Unit price for each activity may be computed appropriately for Annexure –1, 2, 3, 4 and 5 (based on the selected service).
2. The unit price for the services will be valid for the period of three years from the date of rate contract empanelment.
3. The unit prices for the respective service should be submitted in sealed cover and subscribed on the envelope with the following:

Envelope – 2

Commercial bid submission for Geospatial database generation & Field Survey services

Name of the Service applied for:

Name of the firm:

6.7. Annexure-7: Undertaking form

I / We hereby declare that our Company/ firm _____, at the time of bidding:

- a) possess the necessary professional, technical, financial and managerial resources and competence as required in this RFP
- b) is having unblemished record and is not declared ineligible for corrupt & fraudulent practices either indefinitely or for a particular period of time by any State/ Central government/ PSU/ UT.
- c) is not insolvent in receivership, bankrupt or being wound up, not have its affairs administered by a court or a judicial officer, not have its business activities suspended and is not the subject of legal proceedings for any of the foregoing reasons.
- d) Read and understood the RFP document for “**Geospatial database generation & Field Survey services**” and comply with the terms & conditions of the RFP.
- e) Information provided in the application forms submitted to NRSC is and correct true to best of my / our knowledge.

Signature of the representative of the firm:

(along with the date)

Official stamp of the firm:

Name of the representative:

Designation :

Address: