

NATIONAL HIGH SPEED RAIL CORPORATION LIMITED (NHSRCL)
(A Joint Sector Company of Govt. of India and Participating State Government)
 2nd Floor, Asia Bhawan, Road No.205, Sector-9, Dwarka, New Delhi-110077, India

Addendum No. 01

Country: INDIA

Name of Work: Final Alignment design including Aerial LiDAR survey and other related works for six high speed rail corridors

Date: 02.03.2020

Tender No. NHSRCL/CO/CONTRACT/LIDAR/2020/03

Following are to be considered:

Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
1.	Section I, NIT, Sub Clause 6, Page 4 of 128	6. Date of Receipt and opening of Technical Bids: The completed Bids must be dropped in the nominated tender box or delivered to the address below during office hours from 10.02.2020 onwards but not later than 15:00 on 11.03.2020. Technical Bids will be opened at 15:30 hrs on 11.03.2020 in the presence of Bidders who choose to be present. NHSRCL will not be responsible for any delays in Bidder obtaining the Bidding documents from NHSRCL/Website or receipt of the submitted bid by NHSRCL. However, NHSRCL reserves the right to postpone/defer the opening, if it deems fit.	6. Date of Receipt and opening of Technical Bids: The completed Bids must be dropped in the nominated tender box or delivered to the address below during office hours from 10.02.2020 onwards but not later than 15:00 on 20.03.2020 . Technical Bids will be opened at 15:30 hrs on 20.03.2020 in the presence of Bidders who choose to be present. NHSRCL will not be responsible for any delays in Bidder obtaining the Bidding documents from NHSRCL/Website or receipt of the submitted bid by NHSRCL. However, NHSRCL reserves the right to postpone/defer the opening, if it deems fit.
2.	Section III ITB Sub Clause 1.4, Page 10 of 128	Throughout these bidding documents, the terms “bid” and “tender” and their derivatives (“bidder”/ “tenderer”), “bid/tendered”, “bidding”/ “tendering”, etc.) are synonymous. Day means calendar day. Singular also means plural. The term Consultant may <u>interchangeably</u> read as contractor also.	Throughout these bidding documents, the terms “bid” and “tender” and their derivatives (“bidder”/ “tenderer”), “bid/tendered”, “bidding”/ “tendering”, etc.) are synonymous. Day means calendar day. Singular also means plural. The term <u>Consultant may read as contractor.</u>
3.	Section III ITB Sub Clause 6.2.1, Page 12 of 128	The bidder should submit query in writing not later than Fourteen (14) days prior to the deadline for submission of Bids. <u>Replies to bidder queries should be sent to the Bidders by email/ courier/ registered post</u> but without identifying the source of inquiry not later than Five (05) days prior to the deadline for submission of Bids.	The bidder should submit query in writing not later than Fourteen (14) days prior to the deadline for submission of Bids. <u>Replies to bidder queries will be uploaded on NHSRCL website https://www.nhsrcl.in & https://eprocure.gov.in/epublish/app</u> but without identifying the source of inquiry not later than Five (05) days prior to the deadline for submission of Bids.



Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
4.	Section III ITB Sub Clause 6.3.1, Page 12 of 128	At any time prior to the submission of Bids, the Employer may, whether at its own initiative, or in response to a clarification requested by a firm, amend the bid by issuing an Addendum/ Corrigendum. <u>Addendum/ Corrigendum which will be informed to the Bidders.</u> To give bidders reasonable time in which to take an amendment into account in their Bids, the Employer may at its discretion, if the amendment is substantial, extend the deadline for the bid submission. The issued Addendum(s) and Corrigendum(s) should be considered as part of Bid Document.	At any time prior to the submission of Bids, the Employer may, whether at its own initiative, or in response to a clarification requested by a firm, amend the bid by issuing an Addendum/ Corrigendum. <u>Addendum/ Corrigendum which will be uploaded on NHSRCL website https://www.nhsrcl.in & https://eprocure.gov.in/epublish/app.</u> To give bidders reasonable time in which to take an amendment into account in their Bids, the Employer may at its discretion, if the amendment is substantial, extend the deadline for the bid submission. The issued Addendum(s) and Corrigendum(s) should be considered as part of Bid Document.
5.	Section III ITB Sub Clause 11.2 ii, Page 13 of 128	All details furnished as per Clause 11.5 of ITB.	<u>Letter of Technical Bid along with</u> all details furnished as per Clause 11.5 of ITB.
6.	Section III ITB Sub Clause 17.1.3, Page 18 of 128 Last Paragraph	On completion of Technical and Financial evaluation of submitted Bids, final ranking of the Bids will be determined. This will be done by normally applying weightage as specified in the procedure listed in Annexure I respectively to the technical and financial score of each evaluated qualifying Technical and Financial Bids and then computing the relevant combined total score for each Bidder. After such final ranking, normally, the first-ranked Bidder shall be <u>awarded</u> the Contract.	On completion of Technical and Financial evaluation of submitted Bids, final ranking of the Bids will be determined. This will be done by normally applying weightage as specified in the procedure listed in Annexure I respectively to the technical and financial score of each evaluated qualifying Technical and Financial Bids and then computing the relevant combined total score for each Bidder. After such final ranking, normally, the first-ranked Bidder shall be <u>considered for negotiation/ award of the Contract.</u>
7.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 1.1, Page 22 of 128	The tenderer's bid will first qualify the minimum required criteria and thereafter shall be evaluated based on Combined Quality and Cost Based Selection (CQCBS) and procedures described in this tender document. Overall final evaluation of the bidder will be done on the basis of technical as well as financial scores achieved by the bidder. The weightage of technical and financial scores will be 70% and 30% respectively. The minimum technical score required to qualify is 70%. The financial bids of unsuccessful bidders will not be opened and will be returned un-opened. In case of one or no bidder scoring <u>less than</u> 70%, Employer may relax this requirement at its discretion to 60%.	The tenderer's bid will first qualify the minimum required criteria and thereafter shall be evaluated based on Combined Quality and Cost Based Selection (CQCBS) and procedures described in this tender document. Overall final evaluation of the bidder will be done on the basis of technical as well as financial scores achieved by the bidder. The weightage of technical and financial scores will be 70% and 30% respectively. The minimum technical score required to qualify is 70%. The financial bids of unsuccessful bidders will not be opened and will be returned un-opened. In case of only one or no bidder scoring <u>more than</u> 70%, Employer may relax this requirement at its discretion to 60%.

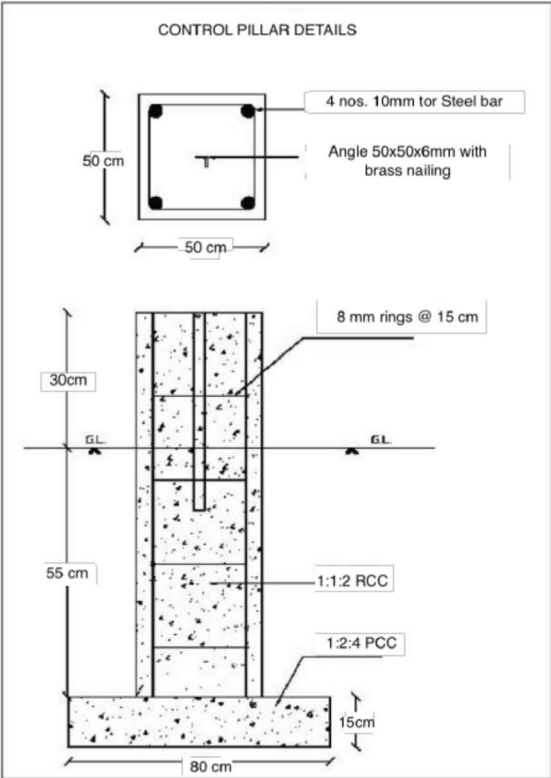


Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
8.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 2.2.1 S. No. 6, Page 23 of 128	Photogrammetry Feature Extraction Software Leica <u>photogrammetry suite of Bentley</u> micro station or similar	Photogrammetry Feature Extraction Software Leica <u>photogrammetry suite of Bentley</u> micro station or similar
9.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 2.2.2 Note 2, Page 24 of 128	5. Single entity must meet the requirement of para 2.2.2.	To be deleted.
10.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 2.2.2 Note 3, Page 24 of 128	4. For past experience of activities in sub clause 2.2.2 (d), credit shall be given for the execution of the quantity of that specific activity executed by the firm as part of a JV, duly certified by the employer. Credit of JV parties shall be calculated based on responsibility matrix of the respective work activity to the respective JV partner.	4. For past experience of activities in sub clause 2.2.2 (d), credit shall be given for the execution of the quantity of that specific activity executed by the firm, duly certified by the employer. <u>In case of JV/Consortium, credit shall be given according to the Bidder's share in JV/Consortium.</u>
11.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 2.4.1, Page 25 of 128	Sr. Photo-grammetry Expert (A) i. Graduate in Civil Engineering/ M Sc Geomatics/ M Sc Geology/Surveying and Mapping with minimum of 5 years' experience in Photogrammetry related works	Sr. Photo-grammetry Expert (A) i. Graduate in Civil Engineering/ M Sc Geomatics/ M Sc Geology <u>or any other related/similar Surveying and Mapping engineering degree</u> with minimum of 5 years' experience in Photogrammetry related works
12.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 2.4.1, Page 26 of 128	Sr. LiDAR Professional (C) i. (Graduate in Civil Engineering/M Sc Geomatics/ M Sc Geology/ Surveying & Mapping with minimum of 5 years' experience in LiDAR works	Sr. LiDAR Professional (C) i. Graduate in Civil Engineering/ M Sc Geomatics/ M Sc Geology <u>or any other related/similar Surveying and Mapping engineering degree</u> Surveying & Mapping with minimum of 5 years' experience in LiDAR works



Item No.	Refer Para No.	Original Paragraph		Revised Paragraph	
13.	Section IV, Appendix To Tender, Page 29 of 128	(d) Date and time of submission of Bid	On 11.03.2020 up to 15:00 hrs.	(d) Date and time of submission of Bid	On <u>20.03.2020</u> up to 15:00 hrs.
14.	Section IV, Appendix To Tender, Page 29 of 128	(e) Date and time of opening of the Bids	On 11.03.2020 at 15:30 hrs.	(e) Date and time of opening of the Bids	On <u>20.03.2020</u> at 15:30hrs.
15.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 3.2.2.1, Page 33 of 128	3.2.2.1. For different corridors, the client shall/may provide either off-the-shelf <u>Orthophotos of 50 cm Ground Sampling Distance (GSD) or Stereo/ Mono Imagery</u>		3.2.2.1. For different corridors, the client shall/may provide <u>off-the-shelf mono ortho-satellite imagery of 50 cm ground sampling distance & DTM/DSM of 3m accuracy (with confidence interval of 90%) from NRSC on ellipsoid height.</u>	
16.	Annexure I Bid Qualifying Criteria and Evaluation Methodology Sub Clause 3.2.2.1, Page 33 of 128			Add the following para below Sub cl. 3.2.2.2 3.2.2.3 For different corridor, client may provide high resolution raw satellite imagery, DTM/DSM in ellipsoid height from NRSC.	
17.	Section V Terms of Reference, Sub Clause 3.3.2, Page 38 of 128	Construction of cast in-situ Permanent Control Point pillars of size 500mm x 500mm x 1000mm of RCC (Nominal Mix <u>1:1½:3</u>) with provision of 700 mm long M.S. angle of size 50 x 50 x <u>5</u> mm with brass nailing on the MS angle for marking the Control Points and <u>embossing</u> the CP pillar number on the MS plate of size 125mm x 125mm x 5mm embedded in concrete by four 6 mm dia rods 150 mm long as per approved drawing. The pillar should have the following reinforcement: 4nos-10mm dia longitudinal and 8mm dia rings@150mm c/c. The Foundation size of the pillar should be: 800mm x 800mm x 150mm with a PCC base. As far as possible permanent control point should be marked on permanent structure and wherever not possible, erected on permanent		Construction of cast in-situ Permanent Control Point pillars of size 500mm x 500mm x 1000mm of RCC (Nominal Mix <u>1:1:2</u>) with provision of 700 mm long M.S. angle of size 50 x 50 x <u>6</u> mm with brass nailing on the MS angle for marking the Control Points and <u>engraving</u> the CP pillar number on the MS plate of size 125mm x 125mm x 5mm embedded in concrete by four 6 mm dia rods 150 mm long as per approved drawing. The pillar should have the following reinforcement: 4nos-10mm dia longitudinal and 8mm dia rings@150mm c/c. The Foundation size of the pillar should be: 800mm x 800mm x 150mm with a PCC base (Nominal mix 1:2:4). As far as possible permanent control point should be marked on permanent structure and wherever not possible, erected on	



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		pillar.	<p>permanent pillar.</p> <p><i>[Replace the Figure specified at Page 39 of 128 with the following figure.]</i></p>  <p>The figure, titled 'CONTROL PILLAR DETAILS', consists of two parts: a top view and a side elevation. The top view shows a square pillar with a side length of 50 cm. It contains four 10mm diameter steel bars at the corners and an angle iron (50x50x6mm) with brass nailing across the center. The side elevation shows a pillar with a total height of 85 cm (30 cm above ground level and 55 cm below). The top 30 cm is made of 1:1:2 RCC with 8 mm rings at 15 cm spacing. The bottom 55 cm is made of 1:2:4 PCC. The base of the pillar is 80 cm wide and 15 cm thick. Ground level (G.L.) is indicated by a horizontal line.</p>
18.	Section V Terms of Reference, Sub Clause 3.3.4.5, Page 41 of 128	<p>After finalization of horizontal and vertical alignment of final alignment for the Engineering Department shall be prepared and submitted:</p> <p>a. General Map of the country traversed by the project scale of 25 km to 1 cm.</p> <p>b. Index map on a scale of 2.5 km to 1 cm.</p>	<p>After finalization of horizontal and vertical alignment of final alignment shall be prepared and submitted:</p> <p>a. General Map of the country traversed by the project scale of 25 km to 1 cm.</p> <p>b. Index map on a scale of 2.5 km to 1 cm.</p> <p>c. Detail Plan and sections map in in scale 1:2500 horizontal</p>

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		<p>c. Detail Plan and sections map in in scale 1:2500 horizontal 1:250 vertical (generated from Aerial LiDAR and Imagery) with Datum: WGS-84, Projection: UTM, Vertical Datum: Mean Sea Level. Contour Interval of 0.5 meters. Map template including index, symbology etc. shall be generally as per Survey of India topo maps.</p> <p>d. List of gradient, curves (horizontal and vertical), crossing (like Railway, Highways, etc), details of sanctioned projects, stations.</p>	<p>1:250 vertical (generated from Aerial LiDAR and Imagery) with Datum: WGS-84, Projection: UTM, Vertical Datum: Mean Sea Level. Contour Interval of 0.5 meters. Map template including index, symbology etc. shall be generally as per Survey of India topo maps.</p> <p>d. List of gradient, curves (horizontal and vertical), crossing (like Railway, Highways, etc), details of sanctioned projects, stations.</p>																																																
19.	Section V Terms of Reference, Sub Clause 3.3.8, Page 42 of 128	<p>List of Maps Scales to be provided</p> <p>For the sake of clarity, the following are the list of outputs with scales</p> <table border="1"> <thead> <tr> <th>S.No.</th> <th>Output</th> <th>Required Scale</th> <th>Reference Section</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Topographic Map derived from Satellite Imagery</td> <td>1:5000</td> <td>Section 3.2.6.1</td> </tr> <tr> <td>2</td> <td>3D Topographic Map from LiDAR data</td> <td>1:2500</td> <td>Section 3.3.1.9</td> </tr> <tr> <td>3</td> <td>Detailed Plan & Section</td> <td>1:2500 in Horizontal & 1:250 in Vertical</td> <td><u>Section 3.3.7.5 (c)</u></td> </tr> <tr> <td>4</td> <td>General Map</td> <td>1:25,00,000</td> <td><u>Section 3.3.7.5 (a)</u></td> </tr> <tr> <td>5</td> <td>Index Map</td> <td>1:2,50,000</td> <td><u>Section 3.3.7.5 (b)</u></td> </tr> </tbody> </table>	S.No.	Output	Required Scale	Reference Section	1	Topographic Map derived from Satellite Imagery	1:5000	Section 3.2.6.1	2	3D Topographic Map from LiDAR data	1:2500	Section 3.3.1.9	3	Detailed Plan & Section	1:2500 in Horizontal & 1:250 in Vertical	<u>Section 3.3.7.5 (c)</u>	4	General Map	1:25,00,000	<u>Section 3.3.7.5 (a)</u>	5	Index Map	1:2,50,000	<u>Section 3.3.7.5 (b)</u>	<p>List of Maps Scales to be provided</p> <p>For the sake of clarity, the following are the list of outputs with scales</p> <table border="1"> <thead> <tr> <th>S.No.</th> <th>Output</th> <th>Required Scale</th> <th>Reference Section</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Topographic Map derived from Satellite Imagery</td> <td>1:5000</td> <td>Section 3.2.6.1</td> </tr> <tr> <td>2</td> <td>3D Topographic Map from LiDAR data</td> <td>1:2500</td> <td>Section 3.3.1.9</td> </tr> <tr> <td>3</td> <td>Detailed Plan & Section</td> <td>1:2500 in Horizontal & 1:250 in Vertical</td> <td><u>Section 3.3.4.5 (c)</u></td> </tr> <tr> <td>4</td> <td>General Map</td> <td>1:25,00,000</td> <td><u>Section 3.3.4.5 (a)</u></td> </tr> <tr> <td>5</td> <td>Index Map</td> <td>1:2,50,000</td> <td><u>Section 3.3.4.5 (b)</u></td> </tr> </tbody> </table>	S.No.	Output	Required Scale	Reference Section	1	Topographic Map derived from Satellite Imagery	1:5000	Section 3.2.6.1	2	3D Topographic Map from LiDAR data	1:2500	Section 3.3.1.9	3	Detailed Plan & Section	1:2500 in Horizontal & 1:250 in Vertical	<u>Section 3.3.4.5 (c)</u>	4	General Map	1:25,00,000	<u>Section 3.3.4.5 (a)</u>	5	Index Map	1:2,50,000	<u>Section 3.3.4.5 (b)</u>
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20.	Section V Terms of Reference, Sub Clause 3.4.5 x., Page 45 of 128	<p>x. Final Alignment Report Stage II as follows:</p> <p>The draft Final Alignment Report Stage II shall be submitted within <u>150</u> days from date of commencement of work on the corridor. NHSRCL will give its comments within <u>15</u> days of the submission of the report. The contractor shall incorporate these comments and submit the Final Alignment Report Stage II within another <u>15</u> days post which NHSRCL will give final acceptance of the Stage-II Report within 30 days of submission. NHSRCL will interact with State Authorities/ Railway and other agency for approval of final alignment, however, the Contractor shall attend the meetings in this regard and provide required clarifications/presentations. This report shall consist of but not limited to the following:</p>			<p>x. Final Alignment Report Stage II as follows:</p> <p>The draft Final Alignment Report Stage II shall be submitted within <u>140</u> days from date of commencement of work on the corridor. NHSRCL will give its comments within <u>5</u> days of the submission of the report. The contractor shall incorporate these comments and submit the Final Alignment Report Stage II within another <u>5</u> days post which NHSRCL will give final acceptance of the Stage-II Report within 30 days of submission. NHSRCL will interact with State Authorities/ Railway and other agency for approval of final alignment, however, the Contractor shall attend the meetings in this regard and provide required clarifications/presentations. This report shall consist of but not limited to the following:</p>		
21.	Section V Terms of Reference, Sub Clause 3.4.6, Page 46 of 128	<p>Instructions to be followed by the <u>Consultant</u> while <u>providing Services</u></p> <p>a. Augmentation of Data: <u>In the conduct of the Consultancy service</u>, NHSRCL shall provide available relevant data and reports to the <u>consultant</u>, but these may or may not be adequate. The <u>Consultant</u> shall supplement by collecting:</p> <p>i. Design criteria/standards/Codes/manuals/best practices in a relevant field related to project.</p> <p>ii. Details of all major habitations, demography, features, and structures in the area.</p> <p>iii. Details of other mega projects like the hydro project, roads etc in the area which may have an influence on the alignment design.</p> <p>b. Consultant shall be solely responsible for the analysis and interpretation of all data received and collected and for the conclusions and recommendations contained in their reports.</p>			<p>Instructions to be followed by the <u>Contractor</u> while <u>executing the work</u>.</p> <p>a. Augmentation of Data: <u>In execution of work</u>, NHSRCL shall provide available relevant data and reports to the <u>Contractor</u>, but these may or may not be adequate. The <u>Contractor</u> shall supplement by collecting:</p> <p>i. Design criteria/standards/Codes/manuals/best practices in a relevant field related to project.</p> <p>ii. Details of all major habitations, demography, features, and structures in the area.</p> <p>iii. Details of other mega projects like the hydro project, roads etc in the area which may have an influence on the alignment design.</p> <p>b. Contractor shall be solely responsible for the analysis and interpretation of all data received and collected and for the conclusions and recommendations contained in their reports.</p>		
22.	Section V Terms of Reference Sub Clause 3.9 Schedule of Key	S. No.	Key Activity	Key Dates *	S. No.	Key Activity	Key Dates *
		1	Submission of Approach and Methodology Statement as per clause	D+10			1 Submission of Approach and Methodology Statement as per clause D+10



Item No.	Refer Para No.	Original Paragraph			Revised Paragraph		
	dates, Page 48 of 128	2	Submission of Inception Report as per clause 3.4.1	D+30	2	Submission of Inception Report as per clause 3.4.1	D+30
		3	Processing of satellite images procured for map generation, and submission of the report thereof	D+50	3	Processing of satellite images procured for map generation, and submission of the report thereof	D+50
		4	Submission of Alignment Report Stage-I as per clause 3.4.4	D+80	4	Submission of Alignment Report Stage-I as per clause 3.4.4	D+ <u>60</u>
		5	Submission of Alignment Report Stage-II (Final Submission) as per clause 3.4.5	D+ <u>170</u>	5	Submission of Alignment Report Stage-II (Final Submission) as per clause 3.4.5	D+ <u>150</u>
		"D" is the date of commencement of work.			"D" is the date of providing the .kmz file of respective corridors by the Employer.		
23.	Section V Terms of Reference Annexure -2 (TOR) Point 2, Page 51 of 128	2. High resolution 50 cm resolution Ortho-Imagery & DTM/DSM of 3 m accuracy (with confidence interval of 90%) procured from NRSC/ISRO, Hyderabad in digital format or raw satellite imagery from NRSC/ ISRO as required.			<p><i>Replace the entire Point 2 with the following.</i></p> <p>2. High resolution (50 cm) Ortho-Imagery & DTM/DSM of 3 m accuracy (with confidence interval of 90%) procured from NRSC, Hyderabad in digital format.</p> <p style="text-align: center;">Or</p> <p>High resolution (50 cm) Ortho ready imagery, DTM/ DSM on ellipsoid height from NRSC</p> <p style="text-align: center;">Or</p> <p>High resolution raw satellite imagery from NRSC</p>		
24.	Section V Terms of Reference Annexure -3 (TOR) 4.3 i Point 3, Page 57 of 128	2. Flight line overlap must be 10% or greater, as required to ensure there are no data gaps between the usable portions of the swaths.			2. Flight line overlap must be 20% or greater, as required to ensure there are no data gaps between the usable portions of the swaths.		



Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
25.	Section V Terms of Reference Annexure -3 (TOR) 4.3 iv Point 3, Page 61 of 128	In the above circumstances a “compiled to meet” statement of horizontal accuracy at <u>68 per cent or 95 per cent</u> confidence will be reported.	In the above circumstances a “compiled to meet” statement of horizontal accuracy at 95 per cent confidence will be reported.
26.	Form 1 S. No 3, Page 67 of 128	Attested copies of Affidavit for sole proprietorship / memorandum and Articles of Association/ <u>JV/ Consortium Agreement</u> along with details pertaining to place of registration, principal place of business of the firm, etc.,	Attested copies of Affidavit for Sole Proprietorship / Memorandum of Association or Articles of Association along with details pertaining to place of registration, principal place of business of the firm, etc./ <u>copy of Partnership Deed in case of Partnership firm, copy of LLP Agreement in case of LLP Firm.</u>
27.	Form 1 S. No 8, Page 68 of 128	Details of Tender Cost submitted, if any.	Details of Tender <u>Document</u> Cost submitted, if any.
28.	Form 6 Note 4, Page 77 of 128	The Bidder is not required to submit any other document as documentary evidence along with the Bidding Documents. All information furnished in this Form shall be certified by a Chartered Accountant/Company Auditor/Statutory Auditor. In case of JV, credit shall be given according to the responsibility matrix.	The Bidder is not required to submit any document <u>other than those mentioned above</u> as documentary evidence along with the Bidding Documents. All information furnished in this Form shall be certified by a Chartered Accountant/Company Auditor/Statutory Auditor. <u>In case of JV/Consortium, credit shall be given according to the Bidder's share in JV/Consortium.</u>
29.	Form 7, Page 78 of 128	Form 7 CURRICULUM VITAE (CV) OF PROFESSIONAL PERSONNEL	Form 7 CURRICULUM VITAE (CV) OF PROFESSIONAL PERSONNEL <u>Replace the entire Form 7 with the revised Form 7 enclosed as Attachment 1</u>
30.	Section VII General Conditions of Contract (GCC) Page 97 of 128	Notes on General Conditions <i>The Conditions of Contract comprise two parts:</i> <i>(a) Standard General Conditions – GCC (Section <u>VI</u> of the Bidding Documents); and</i> <i>(b) Particular Conditions of Contract – PCC (Section <u>VII</u> of the Bidding Documents).</i>	Notes on General Conditions <i>The Conditions of Contract comprise two parts:</i> <i>(a) Standard General Conditions – GCC (Section <u>VII</u> of the Bidding Documents); and</i> <i>(b) Particular Conditions of Contract – PCC (Section <u>VIII</u> of the Bidding Documents).</i>



Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
31.	Section VIII Particular Conditions of Contract (PCC) Part-A Contract Data, Page 100 of 128	<i>[The Employer should insert relevant data prior to the issue of the Bidding Documents. Where a number of days is to be inserted it is desirable for the number to be a multiple of seven for consistency with the Conditions of Contract.]</i>	To be deleted.
32.	Section VIII Particular Conditions of Contract (PCC) Part-A Contract Data, Sub clause 4.2 Performance Security, Page 103 of 128	<p>Replace First paragraph of Sub-Clause 4.2.1 with the following:</p> <p>The Contractor shall deliver the Performance Securities to the Employer within 28 days after receiving the Letter of Acceptance, and shall send a copy to the Engineer. The Performance Security shall be issued by a Scheduled Commercial Bank or State Bank of India and shall be in the form annexed to the Particular Conditions or in another form approved by the Employer.</p> <p>Add new paragraph after last paragraph of Sub-Clause 4.2 with the following:</p> <p>“In the event the Contractor fails to provide the Performance Security within 28 days from the date of issue of the LOA, it may seek an extension of time for providing the performance security for a period not exceeding a further 15 days, duly extending the validity of bid security accordingly, on payment of damages for such extended period in a sum calculated at the rate of 0.005% of the Accepted Contract Amount less Provisional Sums for each day until the Performance Security is provided.”</p>	<p>Replace First paragraph of Sub-Clause 4.2.1 with the following:</p> <p>The Contractor shall deliver the Performance Securities to the Employer within 28 days after receiving the Letter of Acceptance, and shall send a copy to the Engineer. The Performance Security shall be issued by a Scheduled Commercial Bank or State Bank of India and shall be in the form annexed to the Particular Conditions or in another form approved by the Employer.</p> <p>Add new paragraph after last paragraph of Sub-Clause 4.2 with the following:</p> <p>“In the event the Contractor fails to provide the Performance Security within <u>28 days after receiving the Letter of Acceptance</u>, it may seek an extension of time for providing the performance security for a period not exceeding a further 15 days, duly extending the validity of bid security accordingly, on payment of damages for such extended period in a sum calculated at the rate of 0.005% of the Accepted Contract Amount less Provisional Sums for each day until the Performance Security is provided.”</p>
33.	Section VIII Particular Conditions of Contract (PCC) Part-A Contract Data, Sub clause 14.2 Advance	5% (<u>ten</u> percent) of the Accepted Contract Amount (excluding the Provisional Sum) payable in the currencies and proportions in which the Accepted Contract Amount is payable.	5% (<u>five</u> percent) of the Accepted Contract Amount (excluding the Provisional Sum) payable in the currencies and proportions in which the Accepted Contract Amount is payable.



Item No.	Refer Para No.	Original Paragraph	Revised Paragraph																																														
	Payment, Page 101 of 128																																																
34.	Section VIII Particular Conditions of Contract (PCC) Part-A Contract Data, Table: Summary of Milestones, Page 102 of 128	<p>Table: Summary of Milestones</p> <table border="1"> <thead> <tr> <th>S No</th> <th>Milestone Name/Description (Sub-Clause 1.1.89)</th> <th>Time for Completion from Commencement Date</th> <th>Delay Damages (amount per day of delay)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Corridor-1 Delhi-Varanasi</td> <td>170</td> <td rowspan="6">Upto 0.05% of accepted contract value of each corridor for each day of delay</td> </tr> <tr> <td>2.</td> <td>Corridor-2</td> <td>230</td> </tr> <tr> <td>3.</td> <td>Corridor-3</td> <td>290</td> </tr> <tr> <td>4.</td> <td>Corridor-4</td> <td>350</td> </tr> <tr> <td>5.</td> <td>Corridor-5</td> <td>410</td> </tr> <tr> <td>6.</td> <td>Corridor-6</td> <td>470</td> </tr> </tbody> </table> <p>Work on Delhi- Varanasi corridor will be commenced immediately. Work on other corridors will commence in sequence of one another. Sequences of those corridors will be jointly decided after award of contract.</p>	S No	Milestone Name/Description (Sub-Clause 1.1.89)	Time for Completion from Commencement Date	Delay Damages (amount per day of delay)	1.	Corridor-1 Delhi-Varanasi	170	Upto 0.05% of accepted contract value of each corridor for each day of delay	2.	Corridor-2	230	3.	Corridor-3	290	4.	Corridor-4	350	5.	Corridor-5	410	6.	Corridor-6	470	<p>Table: Summary of Milestones</p> <table border="1"> <thead> <tr> <th>S No</th> <th>Milestone Name/Description (Sub-Clause 1.1.89)</th> <th>Time for Completion from Commencement Date</th> <th>Delay Damages (amount per day of delay)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Corridor-1 Delhi-Varanasi</td> <td>150</td> <td rowspan="6">0.01% of accepted contract value of each corridor for each day of delay</td> </tr> <tr> <td>2.</td> <td>Corridor-2</td> <td>230</td> </tr> <tr> <td>3.</td> <td>Corridor-3</td> <td>290</td> </tr> <tr> <td>4.</td> <td>Corridor-4</td> <td>350</td> </tr> <tr> <td>5.</td> <td>Corridor-5</td> <td>410</td> </tr> <tr> <td>6.</td> <td>Corridor-6</td> <td>470</td> </tr> </tbody> </table> <p>Work on Delhi- Varanasi corridor will be commenced immediately. Work on other corridors will commence in sequence of one another. Sequences of these corridors will be jointly decided after award of contract.</p>	S No	Milestone Name/Description (Sub-Clause 1.1.89)	Time for Completion from Commencement Date	Delay Damages (amount per day of delay)	1.	Corridor-1 Delhi-Varanasi	150	0.01% of accepted contract value of each corridor for each day of delay	2.	Corridor-2	230	3.	Corridor-3	290	4.	Corridor-4	350	5.	Corridor-5	410	6.	Corridor-6	470
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35.	Section VIII Particular Conditions of Contract (PCC) Part B - Specific Provisions Sub Clause 14.7 Payment, Page 106 of 128	If the Contractor chooses payment through the Commitment Procedure, then the provisional payment Clause shall not apply and then the payment shall be made within 56 days after the Engineer receives the statement and supporting documents.	To be deleted.																																														
36.	Section VIII	Replace the entire Sub-Clause 21.6 with the following:	Replace the entire Sub-Clause 21.6 with the following:																																														



Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
	<p>Particular Conditions of Contract (PCC)</p> <p>Part B - Specific Provisions Sub Clause 21.6 Arbitration, Page 108 of 128</p>	<p>Any dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 21.5 above and in respect of which the DAAB's decision (if any) has not become final and binding shall be finally settled by arbitration. Arbitration shall be conducted as follows:</p> <p>(a) if the Contract is with foreign contractors (or if the lead partner is a foreign contractor, in case of JV), international arbitration with proceedings administered by the International Chamber of Commerce (ICC) and conducted under the ICC Rules of Arbitration; by one or more arbitrators appointed in accordance with said arbitration rules.</p> <p>(b) if the Contract is with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's country.</p> <p>The place of arbitration shall be a neutral location determined in accordance with the applicable rules of arbitration unless otherwise stated in the Contract Data; and the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language].</p> <p>The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer, and any decision of the DAAB, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Engineer from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.</p> <p>Neither Party shall be limited in the proceedings before the arbitrators to the evidence or arguments previously put before the DAAB to obtain its decision, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction. Any decision of the DAAB shall be admissible in evidence in the arbitration.</p> <p>Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, the Engineer and the DAAB shall not be altered by reason of any arbitration being conducted during the progress of the Works.</p>	<p>21.6.1 Arbitration</p> <p>Disputes or differences, whatsoever arising between the parties arising out of touching or relating to construction/ manufacture, measuring operation or effect of the Contract or the breach thereof shall be referred to Arbitration in accordance with the following provisions:</p> <p>(a) Matters to be arbitrated upon shall be referred to a sole Arbitrator if the total value of the claim is upto INR 5 million and to a panel of three Arbitrators if total value of claims is more than INR 5 million. The Employer shall provide a panel of three arbitrators which may also include NHRCL officers for the claims upto INR 5 million and a panel of five Arbitrators which may also include NHRCL officers for claims of more than INR 5 million. The Contractor shall have to choose the sole Arbitrator from the panel of three and/or one Arbitrator from the panel of five in case three Arbitrators are to be appointed. The Employer shall also choose one Arbitrator from this panel of five and the two so chosen will choose the third arbitrator from the panel only. The Arbitrator(s) shall be appointed within a period of 30 days from the date of receipt of written notice/ demand of appointment of Arbitrator from either party. Neither party shall be limited in the proceedings before such arbitrator(s) to the evidence or arguments put before the Engineer for the purpose of obtaining his decision. No decision given by the Engineer in accordance with the foregoing provisions shall disqualify him from being called as a witness and giving evidence before the arbitrator(s) on any matter, whatsoever, relevant to dispute or difference referred to arbitrator(s). The arbitration proceedings shall be held in Delhi only. The language of proceedings, that of documents and communication shall be English.</p> <p>(b) The Employer at the time of offering the panel of Arbitrator(s) to be appointed as Arbitrator shall also supply the information with regard to the qualifications of the said Arbitrator nominated in the panel along with their professional experience, phone nos. and addresses to the contractor.</p>



Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
			<p>(c) The award of the sole Arbitrator or the award by majority of three Arbitrators as the case may be shall be binding on all parties.</p> <p>(d) If, in a dispute, the Contractor fails to choose the Arbitrator within thirty (30) days after the Employer has nominated the Panel, the Employer may apply to the Indian Council of Arbitration, New Delhi, to nominate an Arbitrator from the panel of Arbitrators given by the Employer for the matter in dispute.</p> <p>(e) Rules governing Arbitration proceedings: The Arbitration proceedings shall be governed by Indian Arbitration and Conciliation Act 1996, as amended from time to time including provisions in force at the time the reference made.</p> <p>21.6.2 Interest on Arbitration Award</p> <p>Where the arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period, till the date on which the award is made.</p> <p>21.6.3 Cost of Arbitration</p> <p>The cost of arbitration shall be equally borne by the respective parties during arbitration proceedings. The cost shall, inter alia, include the fees of the Arbitrator(s) as per rates fixed by the Employer from time to time.</p> <p>21.6.4 Jurisdiction of Courts</p> <p>Where recourse to a Court is to be made in respect of any matter. the court at Delhi/ New Delhi shall have the exclusive jurisdiction to try all disputes between the parties.</p> <p>21.6.5 Suspension of Work on Account of Arbitration</p> <p>The reference to Arbitration shall proceed notwithstanding that the Works shall not then be or be alleged to be complete, provided always that the obligations of the Employer, Engineer and the Contractor shall not be altered by reasons of arbitration being conducted during the progress of the Works. Neither party shall be entitled to suspend the work or part of the work to which the</p>



Item No.	Refer Para No.	Original Paragraph	Revised Paragraph
			dispute relates on account of arbitration and payments to the Contractor shall continue to be made in terms of the Contract.
37.	Section X Bill of Quantities (BOQ) Page 120 of 128 to 128 of 128		Replace the entire of table of Schedule (Bill) of Quantities and Payment Terms with the Attachment 2. <i>Note: Bidders are requested to submit their financial offer for the revised BOQ only enclosed as Attachment 2.</i>

Place: New Delhi
Date: 2nd March 2020

S/d

GM/CONTRACT,
NHSRCL



**(Refer Bid Clause – 2.4.1 of Annexure I of ITB) CURRICULUM VITAE (CV)
OF PROFESSIONAL PERSONNEL**

FORMAT FOR CV OF Sr. Photogrammetry expert / Alignment Design Expert / Sr. LiDAR Professional PERSONNEL DURING ASSIGNMENT

One CV form for each category to filled and submitted with the bid. [For each position separate form to be filled and submitted] Proposed Position:

Name of Personnel:

Date of Birth:

Nationality:

Educational Qualifications:

Joining Date in Bidder's Organization:

Summary of Experience:

Table 1

Qualification/Experience *	Relevant Details
1. Educational qualifications	
2. No. Of years of experience <i>Employment Record: (Starting with present position, list in reverse order every employment held.)</i>	Name of the Employer/ Position held From - To Total No. of years of experience
3. Relevant experience in Railway/highway/other linear Project(s)	Length and type of linear projects handled.

Table 2

SN	Relevant Experience of the Personnel to the assignment		
1	Personnel's' experience in handling similar scope for projects in the last five years (Top 5 Projects only)		
	SN	Name of Project	Length of Project (Km)
	1		
	2		
	3		
	4		
	5		



***The qualification and experience should be confirming to Bid clause 2.4.1.**

Certification:

I am willing to work on the Project and will be available for the complete Project assignment as required. I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications and my experience.

(Signature and name of the Professional)

Place

Date

(Signature and name of the Authorised Signatory of the Applicant)

Certified that the above employee is working in the Bidder's organization for last one year.

Name and Signature of HR Head of the Bidder's Company



SCHEDULE (BILL) OF QUANTITIES (RATES TO BE FILLED IN BY BIDDER)**NAME OF WORK:** Final Alignment design including Aerial LiDAR survey and other related works for six high speed rail corridors

S. No	Item Description	Unit	Total qty (a)	Rate (to be filled in by Bidder) (b) (INR)	Amount Rs. (a) x (b) (INR)
	Development of suitable HSR alignment from amongst the rail routes/ corridors.				
1	Processing of raw satellite mono/ stereo imagery, DTM/ DSM on ellipsoidal height, ortho ready imagery and create DTM/ DSM to mean sea level using Survey of India (Sol) benchmark by undertaking required ground control survey with prior approval of NHRCL and preparing seamlessly mosaiced orthophotos from the supplied satellite imagery by ortho-rectification using the corrected DTM referenced to Mean Sea Level using Sol Benchmarks.	Sqkm	11,365.00		
2a	Feature extraction from Satellite Imagery to generate Topographic Map (1:5000) with layers such as Forest, Flood plains, Roads and railways, Rivers, Nallahs, Power lines, Habitats etc. along with identifying important features in corridor such as ROB's, existing structures and other features as required for alignment development.	Km	3788.36		
2b	Carrying out reconnaissance survey of obligatory points and verification of ground features including tunnel portals, station location, river crossings, etc. with Sol topo sheets of scale 1: 50,000 and topo plan prepared with satellite imagery. The work Included service of engineers, alignment design engineers, scientists, surveyors, draftsmen, CAD operators, labours, helpers and others (computer, printers & tracing etc.). Rate is inclusive of all labour, material, tools and taxes (excluding GST). Nothing extra shall be paid for completion. of this job as per condition of contract	Km	3788.36		
3	Development and evaluation of horizontal and vertical alignment up to three alternatives so as to finalize the most suitable alignment in consultation with the client by evaluation of various technical and economical considerations for each alternative clearly bringing out the advantages and disadvantages of each option. The Contractor should ensure the following during option evaluation: a. Incorporate all findings of Satellite Imagery, DEM, topographic data and reconnaissance survey b. Consider environmental issues; including hydrology and geological constraints.	Km	3788.36		



S. No	Item Description	Unit	Total qty (a)	Rate (to be filled in by Bidder) (b) (INR)	Amount Rs. (a) x (b) (INR)
	<p>c. Consider community and stakeholder issues; including social issues, threatened & endangered species, historic resources, wetlands & streams, and archaeological resources;</p> <p>d. Consider social, landowner and urban development constraints to minimize relocation impact on communities</p> <p>e. Consider flood plain and stream crossings;</p> <p>f. Consider disaster hazards such as flooding, earthquakes etc.;</p> <p>g. Determine the most cost-effective options that meet the defined constraints and demonstrates project viability;</p> <p>h. Meet geometric constraints in accordance with the design standards for High Speed Rail in the different topographic areas;</p> <p>i. Demonstrate comprehensive consideration of alternatives that provide the community with confidence that all available options have been investigated;</p> <p>j. Undertake comprehensive sensitivity analysis (Multi criteria analysis) of the alignment and construction cost impact of changes to the constraints and/or design standards;</p> <p>k. Prepare plan and profile including marking of tentative (existing or future) IR RoW / NHA/Expressway / DFC Row boundary on the Plan based on the data provided by the Client. (Deliverables as per TOR)</p> <p>A detailed Alignment study report shall be submitted for the above as per TOR. The finalized corridor shall be taken up for further refinement through detailed studies.</p>				
4	<p>Final Location Survey using Aerial LiDAR Technology as per Terms of Reference.</p> <p>The work broadly includes:</p> <p>(i) Collection & paper study of existing alignment reports, data, drawing, documents, ground control points etc.;</p> <p>(ii) Getting all clearance such as DGCA etc. for Aerial LiDAR survey along the proposed corridor</p> <p>(iii) Mobilization of Aircraft/Helicopter with required LiDAR and Camera equipment</p> <p>(iv) Ground Control Survey as follows:</p>	Km	4821.54		



S. No	Item Description	Unit	Total qty (a)	Rate (to be filled in by Bidder) (b) (INR)	Amount Rs. (a) x (b) (INR)
	<p>a. Carrying out reconnaissance survey of the project area for identifying the Control Points for carrying out DGPS survey and preparing a plan of a grid network of Control Points on SOI topo-sheets/satellite imagery.</p> <p>b. Survey of India Benchmarks to be located during the above reconnaissance survey. These benchmarks shall be tested for stability and the same shall be reported to the client. The entire horizontal and vertical control shall be linked to the approved GTS Benchmarks for conversion of LiDAR data to MSL.</p> <p>c. Master Control Network comprising of interconnected triangles (with baseline of about 25km) to be established for overall horizontal control with approx. 25 km baseline length throughout the alignment. Secondary Control Network comprising of interconnected triangles weaved with Master control network (with base line of 3-5 KM) to be established with a baseline length of approx. 3-5 km throughout the alignment. Target LiDAR points to be established at an interval of approx. 5 km within the final alignment. To densify Horizontal Control Network, the GNSS triangulation method should be adopted and processing of data for network adjustment should be done to achieve an accuracy of 1: 100,000 in horizontal.</p> <p>d. Establishment of vertical control referenced to Sol MSL Permanent Benchmarks to be undertaken by double tertiary leveling along the entire route by connecting target points. The threshold limit for levelling loop closure accuracy should be $12\sqrt{K}$ mm, where K is in km.</p> <p>(Note: Control points should preferably be fixed on permanent structures. Monumentation of Master and Secondary Control Points if required shall be paid separately in S No 8)</p> <p>Aerial LiDAR data capture with a point density of 10 points per sqm with a Fundamental Vertical and Horizontal Accuracy as per TOR. vi) Aerial Imagery capture with a resolution of 10 cm GSD</p> <p>(v) Ground survey using traditional methods such as Echo Sounders etc. along areas such as river crossings etc. where Aerial LiDAR data needs to be complemented, including the following:</p> <p>a. 4 KM (2 KM on each side of centerline) along all river crossings with river cross-sections soundings (or alternate acceptable method) taken at centerline and then at every 500 m distance along upstream and downstream of the river and up to 50 m beyond high bank</p> <p>b. The DEM from this data shall be suitably merged or complemented suitably with the LiDAR DEM in consultation with the client. Separate cross sections of river @ 500-meter interval</p>				



S. No	Item Description	Unit	Total qty (a)	Rate (to be filled in by Bidder) (b) (INR)	Amount Rs. (a) x (b) (INR)
	<p>shall be provided. ix) Pre-processing and post processing of data to give the final outputs as below:</p> <ul style="list-style-type: none"> i. Classified Point Cloud in LAS (.las) format (Soft Copy format) ii. Three-dimensional Topographic survey drawing of 50 m corridor on either side of the railway centerline on a scale of 1:2500 iii. Contour map at 0.5 m interval for 50 m corridor width iv. Digital Elevation Model (DEM)/ Digital Terrain Model from topographic survey data v. Longitudinal and Cross Sections at 20 m interval vi. Digital Orthophotos of 10 cm GSD resolution (in tiles and seamlessly mosaicked over the survey area) vii. 3 sets of all deliverables to be provided in Hard Copy. viii. Soft copy of all deliverables to be provided. <p>(vi) Preliminary land acquisition plan- Digitisation of the Revenue Map (to be given by NHSRCL) after mosaicking and Georeferencing, transfer of alternative alignment approved for LIDAR study on the maps and calculation of area of the land to be acquired along with the details of the plot and its owners and preparation of preliminary land acquisition plan.</p> <p>Note: The final output should be compatible with AutoCAD Civil 3D Software. Appropriate QA/QC to be undertaken for the data to ensure adherence to accuracy requirements as per TOR. Updatons of preliminary land acquisition plan prepared during preliminary stage, as per modified final alignment after LIDAR survey.</p>				
5	Processing of additional data beyond 50 m on either side of alignment, which will be done from Aerial LiDAR data captured within the 150m corridor on either side of alignment. All outputs for additional area also to be provided.	Km	237.51		
6	<p>Contractor will list out the number of trees with in the following corridor –</p> <ul style="list-style-type: none"> a. ROW with in 6.5 mtr either side of centerline b. 5 mtr on either side of 13 mtr corridor as per item a) above. c. Within Stations, TSS/DSS/Ramps, depot and other facilities. 	Km	4109.00		



S. No	Item Description	Unit	Total qty (a)	Rate (to be filled in by Bidder) (b) (INR)	Amount Rs. (a) x (b) (INR)
7	<p>(i) List of Transmission lines / distribution towers/ High mast line for districts which are parallel and lie within the following corridors room proposed center line of HSR alignment with elevation & span length based on LIDAR data</p> <p>a. ROW with in 6.5 mtr either side of centerline</p> <p>b. 5 mtr on either side of 13 mtr corridor as per item a above.</p> <p>c. Between 11.5 mtr upto 50 mtrs on either side.</p> <p>d. Within Stations, TSS/DSS/Ramps, depot and other facilities.</p> <p>(ii) List of other utilities including buildings/structures for all districts along the corridor which are infringing and lie based on LIDAR data within following corridors:</p> <p>a. ROW with in 6.5 mtr either side of centerline</p> <p>b. 5 mtr on either side of 13 mtr corridor as per item a above.</p> <p>c. Between 11.5 mtr upto 50 mtrs on either side.</p> <p>d. Within Stations, TSS/DSS/Ramps, depot and other facilities</p> <p>(Output will be listed in Excel Format and AutoCAD drawing)</p>	Km	4109.00		
8	<p>Erection of cast in-situ RCC Pillars (1:1:2) of size 500mmx500mmx 1000mm, 300 mm projected above ground level for Master Control Points, Secondary Control Points etc., with the provision of 700mm long M.S. angle of size 50x50x6 mm with brass nailing on the MS angle for marking the Control Points and engraving the CP pillar number on the MS plate of size 125mm x 125mm x 5mm embedded in concrete by four 6 mm dia rods 150mm long as per attached drawing. The pillar should have the following reinforcement: 4nos-10mm dia longitudinal and 8mm dia rings@150mm c/c. The Foundation size of the pillar should be: 800mm x 800mm x 150mm with a PCC (Nominal mix 1:2:4) base. (Wherever feasible, marking should be done on existing permanent structure. Payment to be made only for actual pillars erected at site.) Refer attached drawing for details.</p>	Nos	4109		
9	<p>Final Alignment Design - Design of approved alignment on Integrated Base Map, DTM, Contours and Orthophotos based on Aerial LiDAR Survey and Hydrological Survey Data will be used in conjunction with the parameters of HSR including Yard plans using Bentley PRT or similar software.</p>	Km	4109.00		



S. No	Item Description	Unit	Total qty (a)	Rate (to be filled in by Bidder) (b) (INR)	Amount Rs. (a) x (b) (INR)
10	Additional Topographic Survey using DGPS/Total stations if required, at critical important locations for development of vertical/horizontal alignment.	Ha	4109.00		
11	Hydrological Investigation for Bridges: Study of major & minor rivers. Cross sections shall be generated for dry River/Nallah from LiDAR data. Cross section for perennial river shall be developed using traditional methods. Collection of Hydrological data and undertaking hydrological calculations to finalize waterway, High flood level HFL, Low water level of the bridges (LWL), Total waterway.	Nos.	200		
12	Geological mapping in hilly terrains (for tunnel portion only): Geological mapping of the proposed alignment for a corridor width of 300m (150m on either side) in scale of 1 :25000 and submission of geological plans, L-section along the design alignment in relevant areas(1:25000 H and 1:25000 V) and cross sections across the nallahs / valleys/ streams and across the important Geological features including survey work required (by Total station /GPS for Geological Mapping and Geological survey) for in the proposed alignment, their significance in planning, design & construction of tunnels, bridges and other structures, cuttings in HSR alignment,submission of reports including maps etc. for verification of the design alignment in field inclusive of cost of materials, consumables, T&P, equipment's, supervision, experts , manpower, transportation, lead, all taxes etc. GSI maps of scale 1:50,000 shall be used. Rates includes: (i) Geological field work for collecting data for developing the geological model. (ii) Study of Aerial LiDAR & Imagery data derivatives for Geological aspects such as Fault detection.	Km	100.00		
	TOTAL AMOUNT				

Note:

1. Above quoted rates will be excluding GST but inclusive of all other taxes, duties & cess, etc
2. GST shall be paid extra on claiming by contractor in their monthly bills/ invoice.



PAYMENT TERMS:

For each corridor the following will be the payment terms:

1. Submission of Inception Report: 10%
2. Remaining 90% payments shall be paid on BoQ Item Wise as follows:

S No	BoQ Item	Payment Terms
1	Feature Extraction from Satellite Imagery (BOQ item 2a)	<ol style="list-style-type: none">1. 40% payment will be released after completion of field work and submission of draft report.2. 50% payment will be released after acceptance of report.
2	Site Reconnaissance (BOQ item 2b)	<ol style="list-style-type: none">1. 40% on completion of field works and submission of draft preliminary Alignment Stage 1 report2. 50% on acceptance of Final Preliminary Alignment Stage 1 report
3	Development of alignment alternatives and finalization of Stage 1 Alignment (BOQ item 3)	<ol style="list-style-type: none">1. 25% on submission of Quality Assurance Plan2. 40% on submission of draft preliminary Alignment Stage 1 report3. 25% on acceptance of Final Preliminary Alignment Stage 1 report
4	FLS using Aerial LiDAR Survey (BOQ item 4)	<ol style="list-style-type: none">1. 10% on submission of Quality Assurance Plan for Aerial LiDAR Survey2. 10% on completion of Ground Control Survey and submission of report3. 25% on completion of Aerial Data capture and clearance of Data from MoD4. 20% on submission of Aerial LiDAR Data outputs5. 25% on acceptance of Aerial LiDAR data outputs
5	Final Alignment Design (BOQ item 9)	<ol style="list-style-type: none">1. 20% on submission of Quality Assurance Plan2. 20% on submission of 50% design reports3. 25% on submission of remaining design reports and all deliverables including draft Final Alignment Design Stage II Report4. 25% on acceptance of all deliverables and acceptance of Final Alignment Design Stage II report
6	All other BoQ Items	<ol style="list-style-type: none">1. 60% on completion of field work and submission of data and reports.2. 30% on acceptance and certification.

