National Highways & Infrastructure Development Corporation Ltd.

(Under Ministry of Road, Transport & Highways, Govt. of India)

Invitation of EXPRESSION OF INTEREST (EOI) for "Aerial Data Collection of NH-10 Sevoke-Rangpo section from Km 0.000 to 52.100 of in the State of West Bengal"

November 2024

Deputy General Manager (P)

NHIDCL PMU Siliguri

Near Bagrakote Railway Station,

Besides NH-17 (Old NH-31), PO-Bagrakote,

District Jalpaiguri, West Bengal-734501

pmu.siliguri@nhidcl.com

Letter of Invitation (LOI)

NHIDCL/ PMU-Siliguri/Survey/Data Analysis/2024-25 Dated: 27-11-2024

Sub: EXPRESSION OF INTEREST (EOI) for "Aerial Data Collection of NH-10 Sevoke-Rangpo section from Km 0.000 to 52.100 of in the State of West Bengal".

Dear Sir/Madam,

National Highways & Infrastructure Development Corporation Limited (NHIDCL) has the mandate of building infrastructure that involves roads, highways and tunnels for interstate and international connectivity mainly in the States of Assam, Arunachal Pradesh, Manipur, Mizoram, Tripura, Andaman & Nicobar, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim and West Bengal. NHIDCL now intends to short-list eligible service provider / bidder who have proven experience for Aerial Data Collection and Monitoring of ongoing works of NHIDCL through drone technology. To carry out the implementation of subject project, NHIDCL will engage eligible service provider.

2. As per the terms and conditions of the service, the Agency shall be required to carry out aerial videography of the project to ensure compliance of requirements for the Scope of Work.

3. Services are to be provided by an integrated multi-disciplinary team consisting of Drone operator, supporting staff, vehicles and other requirements used in aerial data collection.

4. Scope of work

4.1 The Scope of work includes one-time Aerial Data Collection of **'NH-10 Sevoke-Rangpo section from Km 0.000 (Coronation Bridge) to 52.100 (Atal Setu)'.**

4.2 The applicants shall carry out aerial videography (using 4k resolution), Ortho-imaging, Chainage System Information, Landslide/Sinking Zones Inspections, Contour Lines & Terrain Profile (DEM, DTM, DSM) on National Highway-10 and submit to NHIDCL output in shape / kml / vector files which can be viewed/ analyzed/used on any software platform/ applications.

Note- The vendor/ drone operating agency must submit the 4k resolution aerial video and Geo-tagged Ortho-image for the 100 % length of the National Highway-10 given in the work order & considering width of the Highway Survey as 100 mtrs, which may be increased to 200m for full landslide/sinking section coverage and/or River Teesta bank(s) coverage. The report submitted by the vendor/drone operating agency should clearly indicate contour line, Geo- reference, timestamp, road asset inventory like subsidence/sinking zones, landslide etc. with locational reference along with 4k resolution aerial video and orthoimages. The accuracy Geo Tag Should be in order of 10cm +/- 1cm. The proof of Geo Tag accuracy needs to be demonstrated by the participating vendors either through

technical documentation or experiment. If the Geo tag accuracy is not as per NHIDCL requirement, service will be treated invalid.

Example: If the highway length awarded is 100 Kms, the area of videography coverage will be around 100 x 0.1 Sq kms and area of ortho-image will be 100 x 0.1 Sq kms. (considering width of the Highway Survey as 100 mtrs, which may be increased for full landslide/sinking section coverage)

(i) Drone specification to be as per Annexure-2 and the shall be used for data acquisition and subsequently processing.

(ii) The drone shall have on-board mounted payload consisting of processor board, GPS antenna, wireless camera.

(iii) The drone flight shall be controlled through Ground Control Station (GCS). The mission parameter required for flight control shall be provided by GCS to the flight controller. Before starting of survey, real time correction shall be applied, and accuracy should be submitted with full correlation with chainage measurements. (e.g. by using Omni Star/ Bhuvan etc.)

(iv) On board mounted GPS transmitter/receiver should provide the current location to the processor board for flight control as well as it should be communicated to GCS to monitor flight trajectory on the display.

(v) The agency shall be fully responsible to provide security to their persons deputed on site including their insurance, wherever required under the law or considered prudent.

(vi) Time-stamp and display of longitude, latitude shall be overlaid on the video/ Orthoimage. Special annotations or texts should be provided for Points of Interests like landslides, major damage of roads, subsidence/sinking of roads etc.

(vii) The Video/ ortho image should be Geo-tagged/ aligned with the survey roads with latitude and longitude coordinates.

(viii) Wherever possible and desired by the NHIDCL, 360 degree view video needs to be provided for landslide/sinking/subsidence /damaged troad zones.

(ix) The agency shall be fully responsible for obtaining the required permission/ license/ security clearances from the State Govt. / Local bodies and DGCA etc, wherever it is required. All rules issued by Ministry of Civil Aviation and other Govt. Agencies from time to time shall be followed scrupulously.

5. ELIGIBILITY CRITERIA: -

The Applicant should be:

(i) A Company incorporated and registered in India under the Companies Act, 1956 or a partnership firm or LLP formed under LLP act 2008.

Documents in support of above shall be submitted as part of the EOI.

(ii) A company declared ineligible by NHIDCL, NHAI and Ministry of Road Transport & Highways, Government of India or Railways or any other government departments for indulging in corrupt or fraudulent practices in last three years from the last date of receipt of bids, shall be ineligible for this EOI. In case if any information is found false or containing incorrect information at any point of time, the services will be terminated. The agency will be banned for upto two years for doing business in NHIDCL/NHAI/ MoRTH.

6. Service Period:

The total service period shall be for the period of completion of subject work, preferably 7 (seven) days and in any case not more than 10(ten)days.

7. NHIDCL shall evaluate the EOI proposals based on relevant experience of project monitoring, aerial videography in hill terrain etc. (Annexure-1&2) and the financial bid.

8. **Service Quotation(s)** clearly indicating Details as per Annexure-1, Service cost, mobilization time, and timeline for the completion of the work 'Aerial Data Collection of **NH-10 Sevoke-Rangpo section from Km 0.000 (Coronation Bridge) to 52.100 (Atal Setu)' i**n the month of December 2024 as per service period above are hereby invited.

9. Bids/Service Quotations may be submitted online at pmu.siliguri@nhidcl.com. Any conditional bids/quotations shall be summarily rejected by NHIDCL.

10. Last Date of Submission: 04.12.2024 (1700 Hrs)

Annexure-1

Technical Features of Proposed Solution

S.No	System	Features/Accuracy/Description
1	Drone	
2	Camera Payload	
3	GIS Software	
4	Software for photogrammetry	
5	GNSS	
6	Geo Tagging Scheme Details	
7	RTK/PPK Scheme Details with accuracy	
8	Methodology for ensuring GNSS Accuracy in linear surveys	
9	Other Features	

Annexure-2

Revised Standard Operating Procedure (SOP) for recording drone videography imagery

<table>
<tr><th>Parameters</th><th>Revised SOP</th></tr>
<tr><td>Drone Speed</td><td>5m/sec (18km/hr.) or less</td></tr>
<tr><td>Drone Height</td><td>Height at which drone will be flown will depend on ROW. Indicative heights are given below:
<table>
<tr><th>ROW (meter)</th><th>Maximum Drone Height calculated as above Ground Level (meter)</th></tr>
<tr><td>40-70</td><td>60</td></tr>
<tr><td>70-100</td><td>80</td></tr>
<tr><td>100-130</td><td>95</td></tr>
</table>
Since drone height greater than 95 meter is not suitable for analytics, in case of sections (clovers, roundabouts etc.) where ROW is greater than 130m, the drone service provider will operate separately with multiple laps to cover both sides of RoW without exceeding the height limits and the DSP will be paid accordingly.</td></tr>
<tr><td>Camera Sensors</td><td>RGB Sensor, Minimum 12 MP or better. Sensor has to be same for a single inspection.</td></tr>
<tr><td>Recording Type</td><td>Images (JPEG)</td></tr>
<tr><td>Recording Angle</td><td>90 degrees, Nadir unless specified otherwise</td></tr>
<tr><td>Flight Pattern</td><td>Single lap with Right of Way in Centre</td></tr>
<tr><td>Overlap in images expected</td><td>Minimum 85% (Front and Side)</td></tr>
<tr><td>Geotagged Data</td><td>All data to be submitted as a single folder which includes individual sub-folders or sequential geo-tagged images as exported from drone.</td></tr>
<tr><td>Flight logs</td><td>All flight logs from litchi or the app being used by the DSP to be submitted in a separate folder whether in .csv or txt formats, whichever is available in the application in use</td></tr>
<tr><td>Miscellaneous</td><td>• Minimum satellite lock should be 12 satellites or more while flying
• No custom settings in RGB sensor
• The image, width and height ratio should be uniform for all images
• Drone should be ideally flown using terrain follow mode or equivalent.
• All way side amenities, site camps, casting yards, borrow areas, toll plazas, O&M centre etc and nearby roads used for transportation of earth should be covered.</td></tr>
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