



“Engagement of consultant for Conducting the detailed survey using Road survey equipment’s from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura”

Contract No. NHIDCL/RO-Agt/Road survey/2023-24/422

**[National Competitive Bidding]
(Through E-Bidding Mode)
Regional office Agartala**

**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT
CORPORATION LIMITED
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)**

**3rd Floor UD Bhawan, Near Ravindra Bhawan,
Sakuntala Road, Agartala, Tripura-799001**

January, 2025

**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)**

Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura."

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**NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT
CORPORATION LIMITED**

NOTICE INVITING TENDER (NIT)

1. **Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura.**
2. National Highways and Infrastructure Corporation Ltd. (hereinafter called "the Employer/client") invites sealed bids in single stage two cover system i.e. the Technical and Financial Bids on Item Rate Basis for the following work from the experienced firms/organizations excluding those firms who have been declared as non-performing by MoRTH/NHAI/NHIDCL or the firms those are blacklisted/debarred for specified period by MoRTH/NHAI/NHIDCL: -
3. Proposals are hereby invited from empaneled NSV consultant vide MoRTH OMno.RW/NH-29020/03/2020-S&R(P&B)-RSEC dated 1st July 2021 or as amended time to time for collection of Road inventory and Pavement condition data of National Highways and uploading on Road Asset Management System (RAMS). The Letter of Invitation (LOI) and Terms of Reference (ToR) including Request for Proposal (RFP) is available online on e-tender portal of <https://eprocure.gov.in>. The document can also be downloaded from www.nhidcl.com
4. Cost of the Document must be furnished in the form of a non-refundable fee of INR 10,000/- + 18% GST (Non-Refundable) by way of online payment only (payment through other modes shall not be accepted). The online payment receipt shall be submitted while submitting the proposal. The application form without proof of payment of application fee will be rejected without any intimation. The bidder must make online payment of tender document fee i.e., Rs. 11,800/-, through the RTGS/NEFT/Transfer (in favour of Executive Director, Regional Office-Agartala, Tripura) in Establishment Account of ED (P), RO Agartala: -

Particulars	Details
Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited Establishment Account
Beneficiary Bank Account No.	79901010002270
Beneficiary Bank Branch	IFSC – CNRB0017990
Beneficiary Bank Branch Name	Agartala-II Branch
Beneficiary Bank Address	Canara Bank, Agartala-II Branch, Durga Bari Road, 1st floor above RMS office, Agartala, Tripura: 799001

5. Brief particulars of the work are as follows:

Section	State/ UT	Road survey equipment's	Lane	Length Km	Duration
Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km	Tripura	Surface defects detection and roughness measurement using Network Survey Vehicle	2 lanes with paved shoulder	80.2	3 years
		Pavement strength measurement using FWD			
		Bridge inspection using Mobile Bridge Inspection Unit			
		Road signs inspection using Retro Reflectometer			

6. Bid must be submitted online at e-tender portal <https://eprocure.gov.in> from 29.01.2025 (From 14.00 Hrs).

7. The bidder shall furnish, as part of bid, Earnest Money/Bid Security amounting to Rs. 4,21,050/-

The Bidder shall furnish, as part of the Bid, Earnest Money/Bid Security, of the amount as specified in the NIT. Demand Draft must be in favor of Executive Director, Regional Office- Agartala, Tripura. The bidder can also make online payment of bid security through RTGS/NEFT/Transfer in the following Project Account of ED (P).

S. No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited Project Account
2	Beneficiary Bank Account No.	79901010002266
3	Beneficiary Bank Branch	IFSC – CNRB0017990
4	Beneficiary Bank Branch Name	Agartala-II Branch
5	Beneficiary Bank Address	Canara Bank, Agartala-II Branch, Durga Bari Road, 1st floor above RMS office, Agartala, Tripura: 799001

8. The following schedule is to be followed for this assignment:

- Bid Invitation Date: 29.01.2025 (From 14.00 Hrs)
- Dead line for downloading of bid: 19.02.2025 (Up to 17.00 Hrs)
- Pre bid meeting: 06.02.2025 (From 15.00 Hrs)
- Last date for submission of online queries: 10.02.2025
- Response to online Queries: 15.02.2025
- Deadline for Submission of bids: 19.02.2025 (Up to 17.00 Hrs)
- Opening of Bids: 20.02.2025 (17.05 Hrs) Online

For any clarification, the following office may be contacted:

Executive Director (P)
Regional Office-Agartala
National Highways & Infrastructure Development Corporation Limited.
(Ministry of Road Transports & Highways, Government of India)
Regional Office, 3rd floor, UD bhawan, Near Ravindra bhawan, Sakuntala, Agartala, Tripura
Email: edp-agartala@nhidcl.com

Conditional bids would be rejected. NHIDCL reserves the right to accept/reject any or all the bids without assigning any reasons thereof.

Date: 29.01.2025

Letter of Invitation (LOI)

<Reference>

Dated:<Date>

Dear Sir,

Sub: Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura

1. Introduction

- 1.1 The [Client] has been entrusted with the assignment of collection of Road inventory and Pavement condition data of National Highways and uploading on Road Asset Management System (RAMS). [Client] now invites proposal from the NSV consultants empaneled vide MoRTHOMno.RW/NH-29020/03/2020-S&R(P&B)-RSEC dated 1st July 2021 or as amended time to time (Annexure-1) for collection of Road inventory and Pavement condition data of National Highways and uploading on Road Asset Management System (RAMS).
- 1.2 A brief description of the assignment and its objectives are given in the Annexure-II, "Terms of Reference".
- 1.3 The [Client] invites Proposals (the "Proposals") through e-tender (on-line bid submission) for selection from empaneled Consultant (the "Consultant") who shall collect Road inventory and Pavement condition data of National Highways and upload on Road Asset Management System (RAMS). Empaneled Consultants are hereby invited to submit proposal in the manner as prescribed in the RFP document.

A Consultant with "a Particular NSV & FWD, MBIU & Road signs inspection using Retro Reflectometer" may submit proposals. However, a consultant is not allowed to bid for a package with more than one NSV& FWD, MBIU & Road signs inspection using Retro Reflectometer. For the sake of clarity, it is mentioned that one consultant cannot submit two proposals/ bids for the same package.

A Consultant with "a Particular NSV&FWD, MBIU & Road signs inspection using Retro Reflectometer " may submit only one "proof of eligibility" and "Technical Proposal "for any number of packages applied for by them. However, the packages for which a consultant with" a Particular NSV&FWD, MBIU & Road signs inspection using Retro Reflectometer" applies should be clearly mentioned.

Financial proposal shall be submitted separately. Financial proposal is only to be submitted online and no hard copy of the financial proposal should be submitted. The most preferred bidder(H-1) for each package would be determined on the basis of Quality and Costs mentioned in the RFP.

Award of work to a Consultant with "a Particular NSV&FWD, MBIU & Road signs inspection using Retro Reflectometer "The Financial Bid would be evaluated and ranked on the basis of the quote submitted by the bidders. The bidder who quotes lowest Financial Bid shall be ranked as H-1 Bidder. Further the lowest rate quoted by any of participated bidder in item description at BOQ in Sl. No. 1 , 2 , 3 & 4

shall be the governing rate of that item and LOA shall be issued in accordance to lowest rate quoted for all items irrespective of the rates quoted by H-1 bidder.

In case ,a Consultant with "a Particular NSV &FWD, MBIU & Road signs inspection using Retro Reflectometer " turn out to be the most preferred bidder **(H-1)** in more than one package, the package which is to be awarded to this Consultant with "a Particular NSV &FWD, MBIU & Road signs inspection using Retro Reflectometer "shall be determined on the basis of least cost to[Client] considering the financial quote of H-1bidder and H-2 bidder limited to those packages ,which shall be worked out as per the procedure given in the RFP. The consultants are here by invited to submit proposals in the manner prescribed in the RFP.

- 1.4 To obtain first-hand information on the assignment and on the local conditions, the consultants are encouraged to pay a visit to the regional office of the [Client], local State PWDs and the project site before submitting a proposal and may raise pre-proposal queries. They must fully inform themselves of local and site conditions and take them into account in preparing the proposal.
- 1.5 Financial Proposals will be opened only for the firms found to be eligible in terms of this RFP. The consultancy services will be awarded to the highest-ranking consultant on the basis of Quality and Cost.
- 1.6 Please note that (i) costs of preparing the proposal and of negotiating the contract, including visits to the Client, etc., are not reimbursable as a direct cost of the assignment; and (ii) Client is not bound to accept any of the proposals submitted and reserve the right to reject any or all proposals without assigning any reasons.
- 1.7 The proposals must be properly digitally signed as detailed below (submission with DSC)
 - i. by the proprietor in case of a proprietary firm
 - ii. by the partner holding the Power of Attorney in case of a firm in partnership (A certified copy of the Power of Attorney on a stamp paper of Rs. 100 and duly notarized shall accompany the Proposal).
 - iii. by a duly authorized person holding the Power of Attorney in case of a Limited Company or a corporation (A certified copy of the Power of Attorney on a stamp paper of Rs. 100 and duly notarized shall accompany the proposal).
- 1.8 The consultants empaneled by MoRTH vide OM no. RW/NH-29020/03/2020S&R(P&B)-RSEC dated 1st July 2021 or as amended time to time (Annexure-I) can participate and submit the bids.
- 1.9 The Applicant can raise queries as per the schedule given in Data Sheet.
- 1.10 The Applicant, by submitting its Application pursuant to this RFP, shall be deemed to have acknowledged that without prejudice to the MoRTH any other right or remedy hereunder or in law or otherwise, the Applicant shall be debarred from participating in the future projects of the MoRTH and its implementing agencies in the following situations:
 - (a) If an Applicant with draws its Proposal during the period of its validity as specified in this RFP and as extended by the Applicant from time to time.
 - (b) In the case of a Selected Applicant, if the Applicant fails to sign the Agreement.

2. Documents

2.1 To enable you to prepare a proposal, please find and use the attached documents listed in the Data Sheet.

2.2 Consultants requiring a clarification of the documents must notify the Client, in writing, by last day of submission of queries as mentioned in the NIT. Any request for clarification in writing or by tele-fax/e-mail must be sent to the Client's address indicated in the Data Sheet. The Client will upload replies to pre-bid queries on its website.

2.3 At any time before the submission of proposals, the Client may, for any reason, whether at its own initiative or in response to a clarification requested by a Consulting firm, modify the Documents by amendment or corrigendum. The amendment will be uploaded on Client website. The Client may at its discretion extend the deadline for the submission of proposals and the same shall also be uploaded on Client website.

3. Preparation of Proposal

The proposal must be prepared in Two parts viz.

Part 1: (a) Proof of eligibility and (b) Technical Proposal

Part 2: Financial Proposal

3.1 Document in support of proof of eligibility

3.1.1 The minimum essential requirement in respect of eligibility has been indicated in the Annexure-III Data Sheet. The proposal found deficient in any respect of these requirements will not be considered for further evaluation. The following documents must be furnished in support of proof of eligibility as per Formats given in Appendix-I:

- (i) Forwarding letter for Proof of Eligibility in the Form-I
- (ii) Document fee: Cost of the Document must be furnished in the form of a non-refundable fee of INR10,000/- + 18% GST by way of online payment only (payment through other modes shall not be accepted). The online payment receipt shall be submitted while submitting the proposal. The application form without proof of payment of application fee will be rejected without any intimation.
- (iii) BID Security:- The bidder has to digitally sign a Bid securing declaration accepting that if the bidder withdraw or modify its bid during the period of validity i.e. not less than bid validity as mentioned in data sheet from the bid due date or if the bidder is awarded the contract and fail to sign the contract or to submit a performance security before the deadline defined in the request for bid documents, the bidder will be suspended for participation in the tendering process for the works of MoRTH/NHAI/NHIDCL and works under other Centrally Sponsored Schemes, for a period of two year from the bid due date of this work and shall be declared non-performing. The bid securing declaration shall be submitted as per the format at Form -2

(Format for Bid Securing Declaration)".

Power of Attorney on a stamp paper of Rs.100 and duly notarized authorizing to submit the proposal (scanned copies to be uploaded)).

(iv) Integrity Pactin Form-3

3.2 Technical Proposal

3.2.1 You are expected to examine all terms and instructions included in the Documents. Failure to provide all requested information will be at your own risk and may result in rejection of your proposal.

3.2.2 During preparation of the technical proposal, you must give particular attention to the following:

Details of the assignment as indicated in the enclosed TOR. You shall make your own assessment of man and machinery requirements to undertake the assignment.

3.2.3 The technical proposal shall be submitted strictly in the Formats given in Appendix- II and shall comprise of following documents:

- (i) Forwarding letter for technical proposal duly signed by the authorized person on behalf of the bidder, as in Form-4.
- (ii) Firm's references-Relevant Services carried out in the last three years as per Form-5. Project sheets in support of relevant experience as per Form-5 supported by the experience certificates from clients in support of experience as specified in data sheet shall be submitted in input data sheet. Certificate should indicate clearly the firms NSV Survey and falling Weight Deflectometer experience, MBIU & Road signs inspection using Retro Reflectometer etc. Scope of services rendered by the firm should be clearly indicated in the certificate obtained from the client. The information given in Form-5 shall be considered as part of Technical Proposal and shall be evaluated accordingly. The Consultants are therefore advised to see carefully the evaluation criteria for Technical Proposal and submit the Project Sheets accordingly.
- (iii) The proposal shall indicate as to whether the firm is having following facilities for carrying out the field activities or these are proposed to be hired through MOU in the Form-6.
 - (a). Network Survey Vehicle
 - (b). Falling Weight Deflectometer
 - (c). Mobile Bridge Inspection Unit (MBIU)
 - (d). Road signs inspection using Retro Reflectometer

In case the consultant envisages hiring the facility through MOU, the details of the same need to be furnished. These MOU would however, be subject to approval of the client to ensure quality input by such agencies before award of the work.

- (iv) The Consultant should carryout self-evaluation based on the evaluation sheet at Form-7. While submitting the self-evaluation along with bid, Consultant shall make references to the documents submitted in their proposal which have been relied upon in self-evaluation Result of technical evaluation shall be made available on the website giving opportunity to the bidders to respond within 7 days in case they have any objection.
- 3.2.4 The technical proposal must not include any financial information.

3.2.5 Financial Proposal

The Financial proposal should include the costs associated with the assignment. Your financial proposal should be prepared strictly using, the formats Form-8 and Form-09 attached in Appendix-III. Your financial proposal should clearly indicate the amount asked for by you without any assumptions of conditions attached to such amounts. Conditional offer or the proposal not furnished in the format attached in Appendix-III shall be considered non-responsive and is liable to be rejected.

3.2.6 The financial proposal shall take into account all types of the tax liabilities and cost of insurance specified in the Data Sheet.

3.2.7 Costs shall be expressed in Indian Rupees.

3.2.8 Deleted

3.2.9 Goods & Service tax as applicable shall be paid to the Consultant while making payment for services rendered. The consultants shall then deposit the same with the tax authorities and provide a proof of having done so within next 90 days in line with policy circulars issued by Employer. Employer shall pay only the Goods & service tax.

3.2.10 Beginning 13th months from the bid due date, billing rates shall be increased to cover all items of contract @5% every 12 months. However, for evaluation and award of the Bid proposals, the quoted initial rate (as applicable for first 12 months from last date of submission of bid) shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates.

4. Submission of Proposals

4.1 The Applicants shall submit the proposal (Proof of Eligibility and Technical Proposal) comprising the documents as mentioned under clause 3.1.1 and 3.2.3 respectively to meet the requirements of 'Proof of Eligibility' and 'Technical Proposal' online. However, documents listed in Para 3.1.1 (iii), (iv) & (v) shall be submitted in original by the successful bidder before issue of LOA in case of non-compliance the bidder shall be debarred for two year from the bid due date of this work and shall be declared nonperforming. Financial proposal is to be submitted online and no hard copy of the financial proposal should be submitted.

The document listed in Para 3.1.1 (iii), (iv) & (v) shall be digitally submitted by all the bidders to the Client while submitting the proposal.

4.2 The proposal must be digitally signed by the authorized representative of the consultants. The letter of authorization must be confirmed by a written power of attorney accompanying the proposals. All pages of the Proof of Eligibility and Technical Proposal must be initialed by the person or persons signing the proposal.

4.3 The proposal must contain no interlineations or overwriting except as necessary to correct errors made by the Consultants themselves, in which cases such corrections must be initialed by the person or persons signing the proposal.

- 4.4 Your proposal must be valid for the number of days stated in the Data Sheet from the closing date of submission of proposal.

5. Proposal Evaluation

The proposals would be evaluated by a committee constituted for that purpose. A two-stage procedure will be adopted in evaluating the proposal.

5.1 Stage I -Proof of Eligibility and Technical

Proposal It will be checked as to whether:

- i) The consultants are empaneled for NSV by MoRTH vide OM no. RW/NH-29020/03/2020S&R(P&B)-RSEC dated 1st July 2021 or as amended from time to time or not. The proposal shall be summarily rejected if the bidder is not empaneled with the MoRTH NSV consultant.
- ii) The proposal is accompanied by Document fee
- iii) Proposal is accompanied by Integrity Pact as Para 3.1.1
- iv) The proposal is accompanied by Bid Securing declaration form as per Form-2 of Appendix-I.
- v) The documents are properly digitally signed by the authorized signatories and whether the proposal contains proper POA (digitally) as mentioned at Para 1.7 above
- vi) The proposals have been received on or before the dead line of submission.

Technical Proposals of only those consultants shall be evaluated as per the detailed evaluation criteria given in Data Sheet which satisfy the minimum Eligibility Criteria as mentioned in the Data sheet and who had submitted the above-mentioned documents. The technical proposal should score at least 75 marks out of 100 to be considered for financial evaluation.

5.2 Stage II- Evaluation of Financial Proposal

5.2.1 In case only one firm is eligible for opening of Financial Proposals, the Financial Proposal shall not be opened, the bids shall be cancelled and fresh bids shall be invited. For financial evaluation, total cost of financial proposal excluding Goods & Service tax shall be considered. Goods & Service tax shall be payable extra.

5.2.2 The evaluation shall exclude those taxes, duties, fees, levies and other charges imposed under the applicable law & applied to foreign components/ resident consultants.

5.2.3 For a package in which 2 firms are eligible for opening of financial proposals, the procedure as mentioned at Clauses 5.2.4, 5.3 and 5.4 as mentioned below shall be followed for determining the "most preferred bidder (H-1 bidder)" for this package.

5.2.4 The lowest financial proposal (FM) will be given a financial score (SF) of 100 points. The financial scores of other proposals will be computed as follows:

$$SF = 100 \times FM / F$$

(SF=Financial Score, FM=Amount of lowest bid, F=Amount of financial proposal converted in the common currency)

5.3 Combined evaluation of Technical and Financial Proposals.

Proposals will finally be ranked according to their combined technical (ST) and Financial (SF) scores using the weights indicated in the Data Sheet:

$$S = ST \times T + SF \times f$$

Where,

S=Combined Score,

ST=Technical Score out of 100

SF=Financial Score out of 100

T and f are values of weightage for technical and financial proposals respectively as given in the Data Sheet.

5.4 Most Preferred Bidder(H-1).

For a particular package, a Consultant having the maximum Combined score(S) shall be declared as the most preferred bidder (H-1).

5.5 In case work has to be awarded for multiple packages, award of work to a Consultant with "a Particular NSV & FWD" shall be limited to one package only. At first, Consultants who become H-1 in one package each shall be assigned the respective package. Then packages in which a Consultant with "a Particular NSV & FWD" turns out to be the most preferred bidder(H-1) in more than one package shall be considered. In case, a Consultant with "a Particular NSV & FWD" turns out to be the most preferred bidder(H-1) in more than one package, the package which is to be awarded to this NSV & FWD of a consultant shall be determined on the basis of least cost to [Client] considering the Financial Quote of H-1 bidder and H-2 Bidder limited to those packages. Procedure to be followed for awarding work based on QCBS including assessment of least cost to [Client] under special circumstances i.e. When a consultant with "a Particular NSV & FWD" turns out to be the most preferred bidder (H-1) in more than one package is given at Annexure-IV.

6. Performance Security

6.1 The consultant will furnish within 15 days of the issue of Letter of Acceptance (LOA), an unconditional Bank Guarantee equivalent to 3.0 % of the total contract value from a Nationalized Bank, IDBI or ICICI/ICICI Bank / Foreign Bank / EXIM Bank / Any Scheduled Commercial Bank approved by RBI having a net worth of not less than Rs.1000 crore as per latest Annual Report of the Bank. In the case of a Foreign Bank (issued by a Branch in India) the net worth in respect of Indian operations shall only be taken into account. In case of Foreign Bank, the e-BG issued by Foreign Bank should be counter guaranteed by any Nationalized Bank in India. The e-BG towards Performance Security shall be valid initially for a period of three years which can be extendable from time to time. The Bank Guarantee will be released by NHIDCL upon expiry of contract. However, if contract is foreclosed/terminated by NHIDCL at any Stage, with no fault of

Consultant, Performance Security shall be released within three months from date of foreclosure / termination.

6.2 In the event the Consultant fails to provide the security within 15 days of date of LOA, it may seek extension of time for a period of 15(Fifteen) days on payment of damages for such extended period in a sum of calculated at the rate of 0.05% (Zero Point Zero Five Percent) of the Bid price for each day until the performance security is provided. For the avoidance of doubt the agreement shall be deemed to be terminated on expiry of additional 15 days' time period.

6.3 Notwithstanding anything to the contrary contained in this Agreement, the Parties agree that in the event of failure of the Consultant to provide the Performance Security in accordance with the provisions of Clause 6.1 within the time specified therein or such extended period as may be provided by the Authority, in accordance with the provisions of Clause 6.2, all rights, privileges, claims and entitlements of the Consultant under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Consultant and the LoA shall be deemed to have been withdrawn by mutual agreement of the Parties. Authority may take action to debarred such firms for future projects for a period of 2years.

7. Penalty

The consultant will indemnify for any direct loss or damage that accrue due to deficiency in services. Penalty shall be imposed on the consultants for poor performance/deficiency in service as expected from the consultant and as stated in General Conditions of Contract.

8. Signing of Contract Agreement

After having received the performance security and verified it through SFMS confirmation, the Client shall invite the selected bidder for signing of Contract Agreement on a date and time convenient to both parties within 15 days of receipt of valid Performance Security.

9. The Client shall keep the bidders informed during the entire bidding process and shall host the following information on its website:

- i) Notice Inviting Tender (NIT)
- ii) Request For Proposal (RFP)
- iii) Replies to pre-bid queries, if any
- iv) Amendments/corrigendum to RFP
- v) List of bidders who submitted the bids up to the deadline of submission
- vi) List of bidders who did not pass the Eligibility requirements/Technical Evaluation stating the reasons.
- vii) List of bidders along with the technical score, who qualified for opening the financial bid
- viii) Final Score of qualified bidders
- ix) Name of the bidders who is awarded the Contract

10. It is the MoRTH policy that the consultants observe the highest standard of ethics during the selection and execution of such contracts. In pursuance of this policy, the MoRTH:

(a) Defines, for the purpose of this paragraph, the terms set forth below as follows:

- (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution;
 - (ii) "fraudulent practice" means a misrepresentation or omission of facts in order to influence a selection process or the execution of a contract;
 - (iii) "collusive practices" means a scheme or arrangement between two or more consultants with or without the knowledge of the Client, designed to establish prices at artificial, non-competitive levels;
 - (iv) "coercive practices" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract.
- (b) Will reject a proposal for award if it determines that the Consultant recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the contract in question;
- (c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract; and
- (d) Will have the right to require that a provision be included requiring consultants to permit the Employer to inspect their account and records relating to the performance of the contract and to have them audited by authorized representatives of Employer."
- (e) Any defaulting bidder who fails to sign the agreement after issuance of LOA or found practicing fraudulent activity may be declared non-performer for a period of 2 years, which will not be allowed to bid in project /tenders called by Ministry and its agencies.

11. Confirmation

We would appreciate you informing us by facsimile/e-mail whether or not you will submit a proposal.

Thanking you.

Yours Sincerely,

[Client]

Encl .as above

ANNEXURE-1

NSV consultants empaneled vide MoRTH OM no. RW/NH-29020/03/2020-S&R(P&B)-RSEC
dated 1st July 2021 or as amended from time to time.

TERMS OF REFERENCE(TOR)

Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura.

1. General

- 1.1 The [Client] has been entrusted with the assignment of collection of Road inventory & Pavement condition data, structural strength of pavement and other allied & miscellaneous data of National Highways for uploading on Road Asset Management System (RAMS) Portal. [Client] now invites proposals from the empaneled consultants under MoRTH.
- 1.2 The standards and qualities of requisite data shall be in accordance with the detailed specifications mentioned in this RFP and widely accepted international standards, wherever not specified. The responsibility for submission of quality data as per stipulated specifications lies entirely with the appointed Consultant.

2. Objective

- 2.1 The [Client] has been mandated to develop, maintain and manage the quality Road Infrastructure of National Highways in the country to ensure safe and smooth traffic flow across the width and breadth of Country.
- 2.2 Various measures have already been taken through incorporating the necessary provisions in RFP & Contract documents of contractor/Concessionaire as well as in RFP for engagement of Authority's Engineer/ Independent engineer which inter-alia provides for carrying out detailed condition survey of road by the Authority's Engineer/ Independent Engineer using NSV, FWD, MBIU & Road signs inspection using Retro Reflectometer to achieve the said objective. The prevailing contract document of Authority's Engineer and Independent Engineer provides for conducting road inventory and pavement condition survey with NSV. As per contract, NSV survey has to be conducted on completion of work and thereafter at the intervals specified in Contract (Such provisions are varying from Contract to Contract). MoRTH vide its OM No. RW/NH-33044/32/2019- S&R(P&B) dated 13th November 2019, has decided that for all the projects involving 2/4/6/8 lane, Expressway, stage strengthening be necessarily be surveyed with NSV before start of work and thereafter at regular intervals of 6 months as provided in the Contract for each lane of pavement. MoRTH has also decided that in respect of Contracts where provisions for use of NSV does not exist, the condition of road shall also be assessed using NSV (i) before start of work, (ii) before issue of provisional/final completion certificate and (iii) every 6 months after completion of work. Further, MoRTH has decided that in respect of stretch which are not covered by any ongoing work/defect liability period of the completed work/Medium Term Contract Maintenance, condition of road shall also be accessed through NSV

- 2.3** MoRTH has also decided that pavement strength is to be measured using falling Weight Deflectometer (FWD), at least once a year upon completion of project, in accordance with Contractual provisions or as per Ministry letter dated 31.08.2021 whichever is applicable.
- 2.4** MoRTH has developed Road Asset Management System (RAMS) for National Highways (NHs) with the objective to create a single road data base for planning, programming, budgeting, prioritizing, managing and maintaining the entire NH network in India through a systematic and scientific life cycle analysis. The data is to be uploaded at portal <http://nsvsurvey.nhai.org/NSVsurvey>.
- 2.5** The Consultant shall carry out the condition and structural assessment survey of the bridges in accordance with IRC-SP; 35(latest Revision may prevail) with the use of Mobile Bridge Inspection unit (MBIU) or better technology
- 2.6** The Consultant shall measure Coefficient of retro reflected luminance RA (night time retro reflection) of road traffic signs using a portable retro reflectometer. The following criteria shall be met by the process of road signs retro reflection measurement.
- 2.7** The objective of this assignment IS to collect all necessary data by conducting various surveys/available data from concerned agencies and(i)upload on RAMS in prescribed formats at prescribed frequency (ii) provide data to client.

3. Scope of Services

Broad Scope of Services is to conduct National Highways inventory and pavement condition survey for the National Highways using Network Survey Vehicle (NSV) and Falling Weight Deflectometer (FWD), MBIU & Road signs inspection using Retro Reflectometer and uploading of data on RAMS. The general scope of services is given in the following sections. However, the entire scope of services would, inter-alia, include the items mentioned in the Letter of Invitation, Terms of Reference, general contract and supplements and appendices, if any to these documents.

The Consultant shall carry out condition surveys using equipment and following a frequency as defined under.

S No	Key metrics of Asset	Equipment to be used	Frequency of condition survey
1	Surface defects of pavement/Road inventory/condition survey & Roughness of pavement	Network Survey Vehicle (NSV)	Twice a year
2	Strength of pavement	Falling Weight Reflectometer (FWD)	Once a year
3	Bridges inspection	Mobile Bridge Inspection Unit (MBIU)	Twice a year
4	Road signs inspection	Retro-reflectometer	Twice a year

4. General

The Consultants shall carry out detailed inventory and Pavement Condition Survey as per following details.

4.1 Road Inventory Surveys

4.1.1 Detailed road inventory surveys shall be carried out to collect details of all existing road and pavement features using Network Survey vehicle. The inventory data shall include but not limited to the following:

- i. Location Reference Post (LRP) Master
- ii. Carriage way Type
- iii. Road Type
- iv. Pavement Type
- v. Pavement Width
- vi. Shoulder Type
- vii. Shoulder Width
- viii. Topography
- ix. Cross Stretch/Section
- x. Drain Type
- xi. Geometry
- xii. Service Road
- xiii. Median Detail
- xiv. Right Of Way
- xv. Road Furniture
- xvi. Wayside Amenities
- xvii. Utilities
- xviii. FRL data
- xix. Land Use
- xx. Pavement composition
- xxi. Structure Detail

An Indicative Template for inventory data output is enclosed **Appendix-IV namely Output Format**. However, the same should be customizable as per Client's requirement to give the information in desired template with user defined interval for any type of data mentioned above without any additional financial implications. The inventory data such as pavement composition, FRL, ROW etc. necessitating the input of filed units shall be obtained by the Consultant from concerned regional officer of Client or other such designated Authority from time to time by the Client.

4.2 Road and Pavement Condition Surveys

4.2.1 Following details/ data shall be collecting relating to road and pavement surface

conditions using NSV

- i. Visual condition including Raveling, Pot-Holes ,Edge Break, all types of Cracking, Disintegration, Depression, Bleeding ,Patching, , Faulting etc.
- ii. Roughness: Roughness measurement without puts of both raw longitudinal profiles and IRI calculation referenced to the preceding LRP. The roughness must meet ASTM-E950standard.The IRI shall be determined for both wheel paths with calibrated NSV.
- iii. Rutting Depth
- iv. Texture Depth
- v. Skid Resistance

An Indicative Template for data output is enclosed at **Appendix-IV namely Output Format**. However, the same should be Customizable to give the defects in desired template with user defined interval for any defect. Further, the selected Consultant may also be asked to change the severity levels, rating, and algorithm to measure the defects accordingly for various defects as per latest IRC codal provision or ASTM and AASHTO codes. The same shall be done by the selected Consultant without any additional cost.

4.3 The pavement condition surveys shall be carried out using Network Survey vehicles using Laser Crack Measurement-2or equivalent laser profiling technology mounted with Equipment's such as high resolution360 degree cameras, DGPS, system integrated with IMU, DMI etc. and equipped with robust and versatile data acquisition and processing software to accurately measure and report the inventory and pavement condition data as enumerated above. The output of NSV survey shall be in easily usable form at acting as a repository of raw data required for civil work.

4.4 The Consultant shall have the NSV capable of automatically detect, measure and count the following defects with distance triggered mechanism as per required accuracy and resolution.

Sr. No.	Defects/object	Functional and performance requirement
1	Scanning based laser crack measurement system	
	Crack measurement	length, width, depth, area and counting
	Sealed Crack area	area and counting
	Ravelling	Area
	Patch area	area and counting
	Pothole	area, depth, counting and type of pothole
	Edge Break	Length and area

	Concrete	Joint Module
		Spalling and Fault measurement
	Bridge	Width of expansion joint, differential height at expansion joint
	Bridge approach	riding quality measurement
	Road Geometry	gradient, slope and cross slope, Horizontal curvature and vertical curvature
	Texture	Macro Texture measurement (MPD & MTD) in all 5 AASHTO bands
	Roughness	Roughness of Entire lane width as per ASTM E 950
	Rutting	depth and width measurement for entire lane as per ASTM E1703 Standard
	Lane Marking	Length (including missing length) through 3D sensor or 360 degree camera

Sr. No.	Defects/object	Functional and performance requirement
	Geo-tagging	GPS coordinate for all defects and a provision to show the test road on google map based on the DGPS data points collected. NSV must use a differential GPS system to improve the real time position accuracy.
	Depth measurement	range should be atleast 250mm with ± 0.25 accuracy and resolution ± 0.1 mm
	Transverse Profile	range should be minimum 4000 mm with accuracy ± 1.0 mm and minimum resolution of 1.0 mm
	Transverse Profile including rut depth measurement of pavement surface widths of both carriageway and shoulders. The rut depth data must be convertible to different straightedge lengths (1.8m to 3.5m) and meet industry standards (ASTM E1703 / E1703M)	
	Data Points	Atleast 4000 data points should be measured for measurement of 4 meters transverse width

	System requirement	The working speed should be from 0 to 100 km/h, the distance accuracy should be better than $\pm 0.1\%$ for at least 10km.
	Data acquisition, data processing and data analysis software	
	Software	The Consultant shall be equipped with NSV having Reporting software reporting defects and inventory details prepare the report and MS-Excel sheets. There should be automatic merging of parallel overlapping 2D/3D Road Surface images including removing any —double-counted Distress at the merge point. This feature is required for multi-lane highways where each lane is scanned.
	Camera for Road Inventory	
	System	It should have road inventory detection and measurement system with 360° High precision GPS, IMU and DMI.
	Camera	The image resolutions should be minimum 1600 x 1200 pixel. All pictures should be compressed and stitched together automatically. All pictures should be GPS tagged along with road chainage. DMI should be provided for user defined distance based triggering with minimum 5 meter onward.
	DGPS	i) Road Centerline, (i.e. Longitude, Latitude and Altitude), other defects linked with GPS coordinates shall be mapped using a

Sr. No.	Defects/object	Functional and performance requirement
		<p>DGPS Receiver configured to provide DGPS in real time using GAGAN, GNSS, GLONASS etc.</p> <p>ii) Having Minimum 5 Hz update rate and NMEA protocol output format</p> <p>iii) Positional Accuracy (DGPS in 3 Dimensions) : <1 m</p> <p>iv) Output File Format: _Point Layer' and _Line Layer' in Shape file (*.shp) format</p>

4.5 Pavement Structural Strength

4.5.1 The consultant shall carry out structural strength surveys for existing pavements using Falling Weight Deflectometer technique in accordance with the procedure given in IRC:115-2014 (Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique)

and IRC: 117-2015 (Guidelines for the Structural Evaluation of Rigid Pavement by Falling Weight Deflectometer).

- 4.5.2** The interval at which deflection measurements are to be taken up are as per IRC:115-2014 / IRC:117-2015. For flexible pavements, the sample size and the interval of the data to be collected depends on the length of the uniform section calculated and condition of the pavement section i.e. 'good', 'fair' and 'poor' for each lane, established on the pavement condition data based on the criterion given in IRC:115-2014. For rigid pavements, the deflection data may be collected at interiors, comers, transverse joints and longitudinal joints in the outer lanes at intervals as specified in IRC: 117-2015.
- 4.5.3** It is suggested that the deflection surveys may be carried out as per the scheme given below:
- Main line testing; and,
 - Control section testing.
- 4.5.4** The deflection tests for the mainline shall be carried out at every 500 m along the road sections covered under the study. The control section testing shall involve carrying out deflection testing for each 100 m long homogenous road segment along the road sections. The selection of homogenous segment shall be based on the data derived from pavement condition surveys. The total length of such homogenous segments shall not be less than 1 00 m per kilometer. The deflection measurements for the control section testing should be at an interval of not more than 10 m.

- 4.5.5** Falling weight deflectometer surveys may not be carried out for severely distressed sections of the road warranting reconstruction.
- 4.5.6** It is mandatory for the consultant to use Falling weight deflectometer for the evaluation of pavement strength.
- 4.5.7** The following are the set of deliverables which should be submitted after completion of inspection test a part of Monthly Progress Report.
- a. Data report covering following parameters
 - i. Deflection Bowl (Transient Deflections at seven different points)
 - ii. Corrected Elastic Modulus BituminousE1
 - iii. Corrected Elastic Modulus GranularE2
 - iv. Corrected Elastic Modulus SubgradeE3
 - v. Subgrade CBR
 - b. Interpretation report covering summary of entire survey results and analysis of key parameters.
 - c. Recommendations on requisite remedial measures for repair and rehabilitation of pavement based on NSV and FWD data.
- 4.6** The engagement of consultants under this contract is for conducting NSV and FWD surveys to meet out requirements given in Para above. The lane km of NSV and FWD survey mentioned in the contract is for estimate and bidding purpose and the same may vary as per requirements.
- 4.7** The survey vehicle shall only be driven by a Trained Driver for safety reasons.
- 4.8** The consultants shall be solely responsible for adherence to the provisions of Motor Vehicle Act.
- 4.9** The data should be collected in sufficient detail. The data should be compiled and presented in tabular as well as graphical form. Thei inventory data would be stored m computer files using simple utility packages, such as EXCEL.
- 4.10** The data collected through road inventory and pavement investigations should be sufficient to meet the input requirements of HDM-IV.
- 4.11** The pavement surface shall not be wet for data collection.
- 4.12** Thesurveyshallbeconductedundergooddaylightconditionforvideodata.
- 5.** Time lines for the submission of Data, Reports and Documents Consultant shall be required to complete, to the satisfaction of the client, all the different stages of study within the time frame indicated in the schedule of submission in Para 7 pertaining to Reports and Documents for becoming eligible for payment for any part of the next stage.
- 6.** Data, Reports and Documents to be submitted by the Consultant to the Client

- (i) Raw Data and Processed data soft copies and reading software of all data collected in respect of National Highway inventory and pavement condition
- (ii) Verification of Centralized RAMS Cell of NHAI on uploading & acceptance of data for RAMS portal
- (iii) Output from Network Survey Vehicle and Falling Weight Deflectometer survey data (in format prescribed by centralized RAMS Cell from time to time, indicative format enclosed at Annexure)

7. **Bridge Inspection using Mobile Bridge Inspection Unit** : The Consultant shall carry out the condition and structural assessment survey of the bridges in accordance with IRC-SP; 35 (latest Revision may prevail) with the use of Mobile Bridge Inspection unit (MBIU) or better technology
- a. The following criteria shall be met by the process of bridge condition assessment
 - i. Automatic folding and unfolding of platform
 - ii. 90-degree rotation of platform
 - iii. Sufficient safety features to be incorporated such as dedicated power supply, emergency cut off system, etc
 - iv. Complete access to hidden parts of the bridge by the raters
 - b. Detailed bridge inspection report shall be submitted as per the Inspection Proforma provided in IRC-SP 35 (latest Revision may prevail)
8. **Road signs inspection using retro reflectometer (as per IRC)** The Consultant shall measure Coefficient of retro reflected luminance RA (night time retro reflection) of road traffic signs using a portable retro reflectometer. The following criteria shall be met by the process of road signs retro reflection measurement
- i. Measurement of retro reflective signs shall be conducted in accordance with ASTM E1709 and ASTM E2540
 - ii. Measurement time after pressing trigger shall be less than or equal to 1 sec
 - iii. Observation angle adjustment from 0.2 degrees to 2.0 degrees
 - iv. Entrance angle adjustment from -45 degrees to +45 degrees Self-contained commercially available battery
 - v. Inbuilt data storage of at least 2,000 measurements so that data transfer requirement is minimized while the survey is being conducted
 - vi. Interface for transferring data from device to Computer Built in GPS to capture GPS coordinates of road sign
 - vii. Range shall be at least 0-2000 cd/lx/m²

9. Milestones to be achieved and Payment Schedule

The Consultant will be paid consultancy fee for lane length for which services completed considering quoted rate per lane per km as per the following milestone achievements and payment schedule given in the Draft Contract Agreement:

Milestone	Time of Achievement (within of Agreement)	Condition of Fulfillment	Payment Schedule

0	15 th Days	Demonstration of NSV, MBIU, Retro reflectometer and FWD Equipment with Competent Manpower for fulfillment of mentioned output	
	6 th Month	Completion, submission & uploading of NSV, MBIU, Retro reflectometer and FWD Survey for eligible length (1 st Cycle)	Length of lane km X Rate per lane per km
2	12 th Month	Completion, submission & uploading of NSV, MBIU, Retro reflectometer for eligible length (2 nd Cycle)	Length of lane km X Rate per lane per km
3	18 th Month	Completion, submission & uploading of NSV, MBIU, Retro reflectometer and FWD Survey for eligible length (3 rd Cycle)	Length of lane km X Rate per lane per km
4	24 th Month	Completion, submission & uploading of NSV, MBIU, Retro reflectometer for eligible length (4 th Cycle)	Length of lane km X Rate per lane per km
5	30 th Month	Completion, submission &uploading of NSV, MBIU, Retro reflectometer and FWD Survey for eligible length (5 th Cycle)	Length of lane km X Rate per lane per km
6	36 th Month	Completion, submission &uploading of NSV, MBIU, Retro reflectometer for eligible length (6 th Cycle)	Length of lane km X Rate per lane per km

10. Copyright

MoRTH shall be the sole owner of the data collected by the consultants under this assignment. The consultants shall not share this data with any other agency except client or private entity until so desired by MoRTH in writing.

11. PERFORMANCECLAUSE

The consultants shall be expected to fully comply with all the provisions of the 'Tennis of Reference', and shall be fully responsible for conducting surveys and non-adherence to the provision of ToR and non-adherence to the time schedule prescribed under ToR shall amount to non-performance.

12. PERIODOFSERVICES

As per data sheet

13. Project Coordinator

The consultant shall appoint personnel from its head office to act as Project Coordinator for the assignment. He will be authorized to communicate with the [Client] in respect of all matters pertaining to the project. The cost of the Project Coordinator shall be incidental to the Consultancy Assignment.

DATASHEET

1. The description of projects is as below:

State	NH No.	Description of Stretch	Type of Service (NSV/Both NSV& FWD MBIU & Road signs inspection using Retro Reflectometer)	Tentative Length (in km)	Package No.
Tripura	NH-208	Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km	NSV, FWD, MBIU& Road signs inspection using Retro Reflectometer	80.2 Km (2 Lane)	-

2. Duration of the Project: 36months and further may extended to one year as per the rate quoted in bid after with prior approval of client.

3. Date, Time and e-mail address for seeking queries

/clarifications: As per para 5 of NIT.

4. The Documents are:

- i Annexure-I: List of empaneled NSV Consultants
- ii. Annexure-II: Terms of Reference
- iii. Appendix-I: Formats for Proof of Eligibility and Technical
- iv. Appendix-II: Proposal Format for self-Technical evaluation
- v. Appendix-III: Formats for Financial Proposal
- vi Appendix-IV: Output Formats referenced in ToR
- viii Appendix-V: Draft Contract Agreement

5. Tax and Insurance (Ref.Para3.3.2ofLOI)

- (i). The Consultants and their personnel shall pay all taxes (including Goods & service tax), custom duties, fees, levies and other impositions levied under the laws prevailing seven days before the last date of submission of the bids. The effects of any increase / decrease of any type of taxes levied by the Government shall be borne by the Client / Consultant, as appropriate.
- (ii). Limitations of the Consultant's Liability towards the Client shall be as per Clause3.4 of Draft Contract Agreement
- (iii). The risk and coverage shall be as per Clause3.5 of Draft Contract Agreement.

6. The date, time and Address of proposal submission are

As per Para 5 of NIT.

7. Proposal Validity period (Number of days):120days

8. Evaluation criteria

8.1 First stage evaluation-eligibility requirement and Technical Proposal

Table-1: Minimum Eligibility Requirements

Sr. No.	Minimum experience and performance of NSV and FWD, MBIU & Road signs inspection using Retro Reflectometer Survey the last 3years (NH/SH/Equivalent)
1	Consultant Empaneled by MoRT&H
NSV&FWD MBIU & Road signs inspection using Retro Reflectometer Survey	
2(i)	A Firm should have Experience of Collection of Inventory and Condition data of Road Using Network Survey Vehicle of aggregate length equal to 40 lane km or more.
2(ii)	A Firm should have Experience of Collection of Pavement Condition Data using Falling Weight Deflectometer of aggregate length equal to 40 lane km or more.
2(iii)	A Firm should have Experience of MBIU aggregate length equal to 40- lane km or more.
2(iv)	A Firm should have Experience of Road signs inspection using Retro Reflectometer of aggregate length equal to 40- lane km or more.
3	A Firm Should have a 5Cr Average updated Annual Turnover for Last Three year (Financial Year) from Consulting Business
4	Firm should have equipment for NSV, FWD, MBIU & Road signs inspection using Retro Reflectometer Survey by way of ownership/hiring through MOU

(i) The applicant shall fulfil all the requirements given in Table-1.

(ii) For weightage of experience in any past Consultancy assignment, experience certificate from the client shall be submitted.

(iii) Updating Factor for Turnover

Year	Year-1	Year-2	Year-3
Up-dation factor	1.00	1.05	1.10

Note: Consultant need to furnish undertaking that We hereby undertake that proposed aforementioned Equipment is meeting all technical & stipulated norms and output will be of desired accuracy with requisite format as mentioned in the entire scope of services which would, inter-alia, include the items mentioned in the Letter of Invitation, Terms of Reference, general contract and supplements and appendices, if any to these documents.

8.2 Technical evaluation

Sl. No.	Description	Marks
A1	Firm Average Annual Turnover for Last Three year from Consulting Business	20

NSV&FWD, MBIU and Road signs inspection using Retro Reflectometer Survey		
A2(i)	Firm's relevant experience in last 3 years for Network Survey works	10
A2(ii)	Firm's relevant experience in last 3 years for FWD Survey work	10
A2(iii)	Firm's relevant experience in last 3 years for MBIU Survey work	10
A2(iv)	Firm's relevant experience in last 3 years for Road signs inspection using Retro Reflectometer Survey work	10
B1	Availability of Equipment's proposed to be used for Survey work	40
	Total (A1+A2(i)+A2(ii)+A2(iii)+A2(iv)+B1)	100

Further break-up of each criteria has been detailed out below:

A1. Firm's Average Annual Turnover for Last Three year from Consulting Business (Maximum Marks 20)

Experience	Maximum Marks	Total Updated Turnover
Updated Turnover < 5 Crore	0.0	
5 Crores ≤ updated Turnover < 10 Crore	16.0	
Updated Turnover ≥ 10 Crore	20.0	

NSV& FWD, MBIU and Road signs inspection using Retro Reflectometer Survey*

A2 (i). Firm's relevant experience in last 3 years for NSV Survey work (10M)

SL. No.	Description	Maximum Marks	Sub-Marks
1	Experience of Network Survey of aggregate length	10	
1.1	Experience < 40 lane km		0.0
1.2	40 lane km ≤ Experience < 100 lane km		5.0
1.3	100 lane km ≤ Experience < 200 lane km		7.5
1.4	Experience ≥ 200 lane km		10

A2(ii). Firm's relevant experience in last 3 years for FWD Survey work (10M)

Sl. No.	Description	Maximum Marks	Sub-Marks
	Experience of FWD Survey of aggregate length	10	
1.1	Experience < 40 lane km		0.0
1.2	40 lane km ≤ Experience < 100 lane km		5.0
1.3	100 lane km ≤ Experience < 200 lane km		7.5
1.4	Experience ≥ 200 lane km		10

A2(iii). Firm's relevant experience in last 3 years for MBIU survey work (10M)

Sl. .No.	Description	Maximum Marks	Sub-Marks
	Experience of MBIU aggregate length	10	
1.1	Experience < 40 lane km		0.0
1.2	40 lane km ≤ Experience < 100 lane km		5.0
1.3	100 lane km ≤ Experience < 200 lane km		7.5
1.4	Experience ≥ 200 lane km		10

A2(iv). Firm's relevant experience in last 3 years for Road signs inspection using Retro Reflectometer Survey work (10M)

Sl.. No.	Description	Maximum Marks	Sub-Marks
	Experience of FWD Survey of aggregate length	10	
1.1	Experience < 40 lane km		0.0
1.2	40 lane km ≤ Experience < 100 lane km		5.0
1.3	100 lane km ≤ Experience < 200 lane km		7.5
1.4	Experience ≥ 200 lane km		10

*The experience of bidder in NSV, FWD, MBIU and Retro reflectometer shall be supported by experience certificate from Authority. The experience of a bidder for a private concessionaire/contractor shall not be considered.

B1. Availability of Equipment's proposed to be used for Survey work(40M)

NSV and FWD, MBIU & Road signs inspection using Retro Reflectometer Survey			
Sl.No.	Description	Maximum Marks	Sub-Marks
1	Availability of NSV Survey Facilities with persons /resources having operational skills of the equipment	10	
1.1	Owned*(Available In-house)		10
1.2	Hired Through MOU		10
2	Availability of FWD Survey Facilities with persons/resources having operational skills of the equipment	10	
2.1	Owned*(Available In-house)		10
2.2	Hired Through MOU		10
3	Availability of MBIU Survey Facilities with persons /resources having operational skills of the equipment	10	
3.1	Owned*(Available In-house)		10
3.2	Hired Through MOU		10
4	Availability of Road signs inspection using Retro Reflectometer Survey Facilities with persons/resources having operational skills of the equipment	10	
4.1	Owned*(Available In-house)		10
4.2	Hired Through MOU		10
*Shall be as curtailed through Proof. The bidder should possess the documentary evidence of owning the equipment's (NSV, FWD, MBIU & retro-reflectometer) as mentioned in BOQ/RFP or Lease/Hiring agreement from the firm for providing equipment's as and when required.			

8.3 Detailed evaluation criteria which is to be used for evaluation of technical bids

The Consultant should carryout self-evaluation based on the evaluation sheet at Appendix-II Form-7. While submitting the self-evaluation along with bid, Consultant shall make references to the documents submitted in their proposal which have been relied upon in self-evaluation. Result of technical evaluation shall be made available on the website giving opportunity to the bidders to respond within 7days in case they have any objection.

8.4 Second stage-Evaluation of Financial proposal

Financial Proposals of all Qualified Consultants in accordance as per Letter of Invitation shall be opened.

The consultancy services will be awarded to the consultant scoring highest marks in combined evaluation of Technical and Financial proposals in as per Letter of invitation hereof.

The Factors are:

The weight given to Technical Proposal(T)=0.80. The weight given to Financial Proposal(f)=0.20

9. The common currency s "Indian Rupee".
10. Commencement of Assignment (Date, Location): The Consultants shall commence the Services within fifteen days of the date of effectiveness of the contract at locations as required for the project stretch stated in TOR. (Ref. GCC/SC)

Procedure of Awarding Work based on QCBS including Assessment of Least Cost to <Client> under Special Circumstances i.e. When a Consultant with a particular NSV/FWD becomes H-1 bidder in more than one package

A Consultant with a particular NSV/FWD can apply for any number of packages with one NSV/FWD. However, Award of work to a Consultant with —a Particular NSV/FWD— either as sole or as in JV shall be limited to one package only. Following procedure shall be followed for the selection of the most preferred bidder for the consultancy assignment:

1. At first, Consultants who become H-1 in one package each shall be assigned the respective package. Then packages in which a Consultant with —a Particular NSV & FWD— turns out to be the most preferred bidder (H-1) in more than one package shall be considered. In case, a Consultant with —a Particular NSV & FWD— turns out to be the most preferred bidder (H1) in more than one package, the package which is to be awarded to this NS & FWD of a consultant shall be determined on the basis of least cost to <Agency> considering the Financial Quote of H-1 bidder and H-2 Bidder limited to those packages which shall be worked out as per procedure illustrated with an example as mentioned below.
2. Suppose there are 8 packages namely Package-1, Package-2, Package -3, Package-4, Package -5, Package -6, Package-7 and Package-8 respectively. It is also assumed that 10 consultants namely P, Q, R, S, T, U, V, W, X and Y has applied for these packages. It is also assumed that three Consultants namely P, R and U have applied with two NSVs & FWDs and the remaining Consultants have applied with only one NSV & FWD. It is also assumed that the following is the position of various firms after opening of the Financial proposals (and after arithmetic corrections if any of the Financial bids) of the packages and after applying QCBS

	H-1	H-2	H-3	H-4	H-5	H-6
Package no.	Name of Consultants and Financial Quotes (Rs in lakhs)					
Package-1	P (NSV & FWD-1)	Q	W	X	T	Y
	230 lakhs	200 lakhs	240 lakhs	220 lakhs	200 lakhs	230 lakhs
Package-2	V	U(NSV & FWD-1)	X	P (NSV & FWD-2)	T	Y
	240 lakhs	210 lakhs	240 lakhs	220 lakhs	200 lakhs	230 lakhs
Package-3	V	P(NSV & FWD-1)	U(NSV & FWD-1)	R (NSV & FWD-2)	X	Y
	200 lakhs	230 lakhs	250 lakhs	230 lakhs	220 lakhs	200 lakhs
Package-4	R (NSV & FWD-1)	T	U (NSV & FWD-2)	P (NSV & FWD-2)	Y	X
	250 lakhs	220 lakhs	250 lakhs	260 lakhs	220 lakhs	245 lakhs
Package-5	R (NSV & FWD-1)	V	S	U(NSV & FWD-2)	W	T
	220 lakhs	240 lakhs	260 lakhs	250 lakhs	220 lakhs	240 lakhs
Package-6	Q	T	S	P (NSV & FWD-2)	W	U (NSV & FWD-2)
	210 lakhs	240 lakhs	250 lakhs	220 lakhs	200 lakhs	230 lakhs

Package-7	R (NSV & FWD-1)	U (NSV & FWD-1)	Q	S	W	Y
	200 lakhs	220 lakhs	240 lakhs	255 lakhs	230 lakhs	240 lakhs
Package-8	V	R(NSV & FWD-1)	W	S	P (NSV & FWD-1)	Y
	190 lakhs	250 lakhs	220 lakhs	240 lakhs	255 lakhs	240 lakhs

The different packages shall be awarded to consultants as mentioned below:

2.1 Step-1:

In this case, Consultants P (NSV & FWD-1) and Q are the H-1 in only one package each namely package-1 and package-6 respectively. Consultant V is H-1 in 3 packages namely Package2, Package-3 and Package-8 respectively. Consultant R (NSV & FWD-1) is H-1 in 3 packages namely Package-4, Package-5 and Package-7 respectively. Since Consultant P (NSV & FWD-1) is H-1 in Package-1 only and Consultant Q is H-1 in Package-6 only, Consultant P (NSV & FWD-1) shall be awarded Package-1 and Consultant Q shall be awarded Package-6.

2.2 Step-2:

After Consultant P (NSV & FWD-1) is awarded Package-1 and Consultant Q is awarded Package-6, the scenario for the remaining 6 packages is as given below. P (NSV & FWD-1) and Q occurring anywhere else stands deleted as they have already been awarded one work each

	H-1	H-2	H-3	H-4	H-5	H-6
Package No.	Name of Consultants and Financial Quotes (Rs in lakhs)					
Package-2	V	U(NSV & FWD-1)	X	P (NSV & FWD-2)	T	Y
	240 lakhs	210 lakhs	240 lakhs	220 lakhs	200 lakhs	230 lakhs
Package-3	V	U(NSV & FWD-1)	R (NSV & FWD-2)	X	Y	
	200 lakhs	250 lakhs	230 lakhs	220 lakhs	200 lakhs	
Package-4	R (NSV & FWD-1)	T	U (NSV & FWD-2)	P (NSV & FWD-2)	Y	X
	250 lakhs	220 lakhs	250 lakhs	260 lakhs	220 lakhs	245 lakhs
Package-5	R (NSV & FWD-1)	V	S	U (NSV & FWD-2)	W	T
	220 lakhs	240 lakhs	260 lakhs	250 lakhs	220 lakhs	240 lakhs
Package-7	R (NSV & FWD-1)	U (NSV & FWD-1)	S	W	Y	
	200 lakhs	220 lakhs	255 lakhs	230 lakhs	240 lakhs	
Package-8	V	R(NSV &	W	S	Y	

		FWD-1)				
	190 lakhs	250 lakhs	220 lakhs	240 lakhs	240 lakhs	

Consultant V shall be awarded only one package out of the 3 packages for which it is H-1 namely Package-2, Package-3 and Package-8 respectively. Similarly, Consultant R (NSV & FWD-1) shall be awarded only one package out of the 3 packages for which it is H-1 namely Package-4, Package-5 and Package-7 respectively. The determination of package to be awarded to Consultant V and Consultant R (NSV & FWD-1) shall be worked out in a single step (i.e. one at a time). New H-1 for the remaining packages (4 packages) shall be worked out only after determination of packages to be awarded to the H-1 bidders at this stage [i.e. Consultant V and R (NSV & FWD-1) in the instant case] in one step. Determination of Package to be awarded to each of Consultant V and Consultant R (NSV & FWD-1) shall be worked out as follows:

- (i) After the award of Package-1 to Consultant-P (NSV & FWD-1) and Package-6 to Consultant-Q and also considering that a Consultant with a particular NSV & FWD can be awarded only one work, the details of H-1 and H-2 / New H-2 in the remaining 6 packages areas mentioned below. Since V is H-1 in more than one package and shall be awarded one of these packages, V has been deleted from all other packages. Similarly, since R (NSV & FWD-1) in more than one package and shall be awarded one of these packages, R (NSV & FWD-1) has been deleted from all other packages

	H-1	H-2 / New H-2	Remarks
Package-2	V	U(NSV & FWD-1)	
	240 lakhs	210 lakhs	
Package-3	V	U(NSV & FWD-1)	Since Consultant P (NSV & FWD-1) is awarded Package-1, Consultant U (NSV & FWD-1) becomes the new H-2
	200 lakhs	250 lakhs	
Package-4	R (NSV & FWD-1)	T	
	250 lakhs	220 lakhs	
Package-5	R (NSV & FWD-1)	S	
	220 lakhs	260 lakhs	
Package-7	R (NSV & FWD-1)	U (NSV & FWD-1)	
	200 lakhs	220 lakhs	
Package-8	V	W	Consultant-R (NSV & FWD-1) has not been considered as H-2 since Consultant -C (NSV & FWD-1) is to be awarded one package out of the packages 4,5 and 7 in which it is H-1. Hence Consultant -W is the new H-2
	190 lakhs	220 lakhs	

- (ii) Package to be awarded to Consultant -V who is H-1 in three packages namely Package -2, 3 and 8 respectively shall be determined on the basis of least cost to <Agency> considering the Financial Quote of H-1 bidder and H-2 Bidder limited to those packages. The situation for least cost to <Agency> shall be when the firm with Consultant -G is awarded the package for

which Financial Bid of second ranked NSV & FWD (H-2) minus Financial Bid of the first ranked NSV & FWD (H-1) is maximum. The same is illustrated as given below

	H-1	H-2/NewH-2	Financial Bid of H-2/New H-2 <u>minus Financial</u> Bid of H-1	Remarks
Package-2	V	U(NSV & FWD-1)	210-240 = (-) 30 lakhs	
	240 lakhs	210 lakhs		
Package-3	V	U(NSV & FWD-1)	250 – 200 = (+) 50lakhs	H-2 minus H-1 is Maximum. Hence Consultant V shall be awarded Package-3
	200 lakhs	250 lakhs		
Package-8	V	W	220–190=(+)30 lakhs	

In a similar way, Package to be awarded to Consultant – R (NSV & FWD-1) who is H-1 in three packages namely Package -4, 5 and 7 respectively shall be determined as illustrated below:

	H-1	H-2/NewH-2	Financial Bid of H-2/New H-2 <u>minus Financial</u> Bid of H-1	Remarks
Package-4	R (NSV & FWD-1)	T	220-250 = (-) 30 lakhs	
	250 lakhs	220 lakhs		
Package-5	R (NSV & FWD-1)	S	260 – 220 =(+) 40lakhs	H-2 minus H-1 is Maximum. Hence Consultant – R (NSV & FWD-1) shall be awarded Package-5
	220 lakhs	260 lakhs		
Package-7	R (NSV & FWD-1)	U (NSV & FWD-1)	220–200=(+)20lakhs	
	200 lakhs	220 lakhs		

2.3 Step-3

- (i) After the award of the above mentioned 4 packages namely, Package-1 to Consultant– P (NSV & FWD-1), Package -6 to Consultant –Q, Package -3 to Consultant –V, Package -5 to Consultant –R (NSV & FWD-1) and also considering that a Consultant with a particular NSV & FWD can be awarded only one work, the details of new H-1 and New H-2 in the remaining 4 packages are as mentioned below

	H-1 (NewH-1)	H-2(NewH-2)	Remarks
Package-2	U(NSV & FWD-1)	X	Since Consultant V is awarded Package-3, Consultant U (NSV & FWD-1) becomes the new

	210 lakhs	240 lakhs	H-1 and Consultant X becomes the new H2
Package-4	T	U (NSV & FWD-2)	Since Consultant-R (NSV & FWD-1) is awarded Package-5, Consultant T becomes the new H-1 and Consultant U (NSV & FWD-2) becomes the new H-2
	220 lakhs	240 lakhs	
Package-7	U (NSV & FWD-1)	S	Since Consultant R (NSV & FWD-1) is awarded Package-5, Consultant U (NSV & FWD-1) becomes the new H-1 and Consultant S becomes the new H-2
	220 lakhs	255 lakhs	
Package-8	W	S	Since Consultant V is awarded Package-3, Consultant W becomes the new H-1 and Consultant S becomes the new H-2
	220 lakhs	240 lakhs	

- (ii) Consultant T is the new H-1 for only one package namely Package-4. Similarly, Consultant W is the new H-1 for only one package namely Package-8. Accordingly Package- 8 shall be awarded to Consultant–W and Package -4 shall be awarded to Consultant–T.

2.4 Step-4:

Consultant U (NSV & FWD-1) is the new H-1 for package- 2 and Package-7 respectively and Consultant U (NSV & FWD-1) shall be awarded only one package out of this 2 packages. Package to be awarded to Consultant –U (NSV & FWD-1) shall be determined as illustrated below

	H-1	H-2/NewH-2	Financial Bid of H2/New H-2 <u>minus</u> Financial Bid of H-1	Remarks
Package-2	U(NSV & FWD-1)	X	240-210 =(+)30lakhs	
	210 lakhs	240 lakhs		
Package-7	U (NSV & FWD-1)	S	255 – 220 = (+) 35lakhs	H-2 minus H-1 is Maximum. Hence Consultant – U (NSV & FWD1) shall be awarded Package- 7
	220 lakhs	255 lakhs		

2.5 Step-5:

- (i) After the award of the above mentioned 7 packages namely, Package-1 to Consultant– P (NSV & FWD-1) , Package -6 to Consultant –Q, Package -3 to Consultant –V, Package -5 to Consultant –R (NSV & FWD-1), Package-4 to Consultant -T, Package -8 to Consultant-W, package-7 to Consultant –U (NSV & FWD-1) NSV & FWD and also considering that a Consultant with a particular NSV & FWD can be awarded only one work , the details of new H-1 and / New H-2 in the remaining package i.e. package -2 is as mentioned below

	H-1 (New H-1)	H-2 (New H-2)	Remarks
Package-2	X	A (NSV & FWD-2)	Since Consultant V is awarded Package-3 and Consultant U (NSV & FWD-1) is awarded package- 7

	240 lakhs	220 lakhs	, Consultant X becomes the new H-1 and Consultant P(NSV & FWD-2) becomes the new H-2
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- (ii) Consultant X is the new H-1 for only one package namely Package-2. Accordingly, Package -2 shall be awarded to Consultant –X.

2. Thus as per the above mentioned procedure the 8 packages are awarded to the following Consultant at the Financial Quoted (after arithmetic Corrections) by them for the respective packages

Package No.	Name of Consultants awarded packages
Package-1	Consultant- P (NSV & FWD-1)
Package-2	Consultant- X
Package-3	Consultant-V
Package-4	Consultant- T
Package-5	Consultant- R (NSV & FWD-1)
Package-6	Consultant- Q
Package-7	Consultant-U (NSV & FWD-1)
Package-8	Consultant-W

Form-I
Letter of Proposal (On Applicant's letter head)

(Date and Reference)

To,

Sub: Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura

Dear Sir,

With reference to your RFP Document dated....., I/we i.e.M/s-----
------(Name of Bidder) having examined all relevant documents and Understood their contents, hereby submit our Proposal for selection as consultant for following packages. The proposal is unconditional and unqualified.

State	NH No.	Description of Stretch	Type of Service (NSV, FWD, MBIU & Road signs inspection using Retro Reflectometer)	Tentative Length (in km)	Package No.

2. All information provided in the Proposal and in the Appendices is true and correct and all documents accompanying such Proposal are true copies of the irrelative originals.
3. This statement is made for the express purpose of appointment as the Consultant for the aforesaid Project.
4. I/We shall make available to the Client Authority any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the Client Authority to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, we or any of our Associates have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Applicant, nor been

expelled from any project or contract by any public authority nor have had any contract terminated by any public authority for breach on our part.

7. I/We understand that you may cancel the Selection Process at any time and that you are neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with Clause 1.6 of the RFP document
8. I/We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.
9. I/We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
10. I/We further certify that no investigation by a regulatory authority is pending either against us or against our Associates or against our CEO or any of our Directors/Managers/employees.
11. I/We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Authority [and/or the Government of India] in connection with the selection of consultant or in connection with the Selection Process itself in respect of the above-mentioned Project.
12. I/We agree and understand that the proposal is subject to the provisions of the RFP document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.
13. I/We agree to keep this valid for 120 (One hundred and twenty) days from the Proposal Due Date specified in the RFP.
14. A Power of Attorney in favor of the authorized signatory to sign and submit this Proposal and documents is attached herewith.
15. In the event of my/our firm being selected as the Consultant, I/we agree to enter into any Agreement in accordance with the form Appendix V of the RFP. We agree not to seek any changes in the aforesaid form and agree to abide by the same.
18. I/We have studied RFP and all other documents carefully and also surveyed the Project site. We understand that except to the extent as expressly set forth in the Agreement, we shall have no claim, right or title arising out of and documents or information provided to us by the Client Authority or in ~~respect of~~ any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
19. The Proof of Eligibility, Technical proposal and financial proposal are being submitted online (as per LoI). This Proof of Eligibility read with Technical Proposal and Financial Proposal shall constitute the Application which shall be binding on us. If we are declared as H1 bidder, the documents listed in Para 3.1.1 (iii), (iv) and (v) shall be submitted in original by us before issue of LOA and we understand that non-compliance of the same shall lead to our debarment for two years from the Bid Due Date.
20. I/We agree and undertake to abide by all the terms and conditions of the RFP Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the RFP Document.

Yours faithfully,
(Signature, name and designation of the authorized signatory)(Name
And seal of the Applicant/Lead Member)

Form-2 Bid Securing Declaration

I hereby submit a declaration that the bid submitted by the undersigned, on behalf of the consultant, [Name of the consultant], either sole or in JV, shall not be withdrawn or modified during the period of validity i.e. not less than 120(one hundred twenty)days from the bid due date.

I, on behalf of the consultant, [Name of the consultant], also accept the fact that incase the bid is withdrawn or modified during the period of its validity or if we fail to sign the contract in case the work is awarded to us or we fail to submit a performance security before the deadline defined in clause 6.1 of the letter of Invitation (LOI), then [Name of the consultant] will be suspended for participation in the tendering process for the consultancy works of MoRTH/NHAI/INHIDCL and consultancy works under other Centrally Sponsored Schemes, for a period of two years from the bid due date of this work.

(Signature of the Authorized Signatory)

(Official-Seal)

Form-3

INTEGRITY PACT

(To be executed on plain paper and submitted along with Technical Bid/Tender documents for tenders having a value between Rs.5 Cr and 100 Cr. To be signed by the bidder and same signatory competent/authorized to sign the relevant contract on behalf of the MORT&H)

Tender No. _____

This integrity Pact is made at _____ on this _____ day of _____ 2018.

Between

NHIDCL here in after referred to as 'The Principal', which expression shall unless repugnant to the Meaning or contract thereof include its successors and permitted assigns.

And

Hereinafter referred to as 'The Consultant' and which expression shall unless repugnant to be meaning or context thereof include its successors and permitted assigns.

Preamble

Whereas, the Principal intends to award, under laid down organizational procedures, contract for "collection of Road inventory & Pavement condition data of National Highways for uploading on Road Asset Management System (RAMS)". The principal values full compliance with all relevant laws of the land, rules of land, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/ or Consultant(s).

And whereas to meet the purpose aforesaid, both the parties have agreed to enter into this Integrity Pact (hereafter referred to as Integrity Pact) the terms and conditions of which shall also be read as integral part and parcel of the Tender document and contract between the parties. Now, therefore, in consideration of mutual covenants stipulated in this pact, the parties hereby agree as follows and this pact witnesses as under: -

Article-1 Commitments of the principal

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - a. No employee of the principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise

for or accept, for self, or third person, any material of immaterial benefit which the person is not legally entitled to.

- b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - c. The Principal will exclude all known prejudiced persons from the process, whose conduct in the past has been of biased nature.
2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act or any other Statutory Acts or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions as per its internal laid down Rules/Regulations.

Article-2 Commitments of the Bidder(s)/Consultant(s).

The Bidder(s)/Consultant(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

- a. The Bidder(s)/ Consultant(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- b. The Bidder(s)/ Consultant(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission or bids or any other action to stifle competitiveness or to introduce cartelization in the bidding process.
- c. The Bidder(s)/ Consultant(s) will not commit any offence under the relevant IPC/PC Act and other Statutory Acts; further the Bidder(s)/Contractor(s)/Concessionaire(s)/ Consultant(s) will not use improperly, for purposes of completion or personal gain, or pass on to others, any information or document provided by the principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- d. The Bidder(s)/Consultant(s) of foreign-origin shall disclose the name and address of the Agents/ Representatives in India, if any. Similarly, the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) of Indian Nationality shall furnish the name and address of the foreign principle, if any.
- e. The Bidder(s)/ Consultant(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any

Other intermediaries in connection with the award of the contract. He shall also disclose the details of services agreed upon for such payments.

- f. The Bidder(s)/Consultant(s) will not instigate third persons to commit offences outlined above or be a necessary to such offences.
- g. The Bidder(s)/ Consultant(s) will not bring any outside influence through any Govt. bodies/quarters directly or indirectly on the bidding process in furtherance of his bid.

Article-3 Disqualification from tender process and exclusion from future contracts.

1. If the Bidder(s)/ Consultant(s), before award or during execution has committed a transgression through a violation of any provision of Article-2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Consultant(s) from the tender process.
2. If the Bidder(s)/Consultant(s) has committed a transgression through a violation of Article-2 such as to put his reliability or credibility into question, the principal shall be entitled to exclude including blacklist and put on holiday the Bidder(s)/ Consultant(s) for any future tenders/ contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the principal taking into consideration the full facts and circumstances of each case particularly taking into account the number of transgressions, the position of the transgressors within the company hierarchy of the Bidder(s)/ Consultant(s) and the amount of the damage. The exclusion will be imposed for a minimum of 1 year.
3. A transgression is considered to have occurred if the principal after due consideration of the available evidence concludes that "On the basis of facts available there are no material doubts".
4. The Bidder(s)/ Consultant(s) with its free consent and without any influence agrees and undertakes to respect and uphold the principal's absolute rights to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.
5. The decision of the principal to the effect that a breach of the provisions of this Integrity Pact has been committed by Bidder(s)/ Consultant(s) shall be final and binding on the Bidder(s)/ Consultant(s).
6. On occurrence of any sanctions/ disqualification etc. arising out from violation of integrity pact, the Bidder(s)/Consultant(s) shall not be entitled for any compensation on this account.
7. Subject to full satisfaction of the Principal, the exclusion of the Bidder(s)/Consultant(s) could be revoked by the Principal if the Bidder(s)/ Consultant(s) can prove that he has restored/recouped the damage caused by him and has installed a suitable corruption prevention system in his organization.

Article-4 Compensation for Damages.

1. If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Article-3, the Principal shall be entitled to forfeit the Earnest Money Deposit/ Bid Security or demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security (equivalent to 1% of Contract Price) apart from any other legal right that may have accrued to the Principal.
2. In addition to above, the Principal shall be entitled to take recourse to the relevant provisions of the contract related to Termination of Contract due to Bidder(s)/ Consultant(s) Default. In such case, the Principal shall be entitled to forfeit the Performance Bank Guarantee of the Bidder(s)/ Consultant(s) and/ or demand and recover liquidated and all damages as per the provisions of the contract agreement against Termination.

Article-5 Previous Transgression

1. The Bidder declares that no previous transgressions occurred in the last 3 years immediately before signing of this Integrity Pact with any other Company in any country conforming to the anticorruption/ Transparency International (TI) approach or with any other Public Sector Enterprise/ Undertaking in India or any Government Department in India that could justify his exclusion from the tender process.
2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action for his exclusion can be taken as mentioned under Article-3 above for transgressions of Article-2 and shall be liable for compensation for damages as per Article-4 above.

Article-6 Equal treatments of all Bidder(s) /Consultant(s)/Subconsultants.

1. The Bidder(s)/ Consultant(s) undertake(s) to demand from all sub-consultants a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
2. The Principal will enter into agreements with identical conditions as this one with all Bidder(s)/ Consultant(s) and Sub-consultants.
3. The Principal will disqualify from the tender process all Bidders who do not sign this Pact or violate its provisions.

Article-7 Criminal charges against violating Bidder(s) /Consultant(s)/Sub-consultants(s).

If the Principal obtains knowledge of conduct of a Bidder(s)/ Consultant(s) or Sub-consultants, or of an employee or a representative or an associate of a Bidder(s)/Consultant(s) or Sub-consultant, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Article-8 Pact Duration

This Pact begins when both parties have legally signed it. (In case of EPC i.e. for projects funded by Principal and consultancy services). It expires for the Bidder(s) / Consultant(s) 12 months after his Defect

Liability period is over or 12 months after his last payment under the contract whichever is later and for all other unsuccessful Bidders 6 months after this Contract has been awarded. (In case of BOT Projects) It expires for the concessionaire 24months after his concession period is over and for all other unsuccessful Bidders 6months after this Contract has been awarded.

If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by MORT&H.

Article-10 Other Provisions.

1. This pact is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e.....
2. Changes and supplements as well as termination notices need to be made in writing.
3. If the Bidder/Contractor/Concessionaire/Authority's Engineer is a partnership or a consortium, this pact must be signed by all partners or consortium members.
4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
5. Any disputes/differences arising between the parties with regard to term of this pact, any action taken by the Principal in accordance with this Pact or interpretation thereof shall not be subject to any Arbitration.
6. The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

In witness whereof the parties have signed and executed this Pact at the place and date first done mentioned in the presence of following witness: -

(For & On behalf of the Principal)

(For & On behalf of the Bidder(s)/Consultant(s))

(Office Seal)

Place___

Date_

Witness1:

(Name & Address):_____

Witness2:

(Name & Address):_____

Form -4 TECHNICAL

PROPOSAL

FROM (Name of Firm)

To:(Name and Address of Client)

Ladies/Gentlemen:

Subject: Submission of Technical and Financial Proposal for Engagement of Consultants for collection of Road inventory & Pavement condition data of National Highways for uploading on Road Asset Management System (RAMS)

We, the undersigned, offer to provide the consulting services for the above in accordance with your Request for Proposal dated (Date), and our Proposal. We are hereby submitting our Proposal, which includes this Technical Proposal for the above-mentioned work.

Our Proposal is binding upon us. We understand you are not bound to accept any Proposal you receive

We remain,

Yours sincerely

Managing Director/Head of the
firm/ Authorized Representative of the
firm
Name of the firm
Address

Form-5
FIRM'S REFERENCES

A. The following information related to the firm should be provided in the proposal.

i. Name of the work applied for:-

ii. Year of establishment of firm*

Whether Empaneled with MoRTH	Year of Establishment	Country	Type of Organization			
			Partnership	Private limited	Public Limited	Other
Yes/No						

NOTE:-*Copy of Certificate of incorporation shall be submitted.

iii. Office/ Business Address/Telephone nos. /Cable Address

B. Relevant Services Carried out in the Last Three Years, Which Best Illustrate Qualifications

The following information should be provided in the format below for each reference assignment for which your firm, either individually as a corporate entity or as one of the major companies within a consortium, was legally contracted by the client:

Assignment Name:		Country:
Location within Country:		Professional Staff Provided by your firm:
Name of Client:		No. of Staff:
Address:		No. of Staff Months:
Start Date (Month/Year)	Completion Date (Month / Year)	Approx. Value of Services:(in INR/ current USD):
Name of JY Firm(s)if any:		No. of Months of Professional Staff provided by Associated Firm(s)
Status of your Company in the Assignment i.e., Sole/Lead Member/ Other Member		
Narrative Description of Project:		
Description of Actual Services Provided by your Company:		

Signature of Authorized Representative

(Certificate from Employer regarding experience should be furnished)

i. Experience in NSV survey for 2/4/6laning Highway Projects during the last three years.

Sl.No	Projects Name /Year	Sole Consultant/ Prime Consultant of JV	Length of NSV survey of (lane Km)	Client (with Complete address, contact person, telephone Nos. and Fax Nos.)	Total Fee for the Consultancy Assignment (INR)	Fee received by Applicant (in case of JV)	%age of total fee received by the firm	Year

11. Experience in FWD survey for 2/4/6 laning Highway Projects during the last three years.

S No	Projects Name /Year	Sole Consultant/ Prime Consultant of JV	Length of FWD Survey (Lane Km)	Client (with Complete address, contact person, telephone Nos. and Fax Nos.)	Total Fee for the Consultancy Assignment (INR)	Fee received by Applicant (in case of JV)	%age of total fee received by the firm	Year

- a) Only those projects, to be included in the table which are Highways Projects and for which client's certificates from the concerned Government agencies are enclosed with the proposal.
- b) For weightage of experience in any past Consultancy assignment, experience certificate from the clients shall be submitted. If the applicant firm/member of JV has/have done the NSV/FWD, MBIU& Road signs inspection using Retro Reflectometer survey solely on its own, 100% weightage shall be given. If the applicant firm/member of JV has done the NSV/FWD survey as a partner in a JV, *weightage* shall be given as per its share in JV. If the applicant firm/member of JV Have done the NSV/FWD, MBIU & Road signs inspection using Retro Reflectometer survey as an associate, 25% weightage shall be given.
- c) For weightage of experience in any past Consultancy assignment, experience certificate from the client shall be submitted. In absence of clear demarcation of JV share in client certificate, the weightage will be treated as 60 % for lead partner and 40% for minor partner.

Form-6

Facility for NSV, FWD, MBIU & Road signs inspection using Retro Reflectometer Surveys

1. State whether applicant owns /hires through MOU equipment for
 - NSV Surveys
 - FWD Surveys
 - MBIU
 - Road signs inspection using Retro Reflectometer
2. In-case answer to 1 is available with firm. Submit the proof of ownership
3. In case answer to 1 is hiring through MOU-Copy of MOU along with Supporting Document in proof of ownership by agency to which MOU done

Signature of Authorized Representative

(Certificate from Employer regarding experience should be furnished)

Form-7

Self-Technical Evaluation

Summary of Total marks

S. No.	Description	Max Marks	Claimed Marks	Reference
A1	Firm Average Annual Turnover for Last Three year from Consulting Business	20		
NSV&FWD, MBIU& Road signs inspection using Retro Reflectometer Survey only				
A2(i)	Firm's relevant experience in last 3 years for Network Survey works	10		
A2(ii)	Firm's relevant experience in last 3 years for FWD Survey work	10		
A2(iii)	Firm's relevant experience in last 3 years for MBIU Survey work	10		
A2(iv)	Firm's relevant experience in last 3 years for Road signs inspection using Retro Reflectometer Survey work	10		
B1	NSV, FWD, MBIU& Road signs inspection using Retro Reflectometer Equipment's proposed to be used for Survey work	40		
	Total	100		

A1. Firm's Average updated Annual Turnover for Last Three year from Consulting Business

e

Maximum Marks 20)

Experience	Maximum Marks	Total Updated Turnover	Claimed Marks	Reference
Updated Turnover < 5Crore	0.0			
5 Crores ≤ updated Turnover < 10Crore	16			
Updated Turnover ≥ 10Crore	20.0			

NSV& FWD Survey

A2(i). Firm's relevant experience in last 3years for NSV Survey work(10M)

S.No.	Description	Maximum Marks	Experience lane km	Claimed Marks	Reference
1	Specific experience of the NSV Survey work related to the assignment	10			
1.1	Experience of NSV Survey work of aggregate length				
1.1.1	Experience < 40 lane km (0Marks)				
1.1.2	40 lane km \leq Experience < 100 lane km (5Marks)				
1.1.3	100 lane km \leq Experience < 200 lane km (7.5Marks)				
1.1.4	Experience \geq 200 lane km (10Marks)				

A2(ii). Firm's relevant experience in last 3years for FWD Survey work(10M)

Sl.No.	Description	Maximum Marks	Experience lane km	Claimed Marks	Reference
1	Specific experience of the FWD Survey work related to the assignment	10			
1.1	Experience of FWD Survey work of aggregate length	10			
1.1.1	Experience < 40 lane km (0Marks)				
1.1.2	40 lane km \leq Experience < 100 lane km (5Marks)				
1.1.3	100 lane km \leq Experience < 200 lane km (7.5Marks)				
1.1.4	Experience \geq 200 lane km (10Marks)				

A2(iii). Firm's relevant experience in last 3 years for Retro Reflectometer Equipment's Survey work

Reference

Claimed SI.No.	Description	Marks	Experience Lane Km	Claimed Marks	Reference
1	Specific experience of the Retro reflectometer work related to the assignment	10			
1.1	Experience of Retro reflectometer work of aggregate length				
1.1.1	Experience < 40 lane km(0Marks)				
1.1.2	40 lane km ≤ Experience < 100 lane km (5Marks)				
1.1.3	100 lane km ≤ Experience < 200 lane km (7.5Marks)				
1.1.4	Experience ≥ 200 lane km (10 Marks)				

A2(iv). Firm's relevant experience in last 3 years for MBIU Survey work (10M)

SI.No.	Description	Maximum Marks	Experience lane km	Marks	Reference
1	Specific experience of the MBIU work related to the assignment	10			
1.1	Experience of MBIU work of aggregate length				
1.1.1	Experience < 40 lane km (0Marks)				
1.1.2	40 lane km ≤ Experience < 100 lane km (5Marks)				
1.1.3	100 lane km ≤ Experience < 200 lane km (7.5Marks)				
1.1.4	Experience ≥ 200 lane km (10Marks)				

B1. Availability of Equipment's proposed to be used for Survey work(40M)

SI.No.	Description	Maximum Marks	Availability (Yes/No)	Claimed Marks	Reference
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B1. Availability of Equipment's proposed to be used for Survey work(40M)

Sl.No.	Description	Maximum Marks	Availability (Yes/No)	Claimed Marks	Reference
1	Availability of NSV Survey Facilities with persons/resources having operational skills of the equipment	10			
1.1	Owned (Available In House) (10 marks)				
1.2	Hired Through MOU (10 marks)				
2	Availability of FWD Survey Facilities with persons/resources having operational skills of the equipment	10			
2.1	Owned (Available In House) (10marks)				
2.2	Hired Through MOU (10 marks)	10			
3	Availability of MBIU Facilities with persons/resources having operational skills of the equipment				
3.1	Owned (Available In House) (10marks)				
3.2	Hired Through MOU (10 marks)				
4	Availability of Retro reflectometer Facilities with persons/resources having operational skills of the equipment	10			
4.1	Owned (Available In House) (10marks)				
4.2	Hired Through MOU (10 marks)				
Shall be as curtained through Proof. The bidder should possess the documentary evidence of owning the equipment's (NSV, FWD, MBIU & retro-reflectometer) as mentioned in BOQ/RFP or Lease/Hiring agreement from the firm for providing equipment's as and when required.					

Form-8

FINANCIAL PROPOSALS

FROM:(Name of Firm)

TO: Address of Employer

Subject: Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura

We, the undersigned, offer to provide the consulting services for the above in accordance with your Request for Proposal dated [Date], and our proposal. Our attached financial proposal is for the sum of [Amount in words and figures]. This amount is inclusive of the taxes except Goods and Services Tax which shall be reimbursed by the authority.

Our financial proposal shall be binding upon us up to the expiration of the validity period of the proposal, i.e., [Date]

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

Commission and gratuities, if any, paid or to be paid by us to agents relating to this proposal and contract execution, if we are awarded the contract, are listed below:

Name and Address or Gratuity	Amount and	Purpose of Commission of Agents	Currency
.....
.....

We understand you are not bound to accept any proposal you receive.

We remain,
Yours sincerely,

Managing Director/Head of the firm/
Authorised Representative of the
firm* Name of the firm
Address

Form-9

Form-9
Format of Financial Proposal

Package- [Description]

SI.No.	Description	Unit	2- LaneLength	Rate per lane per Km(INR)	Amount (INR)
1	NSV Survey	Lane km	80.2		
2	FWD Survey	Lane km	80.2		
3	MBIU Survey	Lane km	80.2		
4	Road signs inspection using Retro Reflectometer Survey	Lane km	80.2		
Total					
Amount in Words					

Appendix-IV OUTPUT FORMAT

OUTPUT FORMAT FROM NETWORK SURVEY VEHICLE AND FWD, MBIU & Road signs inspection using Retro Reflectometer TESTING

In addition to the reports being submitted one equipment-based inspection, the consultant shall submit electronically in excel(.xls) format certain key parameters to the client in the following format.

Most of Worksheets under Section 1 ('Road inventory data') and Section2 ('Road condition data') have been indicated. These are indicative may be changed by client. If modified, such modified worksheet shall be used for survey and uploading. However, latest Worksheet shall be updated from surveys carried out by the consultants under this contract.

The fields to be updated in respect of the work sheets are described below. Each description is followed by an example of data for a sample project.

Details of specifications of equipment to be mentioned.

SECTION1-ROADINVENTORYDATA

Road inventory data consists of parameters which provide basic information about roads such as pavement type, number of lanes, topography, etc. The road inventory data shall be used to update specific work sheets listed below

1.1 Location Reference Post (LRP) Master

The following table lists the fields which need to be populated for the 'LRP Master' attribute. The descriptions of the fields are given below.

Field		Description	Example
NH Number		New National Highway number	NH0065
LRPName		Name of location reference post (LRP)	Km stone 17
Chainage		Chainage of the survey point (in km)	17
Direction		Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Latitude		Latitude of survey point	9.98897
Longitude		Longitude of survey point	78.02671
Survey Date		Date of survey in the format <DD-MM-YY>	06-05-17
Old NH Number		Old National Highway number	NH0065
Section Code		Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)

A sample output is shown below for reference

NH Number	LRPName	Chainage	Direction	Latitude	Longitude	Altitude	Survey Date	Old NH Number	Section Code
NH0xxx	Road Start	1.230	Increasing	9.98897	78.02671	63.07767	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone 8	8.000	Increasing	9.98444	78.02934	68.60126	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone 8	8.030	Increasing	9.98341	78.03004	68.15520	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone	9.008	Increasing	9.98107	78.03078	65.17153	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone	12.012	Increasing	9.96328	78.04160	56.03436	23-12-15	NH0yyy	ABC-DEF
NH0xxx	Km Stone 17	17.085	Increasing	9.95385	78.05255	156.24748	23-12-15	NH0yyy	ABC-DEF

1.1 (a) Link master table for providing the details about the districts. [Without details of districts RAMS software does not accept data].

Field	Description	Example
NHNumber	New National Highway number	NH0008
Description	Name of Section	Baleecha Kaya
StartChainage	Chainage of the survey point (in km)	278000
EndChainage	Chainage of the survey point (in km)	287400
LinkLength		9400
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
StartPoint	Name of Start Point	Pratapnagar
EndPoint	Name of End Point	Baleecha
State	Name of state in which NH lies	Rajasthan
District	Name of district in which NH lies, if passing more than one district provide start-End Chainage and Latitude Longitude	Jaipur
EntrustedTo	NHAI/MoRTH/NH IDCL/BRO	NHAI
RO/CE Name		Jaipur
OldNHNumber	Old NH Number	8

NHNumber	Description	Start Chainage	End Chainage	LinkLength	Direction	StartPoint	EndPoint	State	District	EntrustedTo	ROName	OldNHNumber
NH00X	ABC-DEF	278000	287400	9400	Increasing	A	L	Rajasthan	Jaipur	NHAI	Jaipur	8
NH00X	DEF-GHI	113800	118500	4700	Increasing	B	M	Rajasthan	Dausa	NHAI	Jaipur	48
NH00X	KLM-PLM	249000	264080	15080	Increasing	C	N	Rajasthan	Pali	NHAI	Jaipur	48
NH00X	AWS-PMS	0	11200	11200	Increasing	D	O	Punjab	Faridkot	NHAI	Chandigarh	8
NH00X	ABC-DEF	0	104000	104000	Increasing	E	P	Maharashtra	Nagpur	NHAI	Nagpur	76
NH00X	DEF-GHI	287400	278000	9400	Decreasing	F	Q	Uttar Pradesh	Lucknow	NHAI	West UP	8
NH00X	KLM-PLM	118500	113800	4700	Decreasing	G	R	Uttar Pradesh	Varanasi	NHAI	East UP	48

NH00X X	AWS- PMS	264080	249000	15080	Decrea sing	H	S	Orrisa	Puri	NHAI	Bhubnes hwar	48
NH00X X	ABC- DEF	11200	0	11200	Decrea sing	I	T	Tamil Nadu	Madu rai	NHAI	Chennai	8
NH00X X	DEF- GHI	104000	0	10400 0	Decrea sing	J	U	Karnatak a	Belga m	NHAI	Banglore	76

1.1 (b) Details about RO/CE Office

Field	Description	Example
RegionalOffice	Name of RO Office	RO-Chandigarh
Description		
OfficerName	Name of Officer	Asdfghjkhg
MobileNumber	Mobile Number	9876543210
ContactNumber		
Address		
EmailId	Email id of office	abc@gmail.com
EntrustedTo	NHAI/MoRTH/NHIDCL/BRO	MoRTH

1.1 (c) Details about PIU/PMU/Division/

Field	Description	Example
PIU/PMU/Division/	Name of PIU/PMU/Division	PWD division Patiala
RegionalOffice	Name of RO Office	RO-Chandigarh
Description		
OfficerName	Name of Officer	Asdfghjkhg
MobileNumber	Mobile Number	9876543210
ContactNumber		
Address		
EmailId	Email id of office	abc@gmail.com
EntrustedTo	NHAI/MoRTH/NHIDCL/BRO	MoRTH

1.1 (d) Centreline GPS coordinates

Field	Description	
NHNumber	New National Highway number	NH0065
Description		
Chainage	Chainage of the survey point (in km)	17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671
Altitude	Altitude of survey point	223.79
Survey Date		
State		
District		
Entrusted To	MORTH/NHAI/NHIDCL/RO	

RO Name		
Old NH Number		

1.1 Carriageway Type

The following table lists the fields which need to be populated for the 'Carriageway Type' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Carriageway Type	Type of carriageway, classified into one of the below categories: Divided Undivided	Divided
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference

NH Number	Section	Start Chainage	End Chainage	Carriageway Type	Date of Survey	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.794	Undivided	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Undivided	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Undivided	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	2.810	4.335	Undivided	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Undivided	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Undivided	06-05-17	9.95385	78.05255

1.2 Road Type

The following table lists the fields which need to be populated for the 'Road Type' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VTJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500

End Chainage	Chainage of the end point (in km)	1.500
Road Type	Classification of road on basis of number of lanes <ul style="list-style-type: none"> • Single Lane • Two Lane • Intermediate Lane • Four Lane • Six Lane • Eight lane • Ten Lane 	Four Lane
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

INHNumber	Section	Start Chainage	End Chainage	RoadType	Date of Survey	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.794	Two Lane	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Two Lane	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Two Lane	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	2.810	4.335	Two Lane	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Two Lane	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Two Lane	06-05-17	9.95385	78.05255

1.3 Pavement Type

The following table lists the fields which need to be populated for the 'Pavement Type' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Pavement Type	Classification of pavement based on type of surface:	Asphalt
	<ul style="list-style-type: none"> • Asphalt • Cement concrete 	
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17

Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section	Start Chainage	End Chainage	Direction	Pavement Type	Date of Survey	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.804	Both	Asphalt	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.804	1.000	Both	Asphalt	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	1.172	Both	Asphalt	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.172	2.821	Both	Asphalt	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.821	4.350	Both	Asphalt	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	4.350	6.710	Both	Asphalt	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	6.710	12.925	Both	Asphalt	06-05-17	9.93102	78.05648

1.4 Pavement Width

The following table lists the fields which need to be populated for the 'Pavement Width' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Pavement Width	Width of the pavement in metres, classified into one of the below categories <ul style="list-style-type: none"> • $\geq 3.75\text{m}$ and $< 5.5\text{m}$ • $> 5.5\text{m}$ and $< 7\text{m}$ • $\geq 7\text{m}$ and $< 10.5\text{m}$ • $\geq 10.5\text{m}$ and $\leq 12.5\text{m}$ • $> 12.5\text{m}$ 	$> 7\text{m}$ and $< 10.5\text{m}$
Pavement Width Value	Width of the pavement in metres, rounded to two places after decimal	7.0

Field	Description	Example
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Pavement Width	Pavement Width Value	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.794	Increasing	7- 10.5 m	7.00	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Increasing	7-10.5m	7.00	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Increasing	7-10.5 m	7.00	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	0.794	0.000	Decreasing	7-10.5m	7.00	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	1.000	0.794	Decreasing	7- 10.5 m	7.00	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.810	1.000	Decreasing	7-10.5m	7.00	06-05-17	9.95385	78.05255

1.5 Shoulder Type

The following table lists the fields which need to be populated for the 'Shoulder Type' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Shoulder Type	Type of shoulder, classified into one of the below categories: None Paved Gravel Earth	Gravel
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897

Longitude	Longitude of survey point	78.02671
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A sample output is shown below for reference:

NH Number	Section Code	StartChainage	End Chainage	Direction	ShoulderType	SurveyDate	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.763	Increasing	No Shoulder	09-01-16	9.98897	78.02611
NH00xx	ABC-DEF	0.763	0.834	Increasing	Paved	09-01-16	9.98444	78.02934
NH00xx	ABC-DEF	0.763	0.834	Increasing	Gravel	09-01-16	9.98444	78.02934
NH00xx	ABC-DEF	0.834	1.254	Increasing	Earthen	09-01-16	9.98341	78.03004
NH00xx	ABC-DEF	1.254	2.945	Increasing	Gravel	05-01-16	9.98107	78.03078
NH00xx	ABC-DEF	2.945	4.327	Increasing	Gravel	05-01-16	9.96328	78.04160
NH00xx	ABC-DEF	4.327	4.405	Increasing	Gravel	05-01-16	9.95385	78.05255
NH00xx	ABC-DEF	4.405	6.844	Increasing	Gravel	05-01-16	9.93102	78.05648
NH00xx	ABC-DEF	6.844	9.359	Increasing	Gravel	05-01-16	9.91229	78.04961
NH00xx	ABC-DEF	9.359	12.966	Increasing	Gravel	05-01-16	9.89041	78.03458

1.6 Shoulder Width

The following table lists the fields for the 'Shoulder Width' attribute, which need to be populated. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Shoulder Width	Width of the shoulder in metres, classified into one of the below categories <ul style="list-style-type: none"> Noshoulder <1m >=1mand<=2m >2m 	< 1m
Shoulder Width Value	Width of the shoulder in metres, rounded to one place after decimal	0.5
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897

Longitude	Longitude of survey point	78.02671
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A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Shoulder Width	Shoulder Width Value	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.785	Increasing	No Shoulder	0.0	03-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.785	2.612	Increasing	No Shoulder	0.0	03-01-16	9.98444	78.029341
NH0xxx	ABC-DEF	2.612	3.170	Increasing	1-2111	2.0	03-01-16	9.98341	78.030041
NH0xxx	ABC-DEF	3.170	5.194	Increasing	1-2111	2.0	03-01-16	9.98107	78.030781
NH0xxx	ABC-DEF	5.194	6.793	Increasing	1-2111	2.0	03-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	6.793	11.404	Increasing	1-2111	2.0	03-01-16	9.95385	78.05255

1.7 Topography

The following table lists the fields which need to be populated for the 'Topography' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Topography	Topography of the road, classified in to one of the below categories Flat Rolling Hilly	Flat
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Topography	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.808	Flat	05-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.808	1.254	Rolling	05-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	1.254	2.828	Hilly	05-01-16	9.98341	78.03004
NH0xxx	ABC-DEF	2.828	4.363	Flat	05-01-16	9.98107	78.03078
NH0xxx	ABC-DEF	4.363	6.724	Flat	05-01-16	9.96328	78.04160
NH0xxx	ABC-DEFI	6.724	12.933	Flat	05-01-16	9.953851	78.05255

1.8 Cross Section

The following table lists the fields which need to be populated for the 'Cross Section' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Cross Section	Crosssectiontype,classifiedintooneofthebelow categories	Fill
Field	Description	Example
	Cut Fill Cut andFill Level	
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Chainage	End Chainage	Direction	CrossSection	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.822	Increasing	Level	03-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.822	2.642	Increasing	Level	03-01-16	9.98444	78.02934

NH0xxx	ABC-DEF	2.642	3.199	Increasing	Level	03-01-16	9.98341	78.03004
NH0xxx	ABC-DEF	3.199	5.360	Increasing	Level	03-01-16	9.98107	78.030781
NH0xxx	ABC-DEF	5.360	5.715	Increasing	Fill	03-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	5.715	6.941	Increasing	Level	03-01-16	9.95385	78.05255
NH0xxx	ABC-DEF	6.941	11.163	Increasing	Level	03-01-16	9.93102	78.05648

1.9 Drain Type

The following table lists the fields which need to be populated for the 'Drain Type' attribute. The descriptions of the fields are given:

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Drain Type	Type of drain, classified into one of the below categories Openunlinedrain Openlinedrain Coveredlinedrain Nodrain	Open lined drain
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	SectionCode	StartChainage	EndChainage	Direction	DrainType	SurveyDate	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	0.069	Increasing	Open Unlined Drain	09-01-16	9.98897	78.02671
NH0xxx	ABC-DEF	0.069	0.782	Increasing	Open Line Drain	09-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	0.288	0.000	Decreasin	Open Unlined Drain	09-01-16	9.98341	78.03004

NH0xxx	ABC-DEF	0.782	0.846	Increasing	Open Unlined Drain	09-01-16	9.98107	78.03078
NH0xxx	ABC-DEF	0.846	1.254	Increasing	Open Unlined Drain	09-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	1.254	2.265	Increasing	Open Unlined Drain	05-01-16	9.95385	78.05255
NH0xxx	ABC-DEF	1.929	0.288	Decreasing	Open Unlined Drain	09-01-16	9.93102	78.05648
NH0xxx	ABC-DEF	1.952	1.929	Decreasing	No Drain	09-01-16	9.91229	78.04961
NH0xxx	ABC-DEF	2.265	3.005	Increasing	Open Unlined Drain	05-01-16	9.89041	78.03458
NH0xxx	ABC-DEF	2.680	1.952	Decreasing	Open Unlined Drain	09-01-16	9.88489	78.02995
NH0xxx	ABC-DEF	3.005	4.424	Increasing	Open Unlined Drain	05-01-16	9.87474	78.02828
NH0xxx	ABC-DEF	3.109	2.680	Decreasing	Open Unlined Drain	09-01-16	9.87363	78.02744
NH0xxx	ABC-DEF	3.320	3.109	Decreasing	Covered Line Drain	09-01-16	9.84857	78.01535
NH0xxx	ABC-DEF	3.917	3.320	Decreasing	Open Unlined Drain	09-01-16	9.83764	78.00392
NH0xxx	ABC-DEF	4.424	4.601	Increasing	Open Unlined Drain	05-01-16	9.83711	77.98576
NH0xxx	ABC-DEF	4.601	5.693	Increasing	Open Unlined Drain	05-01-16	9.83386	77.97729

1.10 Median Opening

The following table lists the fields which need to be populated for the 'Median Opening' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Median Type	Type of median, classified into one of the below categories Raised; Depressed; Barrier; None.	Raised
Solar Blinker	Availability of Solar Blinker available at median opening location • Available and functional	available and functional

	<ul style="list-style-type: none"> not available available but not functional 	
Median Width	Width of the median in metres, rounded to one place after decimal	0.5
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumbe	Section Code	Start Chainage	End Chainage	irection	Median Type	Median Width	Survey Date	Latitude	Longitud
NH00xx	ABC-DEF	0.000	0.794	Both	Raised	0.5	05-01-	9.9889	78.02671
NH00xx	ABC-DEF	0.794	1.000	Both	Raised	0.5	05-01-	9.9844	78.02934
NH00xx	ABC-DEF	1.000	2.810	Both	No Median	0.0	05-01-	9.98341	78.0300
NH00xx	ABC-DEF	2.810	4.335	Both	Raised	1.5	05-01-	9.9810	78.03078
NH00xx	ABC-DEF	4.335	6.666	Both	No Median	0.0	05-01-	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Both	No Median	0.0	05-01-	9.95385	78.05255

1.11 Right Of Way

The following table lists the fields which need to be populated for the 'Right of Way' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Row Width	Width of Right of Way (in metres)	24
Remarks		
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17

Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	Section Code	Start Chainage	End Chainage	Direction	ROW Width	Remarks	Survey Date	Latitude	Longitude
NH0xxx	ABC-DEF	0.000	1.000	Increasing	28		05-05-15	9.98897	78.02671
NH0xxx	ABC-DEF	1.0000	0.000	Decreasing	24		05-05-15	9.98444	78.02934
NH0xxx	ABC-DEF	2.000	3.000	Increasing	30		05-05-15	9.98341	78.03004
NH0xxx	ABC-DEF	3.000	4.000	Increasing	26		05-05-15	9.98107	78.03078
NH0xxx	ABC-DEF	4.000	11.000	!Increasing	24		05-05-15	9.96328178	04160

1.12 Pavement composition (This data to be collected Manually)

The following table lists the fields which need to be populated for the 'Pavement composition' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VII (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Pavement Type	Type of pavement Asphalt Cementconcrete	Asphalt
Bituminous Surface Course Type	Type of bituminous surface course	BC
Bituminous Surface Course Thickness MM	Thickness of BSC layer in mm	40
BSC Construction Year	YearofconstructionofBSClayerinflexiblepavements	2015
Bituminous Base Course Type	Type of bituminous base course	DBM
Bituminous Base Course Thick-ness	Thickness of BBC layer in mm	100
BBC Construction Year	Year of construction of BBC layer in flexible pavements	2015
Granular Base Type	Type of granular base	WMM
Granular Base Thick-ness	Thickness of GB layer in mm	250

GB Construction Year	Year of construction of GB layer in flexible pavements	2015
Pavement Quality Concrete Type	Type of pavement quality concrete	PQC
Pavement Quality Concrete Thickness	Thickness of PQC layer in mm	300
PQC Construction Year	Year of construction of PQC layer in rigid pavements	2015
Dry Lean Concrete Thickness	Thickness of DLC layer in mm	100
Dry Lean MM Concrete Type	Type of dry lean concrete	DLC
DLC Construction Year	Year of construction of DLC layer in rigid pavements	2015
Granular Sub Base Type	Type of granular sub base	GSB
Granular Sub Base Thickness	Thickness of GSB layer in mm	200
GSB Construction Year	Year of construction of GSB layer	2014
Design CBR	Design CBR of the subgrade, expressed in %	5%
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH No.	Section Code	Station	Chainage	Direction	Pavement Type	Bituminous Surface Course Type	Bituminous Surface Course Thickness	BSC Construction Year	Bituminous Base Course Type	Bituminous Base Course Thickness	BBC Construction Year	Granular Base Type	Granular Base Thickness
NH 001	ABC	100	50	Both side	Asphalt	BC	40.0	2015	DBM	100	2015	WMM	250
NH 002	DEF	150	100	Both side	Asphalt	BC	40.0	2015	DBM	80	2015	WMM	250
NH 003	GHI	200	200	Both side	Asphalt	SDBC	25.0	2015	BM	115	2015	WMM	250
NH 004	JKL	250	220	Both side	Asphalt	BC	40.0	2015	DBM	100	2015	WMM	250
NH 005	MNO	300	300	Both side	Asphalt	SDBC	25.0	2015	BM	115	2015	WMM	250
NH 006	PQR	350	310	Both side	Asphalt	BC	40.0	2015	DBM	100	2015	WMM	250

(table continued...)

GB Construction Year	Pavement Quality Concrete Type	Pavement Quality Concrete Thickness	PQC Construction Year	Dry Lean Concrete Thickness	Dry Lean Concrete Type	DLC Construction Year	Granular Sub Base Type	Granular Sub Base Thickness	GSB Construction Year	Design CBR	Survey Date	Latitude	Longitude
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-17	9.99	78.03

											15		
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.98	78.03
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.98	78.03
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.98	78.03
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.96	78.04
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.95	78.05

1.13 Carriageway Furniture

The following table lists the fields which need to be populated for the 'Carriageway Furniture' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Field	Description	Example
Road Furniture Type	Road Furniture classified into one of the below categories: Crash barriers Signs StreetLights Kmstone Junctions Speed breakers Religious structures	Road sign
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	SectionCode	Chainage	Direction	EventType	SurveyDate	Latitude	Longitude
NH00xx	ABC-DEF	0.012	Increasing	Street Light Start	03-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.287	Increasing	Street LightEnd	03-01-16	9.98444	78.02934
NH00xx	ABC-DEF	2.491	Decreasing	Road Sign	03-01-16	9.98341	78.03004
NH00xx	ABC-DEF	2.708	Decreasing	Road Sign	03-01-16	9.98107	78.03078
NH00xx	ABC-DEF	3.496	Increasing	Road Sign	03-01-16	9.96328	78.04160
NH00xx	ABC-DEF	5.160	Increasing	Road Sign	03-01-16	9.95385	78.05255
NH00xx	ABC-DEF	5.356	Decreasing	Road Sign	03-01-16	9.93102	78.05648
NH00xx	ABC-DEF	8.402	Decreasing	Road Sign	03-01-16	9.91229	78.04961
NH00xx	ABC-DEF	10.966	Decreasing	Road Sign	03-01-16	9.89041	78.03458

1.14 Wayside Amenities

The following table lists the fields which need to be populated for the 'Wayside Amenities' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Wayside Amenity	Wayside amenities classified into one of the below categories: Busshelter; Restaurant/Motel; Toilet/Publicconvenience; RestRoomsforshortstay; TollPlaza; First aid/Medicalcentre; Religious Structures Tourist locations	Restaurant/Motel
	Telephonebooth; Petrolpump/minorrepairshop(optional); Charginng station PoliceStation; Temple/Mosque;	
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Data Source		

Remarks		
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Chainage	Direction	Wayside Amenity	Survey Date	Source	Remarks	Latitude	Longitude
NH00xx	ABC-DEF	0.650	Increasing	Restaurant/Motel	05-01-16			9.98897	78.02671
NH00xx	ABC-DEF	1.998	Increasing	Restaurant/Motel	05-01-16			9.98444	78.02934
NH00xx	ABC-DEF	5.524	Increasing	Petrol Pump	05-01-16			9.98341	78.03004
NH00xx	ABC-DEF	11.413	Increasing	Restaurant/Motel	05-01-16			9.98107	78.03078

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Structure	Structure Details classified into one of the below categories: Bridge Culverts; Grade Separator Elevated Road; Vehicle Under Pass Flyover ROB	Bridge
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Data Source		
Remarks		
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

NH Number	Section Code	Chainage	Direction	Structure	Survey Date	Data Source	Remarks	Latitude	Longitude
NH00xx	ABC-DEF	0.650	Increasing	Bridge	05-01-16	Survey		9.98897	78.02671

NH00xx	ABC-DEF	1.998	Increasing	Culvert	05-01-16			9.98444	78.02934
NH00xx	ABC-DEF	5.524	Increasing	ROB	05-01-16			9.98341	78.03004
NH00xx	ABC-DEF	11.413	Increasing	Flyover	05-01-16			9.98107	78.03078

1.15 Land Use

The following table lists the fields which need to be populated for the 'Land Use' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Land Use	Land use classified into one of the below categories: Residential; Commercial; Industrial; Agricultural; Waterbodies; Mixed.	Commercial
encroachment	<ul style="list-style-type: none"> Latitude of encroachment Longitude of encroachment Length under encroachment Details of nature of encroachment 	9.887 6.557 200m Un Authorised settlement
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Field	Description	Example
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Land Use	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.797	Increasing	Mixed	03-01-16	9.988971	78.02671
NH00xx	ABC-DEF	0.511	0	Decreasing	Mixed	03-01-16	9.984441	78.02934
NH00xx	ABC-DEF	0.797	2.699	Increasing	Mixed	03-01-16	9.98341	78.03004
NH00xx	ABC-DEF	0.835	0.511	Decreasing	Mixed	03-01-16	9.981071	78.03078
NH00xx	ABC-DEF	0.987	0.835	Decreasing	Mixed	03-01-16	9.96328	78.04160

NH00xx	ABC-DEF	1.641	0.987	Decreasing	Agriculture	03-01-16	9.95385	78.05255
NH00xx	ABC-DEF	2.081	1.641	Decreasing	Barren Land	03-01-16	9.93102	78.056481
NH00xx	ABC-DEF	2.378	2.081	Decreasing	Agriculture	03-01-16	9.91229	78.04961
NH00xx	ABC-DEF	2.458	2.378	Decreasing	Agriculture	03-01-16	9.89041	78.034581
NH00xx	ABC-DEF	2.699	3.234	Increasing	Agriculture	03-01-16	9.88489	78.02995

Note: Details to be captured for the following also:

- (i) Emergency Landing Strip
- (ii) Tunnels
- (iii) Helipads

SECTION 2 - ROAD CONDITION DATA

Road condition data consists of parameters which directly affect maintenance requirements of the road.

The road condition data shall be used to update specific worksheets, which are listed below.

2.1 Visual condition

The following table lists the fields which need to be populated for the 'Visual Condition' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1 st lane on the left from centerline of carriageway, L2 being 2 nd lane on the left from center line and so on	L1
Ravelling	Percent of pavement are affected by ravelling, which is converted to the following rating scale: 1-Very Poor (>30%) 2-Poor (11-30%) 3-Fair (6-10%) 4-Good (1-5%) 5-Very Good (0%)	2

Pot Holes	No. of potholes, which is converted to the following rating scale: 1-VeryPoor(>5) 2-Poor(3-5) 3-Fair(2) 4- Good(1) 5- VeryGood(0)	1
Edge Break	Pavement area containing edge breaks, which is converted to the following rating scale: 1-VeryPoor(>5m ²) 2-Poor(1-5m ²) 3-Fair(0.5-1 m ²) 4-Good(0-0.5m ²) 5-VeryGood(0m ²)	3
Cracking	Percent of pavement are affected by cracking, which is converted to the following rating scale: 1- Very Poor (>30%) 2-Poor (21-30%) 3- Fair (11-20%) 4- Good (5-10%) 5- Very Good (<5%)	3
Disintegration	Percent of pavement area affected by disintegration, which is converted to the following rating scale: 1- Very Poor (>50%) 2- Poor (20-50%) 3- Fair (10-20%) 4- Good (1-10%) 5- Very Good(<1 %)	2
Depression	Percent of pavement area affected by depression, which is converted to the following rating scale: 1- Very Poor (>5%) 2- Poor (3-5%) 3- Fair (1-2%) 4- Good (0-1%) 5- VeryGood(0)	5
Bleeding	Percent of pavement area affected by bleeding, which is converted to the following rating scale: 1- Very Poor(>50%) 2- Poor (20-50%) 3- Fair (10-20%) 4- Good (1-10%) 5- Very Good(<10%)	3

Patching	Percent of pavement area affected by patching, which is converted to the following rating scale: 1-Very Poor (>30%) 2-Poor (16-30%) 3-Fair (6-15%) 4-Good (2-5%) 5-Very Good (<2%)	4
Drain Condition	Condition of the drain, which is converted to the following rating scale: 1-Poor 2-Fair 3-Good	2
Shoulder Condition	Condition of the shoulder, which is converted to the following rating scale: 1-Poor 2-Fair 3-Good	Fair
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	Section	Start Chainage	End Chainage	Direction	Lane Number	Ravelling	PotHoles	EdgeBreak	Cracking
NH00xx	ABC-DEF	0.000	0.500	Increasing	LI	4	4	4	4
NH00xx	ABC-DEF	0.500	1.000	Increasing	LI	4	4	4	5
NH00xx	ABC-DEF	1.000	1.500	Increasing	LI	5	5	4	5
NH00xx	ABC-DEF	1.500	2.000	Increasing	LI	5	5	5	5
NH00xx	ABC-DEF	2.000	2.500	Increasing	LI	5	5	5	5
NH00xx	ABC-DEF	2.500	3.000	Increasing	LI	5	5	4	5
NH00xx	ABC-DEF	3.000	3.500	Increasing	LI	5	5	4	5
NH00xx	ABC-DEF	3.500	4.000	Increasing	LI	5	4	3	5
NHNumbe	Section	Start Chainage	End Chainage	Direction	Lane Number	Ravelling	PotHoles	EdgeBreak	Cracking
NH00xx	ABC-DEF	4.000	4.500	Inceasin	LI	4	4	4	5
NH00xx	ABC-DEF	4.500	5.000	Tncreasin	LI	5	5	4	5
NH00xx	ABC-DEF	5.000	5.500	Inceasin	LI	5	5	4	5

NH00xx	ABC-DEF	5.500	6.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	6.000	6.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	6.500	7.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	7.000	7.500	Increasing	L1	5	5	5	5
NH00xx	ABC-DEF	7.500	8.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	8.000	8.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	8.500	9.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	9.000	9.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	9.500	10.000	Increasing	L1	5	5	3	5

Disintegration	Depression	Bleeding	Patching	Drain Condition	ShoulderCondition	Date of Survey	Latitude	Longitude
4	4	4	4	2	2	06-05-17	9.98897	78.02671
4	4	4	4	2	2	06-05-17	9.98444	78.02934
5	5	5	4	2	2	06-05-17	9.98341	78.03004
5	5	5	5	2	2	06-05-17	9.98107	78.03078
5	5	5	5	2	2	06-05-17	9.96328	78.04160
5	5	5	5	2	2	06-05-17	9.95385	78.05255
5	5	5	5	2	3	06-05-17	9.93102	78.05648
4	4	4	4	2	3	06-05-17	9.91229	78.04961
4	4	4	4	2	2	06-05-17	9.89041	78.03458
5	5	5	5	2	2	06-05-17	9.88489	78.02995
5	5	5	5	2	2	06-05-17	9.87474	78.02828
5	5	5	5	2	2	06-05-17	9.87363	78.02744
5	5	5	5	2	2	06-05-17	9.84857	78.01535
5	5	5	5	2	2	06-05-17	9.83764	78.00392
5	5	5	5	2	2	06-05-17	9.83711	77.98576
5	5	5	5	1	2	06-05-17	9.83386	77.97729
5	5	5	5	2	2	06-05-17	9.81804	77.97875
5	5	5	5	2	2	06-05-17	9.77426	77.98129
5	4	4	4	2	2	06-05-17	9.73071	77.97999

5	5	5	3	2	2	06-05-17	9.68686	77.97017
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Pavement/Road Condition Distresses (for Cement Concrete Roads)

	Category	Measured Parameter	Interval	Rating	Rating
1	Cracking Single Cracks Intersecting with joint	W = width of crack L = length of crack d = depth of crack D = depth of slab	500 m	1 2 3 4 5	w = 1.5 - 3.0 mm w = 0.5 - 1.5 mm w = 0.2 - 0.5 mm w < 0.2 mm Nil
2	Single Transverse (or Diagonal) Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	500 m	1 2 3 4 5	w = 3.0 - 6.0 mm w = 0.2 - 0.5 mm w = 0.5 - 1.5 mm w < 0.2 mm Nil
3	Single Longitudinal Cracks Intersecting with one or more joint	W = width of crack L = length of crack d = depth of crack D = depth of slab	500 m	1 2 3 4 5	w = 6.0-12.0 mm w = 3.0 - 6.0 mm w = 0.5 -3.0 mm w < 0.2 mm Nil
4	multiple Crack intersecting with one or more joints or cracks	w = width of crack	500 m	1 2 3 4 5	w = 3.0 - 6.0 mm w = 0.5-3.0 mm w = 0.2 - 0.5 mm w < 0.2 mm Nil
5	Corner Break	W = width of crack W = width of crack	500 m	1 2 3 4 5	w > 1.5 mm; L > 0.6 m or three corners broken w < 1.5 mm; L < 0.6 m, two corners broken w < 1.5 mm; L < 0.6m Only one corner broken w < 0.5 mm; only 1 corner broken

	Category	Measured Parameter	Interval	Rating	Rating
					Nil
6	Punchout (Applicable to CRCP only)	w = width of crack L = length (m/m ²)	500 m	1 2 3 4 5	$w > 3$ mm, $L < 3$ m/m ² and deformation $w > 1.5$ mm and $L < 3$ m/m ² either $w > 0.5$ mm or $L < 3$ m/m ² $w < 0.5$ mm; $L < 3$ m/m ² Nil
7	Surface Defects Ravelling or Honey comb type surface	r = damaged surface / total surface of slab (%) d = maximum depth of damage	500 m	1 2 3 4 5	$r = 25 - 50$ % $r = 10 - 25$ % $r = 2 - 10$ % $r < 2$ % Nil
8	Scaling	r = damaged surface / total surface of slab (%)	500 m	1 2 3 4 5	$r = 20 - 30$ % $r = 10 - 20$ % $r = 2 - 10$ % $r < 2$ % Nil
10	Popout (Small Hole), Pothole Refer Para 8.4	n = number / m ² d = diameter maximum depth	500 m	1 2 3 4 5	$d = 100 - 300$ mm; $h < 100$ mm $n > 1$ per 5 m ² $d = 100 - 300$ mm; $h < 100$ mm $n < 1$ per 5 m ² $d = 50 - 100$ mm; $h > 50$ mm; $n < 1$ per 5 m ² $d = 50 - 100$ mm; $h < 50$ mm; $n < 1$ per 5 m ² $d < 50$ mm; $h < 25$ mm; $n < 1$ per 5 m ²
11	Joint Defects	Loss or damage L = Length as % of total Joint length	500 m	2 4 5	Notable, $L > 25$ % insufficient protection against ingress of water and trapping of incompressible material. Discernible, $L < 25$ % but of little immediate consequence with regard to ingress of water or trapping of incompressible material. Difficult to discern.
12	Spalling of joints	W = width on either side of the joint L = length of spalled portion (as % joint length)	500 m	2 3 4 5	$w = 40 - 80$ mm, $L > 25$ % $w = 20 - 40$ mm, $L > 25$ % $w = 10 - 20$ mm, $L < 25$ % $w < 10$ mm Nil
13	Faulting (or Stepping) or Cracks	f = difference of level	500 m	2 3	$f = 12 - 18$ mm $f = 6 - 12$ mm $f = 3 - 6$ mm

	Category	Measured Parameter	Interval	Rating	Rating
	joints			4 5	f<3 mm <1mm
14	Blowup or Buckling	h vertical displacement from normal profile	500m	1 2 3 4	h> 25 mm h=12-25mm h = 6 - 12 mm h<6mm
15	Depression	negative vertical displacement from normal profile. L = length	500m	1 2 3 4 5	> 50 mm or > 20 % joints = 30 - 50 mm = 15 - 30 mm, Nos.< 20 % joints = 5 - 15 mm <5mm
16	Heave	positive vertical displacement from normal profile. L = length	500m	1 2 3 4 5	= 30 - 50 mm = 15 - 30 mm, Nos.< 20 % joints = 5 - 15 mm <5mm
17	Bump	h vertical displacement from normal profile	500m	2 3 4 5	= 7 - 15 mm =4-7mm <4mm
18	Lane to shoulder Dropoff	f = difference of level	500m	1 2 3 4 5	f=50-75mm f= 25 - 50 mm f= 10 - 25 mm f=3-10mm il
19	Drainage	quantity of fines and water expelled through open joints and cracks nos / 100 m stretch	100m	2 3 4 5	appreciable / Frequent 10 - 25% appreciable / Frequent 10 - 25% slight/ occasional Nos. < 10% slight/ occasional Nos. < 10%
20	Ponding	ponding on slabs due to blockage of drains	500m	2 3 4 5	Blockages observed in drains, but water flowing Blockages observed in drains, but water flowing Not discernible problem Not discernible problem Not discernible problem

2.2 Roughness

The following table lists the fields which need to be populated for the 'Roughness' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Field	Description	Example
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Lwplri	International roughness index (IRI) of left wheel path measured from laser profilometer	2.33
Rwplri	International roughness index (IRI) of right wheel path measured from laser profilometer	1.97
Lanelri	Average of the International roughness index (TRI) of left and right wheel paths	2.15
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Lwplri	Rwplri	Lanelri	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.1	Increasing	LI	3.31	5.16	4.24	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.1	0.2	Increasing	LI	2.81	3.54	3.18	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	0.2	0.3	Increasing	LI	2.31	1.92	2.12	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	0.3	0.4	Increasing	LI	2.17	2.37	2.27	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	0.4	0.5	Increasing	LI	2.11	1.72	1.92	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	0.5	0.6	Increasing	LI	2.33	1.97	2.15	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	0.6	0.7	Increasing	LI	2.37	2.00	2.19	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	0.7	0.8	Increasing	LI	2.15	2.17	2.16	33	06-05-17	9.91229	78.04961

NH00xx	ABC-DEF	0.8	0.9	Increasing	L1	2.45	2.05	2.25	32	06-05-17	9.89041	78.03458
NH00xx	ABC-DEF	0.9	1.0	Increasing	L1	2.18	2.51	2.35	48	06-05-17	9.88489	78.029951

2.3 Rutting

The following table lists the fields which need to be populated for the 'Rutting' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	YD-VIJ (Hyderabad Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
Field	Description	Example
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Lane Number	Number of the lane: L1, L2, RI, R2, etc., L1 being 1 st lane on the left from centerline of carriageway, L2 being 2 nd lane on the left from center line and soon	L1
Rutting Left	Rut depth in mm, measured from left wheel path	20
Rutting Right	Rut depth in mm, measured from right wheel path	18
Rutting Avg	Average rut depth measured from left and right wheel	19
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Rutting Left	Rutting Right	Rutting Avg	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	15	14	15	20	06-05-17	9.98897	78.026711
NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	20	18	19	37	06-05-17	9.98444	78.029341
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	10	8	9	42	06-05-17	9.98341	78.030041
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	5	6	6	46	06-05-17	9.98107	78.030781
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	10	10	10	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	7	5	6	49	06-05-17	9.953851	78.05255

NH00xx	ABC-DEF	3.0	3.5	Increasing	LI	20	18	19	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	LI	5	5	5	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	LI	5	5	5	32	06-05-17	9.89041	78.03458

2.4 Texture Depth

The following table lists the fields which need to be populated for the 'Texture Depth' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
Field	Description	Example
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Lane Number	Number of the lane: LI, L2, R1, R2, etc., LI being 1 st lane on the left from centerline of carriageway, L2 being 2 nd lane on the left from centerline and so on	LI
Texture Left	Texture depth of pavement in mm, measured from left wheelpath	0.40
Texture Right	Texture depth of pavement in mm, measured from right wheelpath	0.30
Texture Average	Average texture depth measured from left and right wheel paths	0.35
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Texture Left	Texture Right	Texture Average	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	LI	0.40	0.30	0.35	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.5	1.0	Increasing	LI	0.60	0.50	0.55	37	06-05-17	9.98444	78.02934

DEF												
NHO0xx	ABC- DEF	1.0	1.5	Increasing	L1	0.80	0.90	0.85	42	06-05- 17	9.98341	78.03004
NHO0xx	ABC- DEF	1.5	2.0	Increasing	L1	0.40	0.40	0.4	46	06-05- 17	9.98107	78.03078
NHO0xx	ABC- DEF	2.0	2.5	Increasing	L1	0.30	0.30	0.3	42	06-05- 17	9.96328	78.04160
NHO0xx	ABC- DEF	2.5	3.0	Increasing	L1	0.70	0.60	0.65	49	06-05- 17	9.95385	78.05255
NHO0xx	ABC- DEF	3.0	3.5	Increasing	L1	0.40	0.50	0.45	42	06-05- 17	9.93102	78.05648
NHO0	ABC- DEF	3.5	4.5	Increasing	L1	0.90	0.80	0.85	33	06-05- 17	9.91229	78.04961
NHO0xx	ABC- DEF	4.5	5.0	Increasing	L1	0.40	0.30	0.35	32	06-05- 17	9.89041	78.03458

2.5 Skid Resistance (to be conducted at site locations specified by the client after NSV analysis)

The following table lists the fields which need to be populated for the 'Skid Resistance' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	YD-VIJ (Hyderabad Vijayawada)
Field	Description	Example
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1 st lane on the left from centerline of carriageway, L2 being 2 nd lane on the left from centerline and so on	L1
Skid Left	Skid resistance of pavement measured as skid number, measured from left wheel path	25
Skid Right	Skid resistance of pavement measured as skid number, measured from right wheel path	24
Skid Average	Average skid resistance measured from left and right wheel paths	24.5

Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Skid Left	Skid Right	Skid Average	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	25.0	24.0	24.5	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	23.0	23.0	23.0	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	23.0	24.0	23.5	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	22.0	22.0	22.0	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	20.0	21.0	20.5	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	24.0	24.0	24.0	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	3.0	3.5	Increasing	L1	28.0	28.0	28.0	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	L1	21.0	21.0	21.0	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	L1	25.0	24.0	24.5	32	06-05-17	9.89041	78.03458

2.6 Falling Weight Deflectometer(FWD) (to be conducted at site locations specified by the client after NSV analysis)

The following table lists the fields which need to be populated for the 'FWD' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Field	Description	Example
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Chainage	Chainage of survey point (in km)	0.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing

Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1 st lane on the left from centerline of carriageway, L2 being 2 nd lane on the left from centerline and so on	L1
Air Temperature	Air temperature recorded in °C	33
Surface Temperature	Temperature of the pavement surface, recorded in °C	39.3
Peak Load	Peak impulse load, measured in kN	45.7
Deflection0	Surface deflection at the test load center, measured in micron	246
Deflection 1	Surface deflection at location 1 from the test load center, measured in micron	110
Distance 1	Distance of location 1 from the test load center	300
Deflection2	Surface deflection at location 2 from the test load center, measured in micron	153
Distance2	Distance of location 2 from the test load center	600
Deflection3	Surface deflection at location 3 from the test load center, measured in micron	110
Distance3	Distance of location 3 from the test load center	900
Deflection4	Surface deflection at location 4 from the test load center, measured in micron	76
Distance4	Distance of location 4 from the test load center	1200
Deflections	Surface deflection at location 5 from the test load center, measured in micron	59
Distance5	Distance of location 5 from the test load center	1500
Deflection6	Surface deflection at location 6 from the test load center, measured in micron	44
Distance6	Distance of location 6 from the test load center	1800
Deflection?	Surface deflection at location 7 from the test load center, measured in micron	35
Distance?	Distance of location 7 from the test load center	2100
Deflections	Surface deflection at location 8 from the test load center, measured in micron	28
Distance8	Distance of location 8 from the test load center	2400
Elastic Modulus BituminousEI	Elastic modulus of bituminous layer, back calculated in MPa	3359
Elastic Modulus GranularE2	Elastic modulus of granular layer, backcalculated in MPa	396
Elastic Modulus SubGradeE3	Elastic modulus of subgrade, back calculated in MPa	90
Corrected Elastic Modulus BituminousEI	Corrected elastic modulus of bituminous layer in MPa	3424
Corrected Elastic Modulus GranularE2	Corrected elastic modulus of granular layer in MPa	300

Corrected Elastic Modulus SubGradeE3	Corrected elastic modulus of subgrade in MPa	69
Bituminous Layer	Thickness of bituminous layer in mm	105
Base Layer	Thickness of base layer in mm	230
GSB Layer	Thickness of GSB layer in mm	200
Subgrade CBR	CBR of subgrade	0.08
Bituminous Layer Coefficient A1	Layer coefficient of the bituminous layer	0.36
Base Layer Coefficient A2	Layer coefficient of the base layer	0.17
Granular Base Layer Coefficient A3	Layer coefficient of the GSB layer	0.17
Structural Number	Structural number of the pavement	3.86
Modified Structural Number	Modified structural number including contribution from subgrade	4.85
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Chainage	Direction	Lane Number	Air Temperature	Surface Temperature	Peak Load	Deflection 0	Deflection 1	Location 1	Deflection 2
:HOOx	ABC-DEFI	0.500	RHS	R2	32.6	43.7	45.7	333	188	300	243
:HOOx	ABC-DEFI	1.000	LHS	LI	29.9	32.6	45.4	317	163	300	217
OOx	ABC-DEFI	1.499	RHS	RI	33.0	39.3	45.7	246	110	300	153
:HOOx	ABC-DEFI	2.000	LHS	L2	28.7	32.4	46.0	293	130	300	187
:HOOx	ABC-DEFI	2.500	RHS	R2	33.7	45.8	45.3	429	232	300	316
:HOOx	ABC-DEFI	3.000	LHS	LI	29.0	33.0	45.7	343	204	300	252
NHOOxx	ABC-DEFI	13.500	RHS	RI	33.5	45.4		373	194	300	268
NHOOxx	ABC-DEFI	14.010	LHS	L2	28.9	33.5		348	201	300	254
NH0Oxx	ABC-DEFI	4.500	RHS	R2	33.3	40.3		393	241	300	301

Location 2	Deflection 3	Location 3	Deflection 4	Location 4	Deflection 5	Location 5	Deflection 6	Location 6	Deflection 7	Location 7	Deflection 8
600	180	900	128	1200	102	1500	75	1800	58	2100	42

600	158	900	104	1200	70	1500	48	1800	38	2100	28
600	110	900	76	1200	59	1500	44	1800	35	2100	28
600	126	900	81	1200	62	1500	44	1800	32	2100	23
600	227	900	152	1200	116	1500	86	1800	71	2100	58
600	196	900	144	1200	117	1500	85	1800	65	2100	48
600	187	900	118	1200	83	1500	47	1800	31	2100	22
600	198	900	135	1200	105	1500	64	1800	42	2100	26
600	231	900	162	1200	123	1500	82	1800	62	2100	46

Location	Elastic Modulus Bituminous E1	Elastic Modulus Granular E2	Elastic Modulus Subgrade E3	Corrected Elastic Modulus Bituminous E1	Corrected Elastic Modulus Granular E2	Corrected Elastic Modulus Subgrade E3	Bituminous Layer	Base Layer	Granular Subgrade	Subgrade	Subgrade
2400	6213	185	100	6447	135	78	105	230	200	0.08	
2400	5356	195	100	5295	143	78	105	230	200	0.08	
2400	3359	396	90	3424	300	69	105	230	200	0.08	
2400	4830	226	100	4770	169	78	105	230	200	0.08	
2400	4570	137	97	4781	93	75	105	230	200	0.08	
2400	8454	135	100	8374	91	78	105	230	200	0.08	
2400	4394	165	100	4590	117	78	105	230	200	0.08	
2400	7817	139	96	7762	95	74	105	230	200	0.08	
2400	7666	123	95	7847	81	73	105	230	200	0.08	

Bituminous Layer Coefficient A1	Base Layer Coefficient A2	Granular Base Layer Coefficient A3	Structural Number	Modified Structural Number	Survey Date	Latitude	Longitude
0.45	0.13	0.13	3.68	4.82	01-07-16	9.98897	78.026711
0.42	0.13	0.13	3.56	4.70	23-06-16	9.98444	18.029341
0.36	0.17	0.17	3.86	4.85	01-07-16	9.98341	78.030041
0.41	0.14	0.14	3.65	4.79	23-06-16	9.98107	78.030781
0.41	0.11	0.11	3.24	4.34	01-07-16	9.96328	78.041601
0.49	0.11	0.11	3.58	4.72	23-06-16	9.95385	78.052551
0.40	0.12	0.12	3.34	4.48	01-07-16	9.93102	78.056481
0.48	0.12	0.12	3.67	4.75	23-06-16	9.91229	78.049611
0.48	0.11	0.11	3.53	4.59	01-07-16	9.89041	78.03458

2.7 Falling Weight Deflectometer (FWD)Rigid (to be conducted at site locations specified by the client after NSV analysis)

The following table lists the fields which need to be populated for the 'FWD Rigid' attribute. The descriptions of the fields are given below.

Field		
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
I Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing(chainage) Decreasing(chainage)	Increasing
Lane Number	Number of the lane: LI, L2, RI, R2, etc.	L2
Air Temperature	Air temperature recorded in °C	30.1
Surface Temperature	Temperature of the pavement surface, recorded in °C	39.4
Peak Load	Peak impulse load, measured in kN	103.7
Deflection 1	Surface deflection at the test load center, measured in micron	140
Deflection2	Surface deflection at 300mm from the test load center, measured in micron	121
Deflection3	Surface deflection at 600mm from the test load center, measured in micron	108
Deflection4	Surface deflection at 900mm from the test load center, measured in micron	101
Concrete Slab Thickness	Thickness of concrete slab, measured in mm	300
Area of Deflection Basin	Area of deflection basin, calculated from measured deflections, in cm ²	761
Radius of Relative Stiffness	Radius of relative stiffness, calculated in mm	823
Normalized Deflection d 1	Normalized deflection at location 1, in mm	3.1
Normalized Deflection d 2	Normalized deflection at location 2, in mm	2.9
Normalized Deflection d 3	Normalized deflection at location 3, in mm	2.4
Normalized Deflection d 4	Normalized deflection at location 4, in mm	1.9
Modulus of Subgrade Reaction k	Modulus of subgrade reaction, measured in MPa/m	131
Elastic Modulus of Concrete Ee	Elastic modulus of concrete, calculated in MPa	26118
Cube Strength of Concrete fck	Cube strength of concrete, calculated in MPa	27
Flexural strength of concrete fmr	Flexural strength of concrete, calculated in MPa	3.7

Date Of Testing	Date of testing in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH No	Section Code	Chain - age	Direction	Lane No.	Air Temperature	Surface Temperature	Peak Load					
NH00xx	ABC-DEF	0.0	LHS	L2	29.0	34.9	104.1	167	143	130	119	300
NH00xx	ABC-DEF	0.5	RHS	R2	30.5	38.1	104.4	141	130	122	115	300
NH00xx	ABC-DEF	1.0	LHS	L1	30.0	35.6	105.2	147	111	100	91	300
NH00xx	ABC-DEF	1.5	RHS	R1	28.9	38.3	102.4	140	126	116	107	300
NH00xx	ABC-DEF	2.0	LHS	L2	30.1	39.4	103.7	140	121	108	101	300
NH00xx	ABC-DEF	2.5	RHS	R2	29.0	37.5	104.6	150	134	126	117	300
NH00xx	ABC-DEF	3.0	LHS	L1	30.6	38.9	102.7	124	109	104	92	300
NH00xx	ABC-DEF	3.5	RHS	R1	29.3	39.1	105.9	149	136	128	119	300
NH00xx	ABC-DEF	4.5	RHS	R2	30.3	41.0	104.9	138	127	121	114	300

Area of Deflection Basin	Radius of Relative Stiffness					Modulus of Subgrade Reaction		Cube Strength of Concrete	Flexural strength of concrete	Date Of Test	Latitude	Longitude
759	816	3	3	2	2	112	21590	19	3	25-06-16	9.98897	78.02671
821	1214	3	3	3	2	62	58161	135	8	28-06-16	9.98444	78.02934
684	580	3	3	2	1	246	12051	6	2	25-06-16	9.98341	78.03004
796	1014	3	3	3	2	87	39783	63	6	28-06-16	9.98107	78.03078
761	823	3	3	2	2	131	26118	27	4	25-06-16	9.96328	78.04160
800	1040	3	3	3	2	79	39908	64	6	28-06-16	9.95385	78.0525

										16		5
789	971	3	3	3	2	107	41290	68	6	25-06-16	9.93102	78.05648
814	1150	3	3	3	2	66	50086	100	7	28-06-16	9.91229	78.04961
826	1257	3	3	3	2	59	64082	164	9	28-06-16	9.89041	78.03458

1.2 OUTPUT FORMAT FROM Falling Weight Deflectometer

Road Condition Data

Road condition data consists of parameters which directly affect maintenance requirements of the road. These parameters are dynamic in nature, and therefore a survey to update this dataset shall be conducted annually for FWD testing and every six months as per Annexure IV for network survey vehicle testing. The first survey shall be conducted at the time of completion testing and the remaining surveys shall be conducted as per the defined frequency.

As an example, if majority of highway length (>50%) passes through a state, where defined survey months are May and November, if completion testing is conducted in April, then the first network survey shall be conducted in the month of April. This shall be considered as the network survey to be conducted in the month of May. The 2nd survey shall be conducted in the month of November, the 3rd survey shall be conducted in the month of May and so on. As regards FWD, the first test/survey shall be conducted at the time of completion in April. The 2nd test/survey shall be conducted in April of next year and so on.

The road condition data shall be used to update specific worksheets, which are listed below. Road Condition data to be also submitted mandatorily in excel formats as circulated by the RAMS Cell of NHA which is available in the RAMS Portal.

- Visual condition

The following table lists the fields which need to be populated for the 'Visual Condition' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2	L1

	being 2nd lane on the left from centerline and so on	
Ravelling	Percent of pavement area affected by ravelling, which is converted to the following rating scale: 1 - Very Poor (> 30%) 2 - Poor (11-30%) 3 - Fair (6-10%) 4 - Good (1-5%) 5 - Very Good (0%)	2
Pot Holes	No. of potholes, which is converted to the following rating scale: 1 - Very Poor (> 5) 2 - Poor (3-5) 3 - Fair (2) 4 - Good (1) 5 - Very Good (0)	1
Edge Break	Pavement area containing edge breaks, which is converted to the following rating scale: 1 - Very Poor (> 5m ²) 2 - Poor (1-5m ²) 3 - Fair (0.5-1m ²) 4 - Good (0-0.5m ²) 5 - Very Good (0m ²)	3
Cracking	Percent of pavement area affected by cracking, which is converted to the following rating scale: 1 - Very Poor (> 30%) 2 - Poor (21-30%) 3 - Fair (11-20%) 4 - Good (5-10%) 5 - Very Good (<5%)	3
Disintegration	Percent of pavement area affected by disintegration, which is converted to the following rating scale: 1 - Very Poor (> 50%) 2 - Poor (20-50%) 3 - Fair (10-20%) 4 - Good (1-10%) 5 - Very Good (<1%)	2
Depression	Percent of pavement area affected by depression, which is converted to the following rating scale: 1 - Very Poor (> 5%) 2 - Poor (3-5%) 3 - Fair (1-2%) 4 - Good (0-1%) 5 - Very Good (0)	5
Bleeding	Percent of pavement area affected by bleeding, which is converted to the following rating scale: 1 - Very Poor (> 50%) 2 - Poor (20-50%) 3 - Fair (10-20%) 4 - Good (1-10%) 5 - Very Good (<1%)	3
Patching	Percent of pavement area affected by patching, which is converted to the following rating scale: 1 - Very Poor (> 30%) 2 - Poor (16-30%) 3 - Fair (6-15%) 4 - Good (2-5%)	4

	5 - Very Good (<2%)	
Drain Condition	Condition of the drain, which is converted to the following rating scale: 1 - Poor 2 - Fair 3 - Good	2
Shoulder Condition	Condition of the shoulder, which is converted to the following rating scale: 1 - Poor 2 - Fair 3 - Good	Fair
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NHNumber	Section	Start Chainage	End Chainage	Direction	Lane Number	Ravelling	PotHoles	EdgeBreak	Cracking
NH00xx	ABC-DEF	0.000	0.500	Increasing	L1	4	4	4	4
NH00xx	ABC-DEF	0.500	1.000	Increasing	L1	4	4	4	5
NH00xx	ABC-DEF	1.000	1.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	1.500	2.000	Increasing	L1	5	5	5	5
NH00xx	ABC-DEF	2.000	2.500	Increasing	L1	5	5	5	5
NH00xx	ABC-DEF	2.500	3.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	3.000	3.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	3.500	4.000	Increasing	L1	5	4	3	5
NH00xx	ABC-DEF	4.000	4.500	Increasing	L1	4	4	4	5
NH00xx	ABC-DEF	4.500	5.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	5.000	5.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	5.500	6.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	6.000	6.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	6.500	7.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	7.000	7.500	Increasing	L1	5	5	5	5
NH00xx	ABC-DEF	7.500	8.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	8.000	8.500	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	8.500	9.000	Increasing	L1	5	5	4	5
NH00xx	ABC-DEF	9.000	9.500	Increasing	L1	5	5	4	5

NH00xx	ABC-DEF	9.500	10.000	Increasing	L1	5	5	3	5
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(table continued...)

Disintegration	Depression	Bleeding	Patching	Drain Condition	ShoulderCondition	Date of Survey	Latitude	Longitude
4	4	4	4	2	2	06-05-17	9.98897	78.02671
4	4	4	4	2	2	06-05-17	9.98444	78.02934
5	5	5	4	2	2	06-05-17	9.98341	78.03004
5	5	5	5	2	2	06-05-17	9.98107	78.03078
5	5	5	5	2	2	06-05-17	9.96328	78.04160
5	5	5	5	2	2	06-05-17	9.95385	78.05255
5	5	5	5	2	3	06-05-17	9.93102	78.05648
4	4	4	4	2	3	06-05-17	9.91229	78.04961
4	4	4	4	2	2	06-05-17	9.89041	78.03458
5	5	5	5	2	2	06-05-17	9.88489	78.02995
5	5	5	5	2	2	06-05-17	9.87474	78.02828
5	5	5	5	2	2	06-05-17	9.87363	78.02744
5	5	5	5	2	2	06-05-17	9.84857	78.01535
5	5	5	5	2	2	06-05-17	9.83764	78.00392
5	5	5	5	2	2	06-05-17	9.83711	77.98576
5	5	5	5	1	2	06-05-17	9.83386	77.97729
5	5	5	5	2	2	06-05-17	9.81804	77.97875
5	5	5	5	2	2	06-05-17	9.77426	77.98129
5	4	4	4	2	2	06-05-17	9.73071	77.97999
5	5	5	3	2	2	06-05-17	9.68686	77.97017

2.2 Roughness

The following table lists the fields which need to be populated for the 'Roughness' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500

Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
LwpIri	International roughness index (IRI) of left wheel path measured from laser profilometer	2.33
RwpIri	International roughness index (IRI) of right wheel path measured from laser profilometer	1.97
LaneIri	Average of the International roughness index (IRI) of left and right wheel paths	2.15
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	LwpIri	RwpIri	LaneIri	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.1	Increasing	L1	3.31	5.16	4.24	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.1	0.2	Increasing	L1	2.81	3.54	3.18	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	0.2	0.3	Increasing	L1	2.31	1.92	2.12	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	0.3	0.4	Increasing	L1	2.17	2.37	2.27	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	0.4	0.5	Increasing	L1	2.11	1.72	1.92	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	0.5	0.6	Increasing	L1	2.33	1.97	2.15	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	0.6	0.7	Increasing	L1	2.37	2.00	2.19	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	0.7	0.8	Increasing	L1	2.15	2.17	2.16	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	0.8	0.9	Increasing	L1	2.45	2.05	2.25	32	06-05-17	9.89041	78.03458
NH00xx	ABC-DEF	0.9	1.0	Increasing	L1	2.18	2.51	2.35	48	06-05-17	9.88489	78.02995

2.3 Rutting

The following table lists the fields which need to be populated for the 'Rutting' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Rutting Left	Rut depth in mm, measured from left wheel path	20

Rutting Right	Rut depth in mm, measured from left wheel path	18
Rutting Avg	Average rut depth measured from left and right wheel paths	19
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Rutting Left	Rutting Right	Rutting Avg	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	15	14	15	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	20	18	19	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	10	8	9	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	5	6	6	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	10	10	10	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	7	5	6	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	3.0	3.5	Increasing	L1	20	18	19	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	L1	5	5	5	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	L1	5	5	5	32	06-05-17	9.89041	78.03458

2.4 Texture Depth

The following table lists the fields which need to be populated for the 'Texture Depth' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Texture Left	Texture depth of pavement in mm, measured from left wheel path	0.40
Texture Right	Texture depth of pavement in mm, measured from left wheel path	0.30
Texture Average	Average texture depth measured from left and right wheel paths	0.35
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897

Longitude	Longitude of survey point	78.02671
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A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Texture Left	Texture Right	Texture Average	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	0.40	0.30	0.35	20	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	0.60	0.50	0.55	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	0.80	0.90	0.85	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	0.40	0.40	0.4	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	0.30	0.30	0.3	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	0.70	0.60	0.65	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	3.0	3.5	Increasing	L1	0.40	0.50	0.45	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	L1	0.90	0.80	0.85	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	L1	0.40	0.30	0.35	32	06-05-17	9.89041	78.03458

2.5 Skid Resistance

The following table lists the fields which need to be populated for the 'Skid Resistance' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Start Chainage	Chainage of the start point (in km)	0.500
End Chainage	Chainage of the end point (in km)	1.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Skid Left	Skid resistance of pavement measured as skid number, measured from left wheel path	25
Skid Right	Skid resistance of pavement measured as skid number, measured from left wheel path	24
Skid Average	Average skid resistance measured from left and right wheel paths	24.5
Speed	Speed of vehicle in km/h	42
Survey Date	Date of survey in the format <DD-MM-YYYY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	Lane Number	Skid Left	Skid Right	Skid Average	Speed	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.0	0.5	Increasing	L1	25.0	24.0	24.5	20	06-05-17	9.98897	78.02671

NH00xx	ABC-DEF	0.5	1.0	Increasing	L1	23.0	23.0	23.0	37	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.0	1.5	Increasing	L1	23.0	24.0	23.5	42	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	1.5	2.0	Increasing	L1	22.0	22.0	22.0	46	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	2.0	2.5	Increasing	L1	20.0	21.0	20.5	42	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	2.5	3.0	Increasing	L1	24.0	24.0	24.0	49	06-05-17	9.95385	78.05255
NH00xx	ABC-DEF	3.0	3.5	Increasing	L1	28.0	28.0	28.0	42	06-05-17	9.93102	78.05648
NH00xx	ABC-DEF	3.5	4.5	Increasing	L1	21.0	21.0	21.0	33	06-05-17	9.91229	78.04961
NH00xx	ABC-DEF	4.5	5.0	Increasing	L1	25.0	24.0	24.5	32	06-05-17	9.89041	78.03458

2.6 Falling Weight Deflectometer (FWD)

The following table lists the fields which need to be populated for the 'FWD' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Chainage	Chainage of survey point (in km)	0.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on	L1
Air Temperature	Air temperature recorded in °C	33
Surface Temperature	Temperature of the pavement surface, recorded in °C	39.3
Peak Load	Peak impulse load, measured in kN	45.7
Deflection0	Surface deflection at the test load center, measured in micron	246
Deflection1	Surface deflection at location 1 from the test load center, measured in micron	110
Distance1	Distance of location 1 from the test load center	300
Deflection2	Surface deflection at location 2 from the test load center, measured in micron	153
Distance2	Distance of location 2 from the test load center	600
Deflection3	Surface deflection at location 3 from the test load center, measured in micron	110
Distance3	Distance of location 3 from the test load center	900
Deflection4	Surface deflection at location 4 from the test load center, measured in micron	76
Distance4	Distance of location 4 from the test load center	1200
Deflection5	Surface deflection at location 5 from the test load center, measured in micron	59
Distance5	Distance of location 5 from the test load center	1500
Deflection6	Surface deflection at location 6 from the test load center, measured in micron	44
Distance6	Distance of location 6 from the test load center	1800

Deflection7	Surface deflection at location 7 from the test load center, measured in micron	35
Distance7	Distance of location 7 from the test load center	2100
Deflection8	Surface deflection at location 8 from the test load center, measured in micron	28
Distance8	Distance of location 8 from the test load center	2400
Elastic Modulus BituminousE1	Elastic modulus of bituminous layer, back calculated in MPa	3359
Elastic Modulus GranularE2	Elastic modulus of granular layer, backcalculated in MPa	396
Elastic Modulus SubGradeE3	Elastic modulus of subgrade, back calculated in MPa	90
Corrected Elastic Modulus BituminousE1	Corrected elastic modulus of bituminous layer in MPa	3424
Corrected Elastic Modulus GranularE2	Corrected elastic modulus of granular layer in MPa	300
CorrectedElasticModulusSubGradeE3	Corrected elastic modulus of subgrade in MPa	69
Bituminous Layer	Thickness of bituminous layer in mm	105
Base Layer	Thickness of base layer in mm	230
GSB Layer	Thickness of GSB layer in mm	200
Subgrade CBR	CBR of subgrade	0.08
BituminousLayerCoefficientA1	Layer coefficient of the bituminous layer	0.36
BaseLayerCoefficientA2	Layer coefficient of the base layer	0.17
GranularBaseLayerCoefficientA3	Layer coefficient of the GSB layer	0.17
Structural Number	Structural number of the pavement	3.86
Modified Structural Number	Modified structural number including contribution from subgrade	4.85
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH Number	Section Code	Chainage	Direction	Lane Number	Air Temperature	Surface Temperature	Peak Load	Deflection 0	Deflection 1	Location 1	Deflection 2
NH00xx	ABC-DEF	0.500	RHS	R2	32.6	43.7	45.7	333	188	300	243
NH00xx	ABC-DEF	1.000	LHS	L1	29.9	32.6	45.4	317	163	300	217
NH00xx	ABC-DEF	1.499	RHS	R1	33.0	39.3	45.7	246	110	300	153
NH00xx	ABC-DEF	2.000	LHS	L2	28.7	32.4	46.0	293	130	300	187
NH00xx	ABC-DEF	2.500	RHS	R2	33.7	45.8	45.3	429	232	300	316
NH00xx	ABC-DEF	3.000	LHS	L1	29.0	33.0	45.7	343	204	300	252
NH00xx	ABC-DEF	3.500	RHS	R1	33.5	45.4	44.5	373	194	300	268
NH00xx	ABC-DEF	4.010	LHS	L2	28.9	33.5	45.0	348	201	300	254
NH00xx	ABC-DEF	4.500	RHS	R2	33.3	40.3	46.0	393	241	300	301

(table continued...)

Location 2	Deflection 3	Location 3	Deflection 4	Location 4	Deflection 5	Location 5	Deflection 6	Location 6	Deflection 7	Location 7	Deflection 8
600	180	900	128	1200	102	1500	75	1800	58	2100	42
600	158	900	104	1200	70	1500	48	1800	38	2100	28
600	110	900	76	1200	59	1500	44	1800	35	2100	28
600	126	900	81	1200	62	1500	44	1800	32	2100	23
600	227	900	152	1200	116	1500	86	1800	71	2100	58
600	196	900	144	1200	117	1500	85	1800	65	2100	48
600	187	900	118	1200	83	1500	47	1800	31	2100	22
600	198	900	135	1200	105	1500	64	1800	42	2100	26
600	231	900	162	1200	123	1500	82	1800	62	2100	46

(table continued...)

Location 8	Elastic Modulus Bituminous E1	Elastic Modulus Granular E2	Elastic Modulus Subgrade E3	Corrected Elastic Modulus Bituminous E1	Corrected Elastic Modulus Granular E2	Corrected Elastic Modulus Subgrade E3	Bituminous Layer	Base Layer	GSBL	Subgrade CB R
2400	6213	185	100	6447	135	78	105	230	200	0.08
2400	5356	195	100	5295	143	78	105	230	200	0.08
2400	3359	396	90	3424	300	69	105	230	200	0.08
2400	4830	226	100	4770	169	78	105	230	200	0.08
2400	4570	137	97	4781	93	75	105	230	200	0.08
2400	8454	135	100	8374	91	78	105	230	200	0.08
2400	4394	165	100	4590	117	78	105	230	200	0.08
2400	7817	139	96	7762	95	74	105	230	200	0.08
2400	7666	123	95	7847	81	73	105	230	200	0.08

(table continued...)

Bituminous Layer Coefficient A1	Base Layer Coefficient A2	Granular Base Layer Coefficient A3	Structural Number	Modified Structural Number	Survey Date	Latitude	Longitude
0.45	0.13	0.13	3.68	4.82	01-07-16	9.98897	78.02671
0.42	0.13	0.13	3.56	4.70	23-06-16	9.98444	78.02934
0.36	0.17	0.17	3.86	4.85	01-07-16	9.98341	78.03004
0.41	0.14	0.14	3.65	4.79	23-06-16	9.98107	78.03078
0.41	0.11	0.11	3.24	4.34	01-07-16	9.96328	78.04160
0.49	0.11	0.11	3.58	4.72	23-06-16	9.95385	78.05255
0.40	0.12	0.12	3.34	4.48	01-07-16	9.93102	78.05648
0.48	0.12	0.12	3.67	4.75	23-06-16	9.91229	78.04961
0.48	0.11	0.11	3.53	4.59	01-07-16	9.89041	78.03458

2.7 Falling Weight Deflectometer (FWD) Rigid

The following table lists the fields which need to be populated for the 'FWD Rigid' attribute. The descriptions of the fields are given below.

Field	Description	Example
NH Number	New National Highway number	NH0065
Section Code	Code indicating starting and ending locations of section	HYD-VIJ (Hyderabad-Vijayawada)
Chainage	Chainage of the point (in km)	0.500
Direction	Direction of survey Increasing (chainage) Decreasing (chainage)	Increasing
Lane Number	Number of the lane: L1, L2, R1, R2, etc.	L2
Air Temperature	Air temperature recorded in °C	30.1
Surface Temperature	Temperature of the pavement surface, recorded in °C	39.4
Peak Load	Peak impulse load, measured in kN	103.7
Deflection1	Surface deflection at the test load center, measured in micron	140
Deflection2	Surface deflection at 300 mm from the test load center, measured in micron	121
Deflection3	Surface deflection at 600 mm from the test load center, measured in micron	108
Deflection4	Surface deflection at 900 mm from the test load center, measured in micron	101
Concrete Slab Thicknessh	Thickness of concrete slab, measured in mm	300
Area of Deflection Basin	Area of deflection basin, calculated from measured deflections, in cm ²	761
Radius of Relative Stiffness	Radius of relative stiffness, calculated in mm	823
NormalizedDeflectiond1	Normalized deflection at location 1, in mm	3.1
NormalizedDeflectiond2	Normalized deflection at location 2, in mm	2.9
NormalizedDeflectiond3	Normalized deflection at location 3, in mm	2.4
NormalizedDeflectiond4	Normalized deflection at location 4, in mm	1.9
Modulus of Subgrade Reaction k	Modulus of subgrade reaction, measured in MPa/m	131
Elastic Modulus of Concrete Ec	Elastic modulus of concrete, calculated in MPa	26118
Cube Strength of Concrete fck	Cube strength of concrete, calculated inMPa	27
Flexural strength of concrete fmr	Flexural strength of concrete, calculated in MPa	3.7
Date Of Testing	Date of testing in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	9.98897
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH No	Section Code	Chainage	Direction	Lane No.	Air Temperature	Surface Temperature	Peak Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Concrete Slab Thicknessh
NH00xx	ABC-DEF	0.0	LHS	L2	29.0	34.9	104.1	167	143	130	119	300
NH00xx	ABC-DEF	0.5	RHS	R2	30.5	38.1	104.4	141	130	122	115	300
NH00xx	ABC-DEF	1.0	LHS	L1	30.0	35.6	105.2	147	111	100	91	300
NH00xx	ABC-DEF	1.5	RHS	R1	28.9	38.3	102.4	140	126	116	107	300
NH00xx	ABC-	2.0	LHS	L2	30.1	39.4	103.	140	121	108	101	300

x	DEF						7					
NH00x x	ABC- DEF	2.5	RHS	R2	29.0	37.5	104. 6	150	134	126	117	300
NH00x x	ABC- DEF	3.0	LHS	L1	30.6	38.9	102. 7	124	109	104	92	300
NH00x x	ABC- DEF	3.5	RHS	R1	29.3	39.1	105. 9	149	136	128	119	300
NH00x x	ABC- DEF	4.5	RHS	R2	30.3	41.0	104. 9	138	127	121	114	300

(table continued...)

Area of Deflecti on Basin	Radius of RelativeStiff ness	Normali zed Deflectio n d1	Normali zed Deflectio n d2	Normali zed Deflectio n d3	Normali zed Deflectio n d4	Modul us of Subgra de Reacti on k	Elastic Modul us of Concr ete Ec	Cube Streng th of Concr ete fck	Flexur al streng th of concre te fmr	Date Of Testi ng	Latitu de	Longitu de
759	816	3	3	2	2	112	21590	19	3	25- 06- 16	9.988 97	78.026 71
821	1214	3	3	3	2	62	58161	135	8	28- 06- 16	9.984 44	78.029 34
684	580	3	3	2	1	246	12051	6	2	25- 06- 16	9.983 41	78.030 04
796	1014	3	3	3	2	87	39783	63	6	28- 06- 16	9.981 07	78.030 78
761	823	3	3	2	2	131	26118	27	4	25- 06- 16	9.963 28	78.041 60
800	1040	3	3	3	2	79	39908	64	6	28- 06- 16	9.953 85	78.052 55
789	971	3	3	3	2	107	41290	68	6	25- 06- 16	9.931 02	78.056 48
814	1150	3	3	3	2	66	50086	100	7	28- 06- 16	9.912 29	78.049 61
826	1257	3	3	3	2	59	64082	164	9	28- 06- 16	9.890 41	78.034 58

DRAFT CONTRACT AGREEMENT

Between

[Client]

And

M/s

For

Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura

(Details of Stretch)

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11. Deleted

III. SPECIAL CONDITIONS OF CONTRACT

JV. APPENDICES

Appendix A: Terms of reference containing, inter-alia, the Description of the Services and Reporting Requirements

Appendix B: Reporting requirement

Appendix C: Duties of the Client

Appendix D: Cost Estimate

Appendix E: Copy of letter of invitation

Appendix F: Copy of letter of acceptance

Appendix G: Format for Bank Guarantee for Performance Security for individual work

Appendix H: Response to Pre-bid Queries

CONTRACTFORCONSULTANTS'SERVICES

Engagement of consultant for Conducting the detailed survey using Road survey equipment's from Km 21.100 to Km 101.300 (Total length: 80.200 km) i.e., Kailashahar - Khowai section of NH-208 (Package-I, II, III, IV & V) in the state of Tripura

This CONTRACT (herein after called the "Contract") is made on the-----day of the month of---
-----2025, between, on the one hand, ([Client]), Tripura (here in after called the
"Client") and,

on the other hand, M/s (Hereinafter
called the "Consultants").

WHEREAS

- (A) The Client has requested the Consultants to provide certain consulting services as defined in the General Conditions attached to this Contract (hereinafter called the "Services");
- (B) the Consultants, having represented to the Client that they have the required professional skills, personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract;

NOW THEREFORE the parties here to here by agree as follows:

1The following documents attached here to shall be deemed to form an integral part of this Contract:

- (a) The General Conditions of Contract (here in after called "GC");
- (b) Appendix C:
- (c)

Appendix A:

Appendix B:

T The special condition of contract (herein after called" SC");

h The following Appendices:

e Terms of reference containing, inter-alia, the Description of the Services and Reporting Requirements

S Reporting requirement

p Duties of the Client

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Appendix D: Cost Estimate

Appendix E: Copy of letter of invitation

Appendix F: Copy of letter of acceptance

Appendix G: Copy of Bank Guarantee for Performance Security

Appendix-H: Response to the pre-bid queries

2. The mutual rights and obligations of the Client and the Consultants shall be as set forth in the Contract; in particular:

- (a) The Consultants shall carry out the Services in accordance with the provisions of the Contract; and
- (b) Client shall make payments to the Consultants in accordance with the provisions of the Contract.

IN WITNESS WHERE OF, the Parties here to have caused this Contract to be signed their respective names as of the day and year first above written.

FOR AND ON BEHALF OF

Witness

[Client]

1. Signature Name

2. Signature Name

FOR AND ON BEHALF OF

Witness

(Consultant)

1. Signature Name

2. Signature Name

GENERAL CONDITIONS OF CONTRACT

1. GENERAL PROVISIONS

1.1 Definitions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

- (a) "Applicable Law" means the laws and any other instruments having the force of law in the Government's country [or in such other country as may be specified in the Special Conditions of Contract (SC)], as they may be issued and in force from time to time.
- (b) "Contract" means the Contract signed by the Parties, to which these General Conditions of Contract are attached, together with all the documents listed in Clause 1 of such signed Contract;
- (c) "Effective Date" means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1;
- (d) Deleted
- (e) "GC" means these General Conditions of Contract;
- (f) "Government" means the Government of India;
- (g) "local currency" means the currency of the Government;
- (h) "Consultant" wherever mentioned in this Contract Agreement means the consultants for collection of Road inventory and Pavement condition data of National Highways and uploading on Road Asset Management System (RAMS)
- (i) Deleted
- (j) Deleted
- (k) "Party" means the Client or the Consultants, as the case may be, and Parties means both of them;
- (l) "Services" means the work to be performed by the Consultants pursuant to his contract, as described in Appendix A hereto. The scope of work will be strictly as given in various Clauses in TOR. The approach and methodology to be adopted by the Consultant for carrying out the assignment may be modified depending on the site requirements or after mutual discussions with Employer and its concerned Regional Officers, the EPC Contractor and the Authority Engineer. The work plan as indicated by the Consultant may be modified accordingly to the site requirements.
- (m) "SC" means the Special Conditions of Contract by which these General Conditions of Contract may be amended or supplemented;
- (n) Deleted
- (o) "Third Party" means any person or entity other than the Government, the Client, the Consultants or a Sub consultant.

1.2 Relation between the Parties

Nothing contained herein shall be construed as establishing a relation of master and servant or of agent and principal as between the Client and the Consultants. The Consultants, subject to this Contract, have complete charge of Personnel performing the Services and shall be fully responsible for the Services performed by them or on their behalf hereunder.

1.3 Governing Law and Jurisdiction

This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Laws of India and the Courts at Delhi shall have exclusive jurisdiction over matters arising out of or relating to this Agreement.

1.4 Language

This Contract has been executed in the language specified in the SC, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract.

1.5 Table of Contents and Headings

The table of contents, headings or sub-headings in this agreement are for convenience for reference only and shall not be used in, and shall not limit, alter or affect the construction and interpretation of this Contract.

1.6 Notices

1.6.1 Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, facsimile or e-mail to such Party at the address specified in the SC.

1.6.2 Notice will be deemed to be effective as specified in the SC.

1.6.3 A party may change its address for notice hereunder by giving the other Party notice of such change pursuant to the provisions listed in the SC with respect to Clause GC.6.2.

1.7 Location

The Services shall be performed at such locations as are specified in Letter of Acceptance (Appendix-G) hereto and, where the location of a particular task is not so specified, at such locations, whether in India or elsewhere, as the Client may approve.

1.8 Deleted

1.9 Authorized Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed, under this Contract by the Client or the Consultants may be taken or executed by the officials specified in the SC.

1.10 Taxes and Duties

Unless otherwise specified in the SC, the Consultants, shall pay such taxes, duties, fees and other impositions as may be levied under the Applicable Law. Goods & Service tax as applicable shall be paid to the Consultants while making payment for services rendered. The consultants shall then deposit the same with the tax authorities and provide a proof of having

done so within next 90 days in line with policy circulars issued by Employer.

2. COMMENCEMENT, COMPLETION, MODIFICATION AND
TERMINATION OF CONTRACT

2.1 Effectiveness of Contract

This Contract shall come into force and effect on the date (the "Effective Date") of the Client's notice to the Consultants instructing the Consultants to begin carrying out the Services. This notice shall confirm that the effectiveness conditions, if any, listed in the SC have been met.

2.2 Termination of Contract for Failure to Become Effective

If this Contract has not become effective within such time period after the date of the Contract signed by the Parties as shall be specified in the SC, either Party may, by not less than four (4) weeks' written notice to the other Party, declare this Contract to be null and void, and in the event of such a declaration by either Party, neither Party shall have any claim against the other Party with respect hereto.

2.3 Commencement of Services

The Consultants shall begin carrying out the Services at the end of such time period after the Effective Date as shall be specified in the SC.

2.4 Expiration of Contract

Unless terminated earlier pursuant to Clause GC 2.9 hereof, this Contract shall expire when services have been completed and all payments have been made at the end of such time period after the Effective Date as shall be specified in the SC.

2.5 Entire Agreement

This Contract contains all covenants, stipulations and provisions agreed by the Parties. No agent or representative of either Party has authority to make, and the Parties shall not be bound by or be liable for, any statement, representation, promise or agreement not set forth herein.

2.6 Modification

Modification of the terms and conditions of this Contract, including any modification of the scope of the Services, may only be made by written agreement between the Parties as the case may be, has been obtained. Pursuant to Clause GC 8.2 hereof, however, each Party shall give due consideration to any proposals for modification made by the other Party.

2.7 Force Majeure

2.7.1 Definition

- (a) For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party, and which makes a Party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather

conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.

- (b) Force Majeure shall not include (i) any event which is caused by the negligence or intentional action of a Party or such Party's Subconsultants or agents or employees, nor (ii) any event which a diligent Party could reasonably have been expected to both (A) take into account at the time of the conclusion of this Contract and (B) avoid or overcome in the carrying out of its obligations hereunder.
- (c) Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

2.7.2 No Breach of Contract

The failure of a Party to fulfill any of its obligations here under shall not be considered to be a breach of, or default under, this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due care and reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Contract.

2.7.3 Measures to be Taken

- (a) party affected by an event of Force Majeure shall take all reasonable measures to remove such Party's inability to fulfill its obligations hereunder with a minimum of delay.
- (b) A party affected by an event of Force Majeure shall notify the other Party of such event as soon as possible, and in any event not later than fourteen (14) days following the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give notice of the restoration of normal conditions as soon as possible.
- (c) The Parties shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

2.7.4 Extension of Time

Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

2.7.5 Payments

During the period of their inability to perform the Services as a result of an event of Force Majeure, the Consultants shall be entitled to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of the Services and in reactivating the Services after the end of such period.

2.7.6 Consultation

Not later than thirty (30) days after the Consultants, as the result of an event of Force Majeure, have become unable to perform a material portion of the Services, the Parties shall consult with each other with a view to agreeing on appropriate measures to be taken in the circumstances.

2.8 Suspension

Client may, by written notice of suspension to the Consultants, suspend all payments to the Consultants hereunder if the Consultants fail to perform any of their obligations under this Contract, including the carrying out of the Services, provided that such notice of suspension (i) shall specify the nature of the failure, and (ii) shall request the Consultants to remedy such failure within a period not exceeding thirty (30) days after receipt by the Consultants of such notice of suspension.

2.9 Termination

2.9.1 By the Client

The Client may, by not less than thirty (30) days' written notice of termination to the Consultants (except in the event listed in paragraph (f) below, for which there shall be a written notice of not less than sixty (60) days), such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (h) of this Clause 2.9.1, terminate this Contract:

- (a) if the Consultants fail to remedy a failure in the performance of their obligations under, as specified in a notice of suspension pursuant to Clause 2.8 hereinabove, within thirty (30) days of receipt of such notice of suspension or within such further period as the Client may have subsequently approved in writing;
- (b) if the Consultants become (or, if the Consultants consist of more than one entity, if any of their Members becomes) insolvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary;
- (c) if the Consultants fail to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause 8 hereof;
- (d) if the Consultants submit to the Client a statement which has a material effect on the rights, obligations or interests of the Client and which the Consultants know to be false;
- (e) if, as the result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or
- (f) if the Client, in its sole discretion and for any reason whatsoever, decides to terminate this Contract.
- (g) if the consultant, in the judgment of the Client has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. For the purpose of this clause:

"corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the selection process or in contract execution.

"fraudulent practice" means a misrepresentation of facts in order to influence a selection process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among consultants (prior to or after submission of proposals) designed to establish prices at artificial noncompetitive levels and to deprive the Borrower of the benefits of free and open competition.

- (h) if the concerned Regional Officer of MoRTH represents to Employer that the Consultant is not discharging his duties in a fair, efficient and diligent manner and if the dispute remains unresolved, Employer may terminate this contract.

2.9.2 By the Consultants

The Consultants may, by not less than thirty (30) day's written notice to the Client, such notice to be given after the occurrence of any of the events specified in paragraphs(a)through

(d)ofthisClause2.9.2, terminate this Contract:

- (a) If the Client fails to pay any money due to the Consultants pursuant to this contract and not subject to dispute pursuant to Clause 8 hereof within forty-five (45) days after receiving written notice from the Consultants that such payment is overdue;
- (b) if the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Consultants may have subsequently approved in writing) following the receipt by the Client of the Consultants 'notice specifying such breach;
- (c) if, as the result of Force Majeure, the Consultant are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or
- (d) if the Client fails to comply with any final decision reached as a result of arbitration pursuant to Clause 8 hereof.

2.9.3 Cessation of Rights and Obligations

Upon termination of this Contract pursuant to Clauses GC 2.2 or GC 2.9 hereof, or upon expiration of this Contract pursuant toClauseGC2.4 here of, all rights and obligations of the Parties hereunder shall cease, except:

- (i) such rights and obligations as may have accrued on the date of termination or expiration;
- (ii) the obligation of confidentiality set forth in Clause GC 3.3 hereof;
- (iii) the Consultants' obligation to permit inspection, copying and auditing of their accounts and records set forth in Clause GC 3.6 (ii) hereof; and
- (iv) any right which a Party may have under the Applicable Law

2.9.4 Cessation of Services

Upon termination of this Contract by notice of either Party to the other pursuant to Clauses 2.9.1 or 2.9.2 hereof, the Consultants shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum. With respect to documents prepared by the Consultants and equipment and materials furnished by the Client, the Consultants shall proceed as provided, respectively, by Clauses 3.9 or 3.10 hereof.

2.9.5 Payment upon Termination

Upon termination of this Contract pursuant to Clauses 2.9.1 or 2.9.2 hereof, the Client shall

make the following payments to the Consultants (after offsetting against these payments any amount that may be due from the Consultant to the Client):

- (i) Remuneration pursuant to Clause 6 hereof for Services satisfactorily performed prior to the effective date of termination.
- (ii) Reimbursable expenditures pursuant to Clause 6 hereof for expenditures actually incurred prior to the effective date of termination; and
- (iii) except in the case of termination pursuant to paragraphs (a) through(d) of Clause2.9.1 hereof, reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract including the cost of the return travel of the Consultants' personnel and their eligible dependents.

2.9.6 Disputes about Events of Termination

If either Party disputes whether an event specified in paragraphs (a) through (e) of Clause2.9.1 or in Clause 2.9.2 hereof has occurred, such Party may, within forty-five (45) days after receipt of notice of termination from the other Party, refer the matter to arbitration pursuant to Clause 9 hereof, and this Contract shall not be terminated on account of such event except in accordance with the terms of any resulting arbitral award.

3. OBLIGATIONSOFTHECONSULTANTS

3.1 General

3.1.1 Standard of Performance

The Consultants shall perform the Services and carry out their obligations hereunder with all due diligence, efficiency and economy, in accordance with generally accepted professional techniques and practices, and shall observe sound management practices, and employ appropriate advanced technology and safe and effective equipment, machinery, materials and methods. The Consultants shall always act, in respect of any matter relating to this Contract or to the Services, as faithful advisers to the Client, and shall at all times support and safeguard the Client's legitimate interests in any dealings with Sub consultants or Third Parties.

3.1.2 Law Governing Services

Consultants shall perform the Services in accordance with the Applicable Law and shall take all practicable steps to ensure that any Sub- consultants and or Associates, as well as the Personnel of the Consultants and any Sub-consultants and or Associates, comply with the Applicable Law. The Client shall advise the Consultants in writing of relevant local customs and the Consultants shall, after such notifications, respect such customs.

3.2 Conflict to interests

3.2.1 Consultants not to Benefit from Commissions, Discounts, etc.

The Remuneration of the Consultants pursuant to Clause GC6 hereof shall constitute the Consultants' sole remuneration in connection with this Contract or the Services and, subject to Clause GC3.2.1.1 hereof, the Consultants shall not accept for their own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations hereunder, and the Consultants shall use their best efforts to ensure that any Sub-consultants and or Associates, as well as the Personnel and agents of either of them, similarly shall not receive any such

additional remuneration.

3.2.1.1 If the Consultants, as part of the Services, have the responsibility of advising the Client on the procurement of goods, works or services, the Consultants shall comply with any applicable procurement guidelines of the Client (Employer) and or Associates Bank or of the Association, as the case maybe, and other funding agencies and shall at all times exercise such responsibility in the best interest of the Client. Any discounts or commissions obtained by the Consultants in the exercise of such procurement responsibility shall be for the account of the Client.

3.2.2 Consultants and Affiliates not to be otherwise interested in Project

The Consultants agree that, during the term of this Contract and after its termination, the Consultants and any entity affiliated with the Consultants, as well as any Subconsultant and any entity affiliated with such Subconsultant, shall be disqualified from providing goods, works or services (other than the Services and any continuation thereof) for any project resulting from or closely related to the Services.

3.2.3 Prohibition of Conflicting Activities

Neither the Consultants nor their Subconsultants nor the Personnel of either of them shall engage, either directly or indirectly, in any of the following activities:

- (a) during the term of this Contract, any business or professional activities in the Government's country which would conflict with the activities assigned to them under this Contract; or
- (b) after the termination of this Contract, such other activities as maybe specified in the SC.

3.3 Confidentiality

The Consultants, their Subconsultants and the Personnel of either of them shall not, either during the term or within two(2) years after the expiration of this Contract, disclose any proprietary or confidential information relation to the Project, the Services, this Contract or the Client's business or operations without the prior written consent of the.

3.4 Liability of the Consultants

Subject to additional provisions, if any, set forth in the SC, the Consultants' liability under this Contract shall be as provided by the Applicable Law.

3.5 Insurance to be taken out by the Consultants

The Consultants (i) shall take out and maintain, and shall cause any Subconsultants to take out and maintain, at their (or the Subconsultants', as the case may be) own cost but on terms and conditions approved by the Client, insurance against the risks, and for the coverage, as shall be specified in the Special Conditions (SC), and (ii) at the Client's request, shall provide evidence to the Client showing that such insurance has been taken out and maintained and that the current premiums therefore have been paid.

3.6 Accounting, Inspection and Auditing

The Consultants (i) shall keep accurate and systematic accounts and records in respect of the Services, hereunder, in accordance with internationally accepted accounting principles such as Generally Accepted Accounting Principles (GAAP) and in such form and detail as will

clearly identify all relevant time charges and cost, and the bases thereof (including such bases as may be specifically referred to in the SC) ; (ii) shall permit the Client or its designated representative periodically, and up to one year from the expiration or termination of this Contract, to inspect the same and make copies thereof as well as to have them audited by auditors appointed by the Client; and (iii) shall permit the client to inspect the Consultant's accounts and records relating to the performance of the Consultant and to have them audited by auditors appointed by the client.

3.7 Consultants' Actions requiring Client's prior Approval

The Consultants shall obtain the Client's prior approval in writing before entering into a subcontract for the performance of any part of the Services.

3.8 Reporting Obligations

The Consultants shall submit to the Client the reports and documents specified in Appendix A hereto, in the form, in the numbers and within the time periods set forth in the said Appendix.

3.9 Documents prepared by the Consultants to be the Property of the Client All reports and other documents prepared by the Consultants in performing the Services shall become and remain the property of the Client, and the Consultants shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Client, together with a detailed inventory thereof. The Consultants may retain a copy of such documents. Restrictions about the future use of these documents, shall be as specified in SC.

3.10 Equipment and Materials furnished by the Client

Equipment and materials made available to the Consultants by the Client, or purchased by the Consultants with funds provided by the Client, shall be the property of the Client and shall be marked accordingly. Upon termination or expiration of this Contract, the Consultants shall make available to the Client an inventory of such equipment and materials and shall dispose of such equipment and materials in accordance with the Client's instructions. While in possession of such equipment and materials, the Consultants, unless otherwise instructed by the Client in writing, shall insure them in an amount equal to their full replacement value.

4. CONSULTANTS' PERSONNEL

The Consultants shall employ and provide such qualified and experienced Personnel as are required to carry out the Services.

5. OBLIGATION OF THE CLIENT

5.1 Assistance and Exemptions unless otherwise specified in the SC, the Client shall use its best efforts to ensure that the Government shall:

- (a) provide the Consultants with work permits and such other documents as shall be necessary to enable the Consultants to perform the Services;
- (b) issue to officials, agents and representatives of the Government all such instructions as may be necessary or appropriate for the prompt and effective implementation of the Services
- (c) Provide to the Consultants any such other assistance as may be specified in the SC.

5.2 Access to Land

The Client warrants that the Consultants shall have, free of charge, unimpeded access to all land in the Government's country in respect of which access is required for the performance of the Services. The Client will be responsible for any damage to such land or any property thereon resulting from such access and will indemnify the Consultants and each of the Personnel in respect of liability for any such damage, unless such damage is caused by the default or negligence of the Consultants or the Personnel of them.

5.3 Change in the Applicable Law

If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost or reimbursable expenses incurred by the Consultants in performing the Services, then the remuneration and reimbursable expenses otherwise payable to the Consultants under this Contract shall be increased or decreased accordingly by agreement between the Parties hereto, and corresponding adjustments shall be made to the ceiling amounts specified in Clause 6.1 (b). For any increase or decrease of amount due to change in the Applicable law, a supplementary agreement between the parties shall be executed before making any such payments.

5.4 Services, Facilities and Property of the Client

The client shall make available to the Consultants and the Personnel, for the purposes of the Services and free of any charge, the services, facilities and property described in Appendix D at the times and in the manner specified in said Appendix D, provided that if such services, facilities and property shall not be made available to the Consultants as and when so specified, the Parties shall agree on (i) any time extension that may be appropriate to grant to the Consultants for the performance of the Services, (ii) the manner in which the Consultants shall procure any such services, facilities and property from other sources, and (iii) the additional payments, if any, to be made to the Consultants as a result thereof pursuant to Clause 6.1(c) hereinafter.

5.5 Payment

In consideration of the Services performed by the Consultants under this Contract, the Client shall make to the Consultants such payments and in such manner as is provided by Clause 6 of this Contract.

6. PAYMENT TO THE CONSULTANTS

6.1 Cost Estimates: Ceiling Amount

- (a) An abstract of the cost of the Services payable in local currency (Indian Rupees) is set forth in Appendix E.
- (b) Except as may be otherwise agreed under Clause 2.6 and subject to Clause 6.1(c), the payments under this Contract shall not exceed the ceiling specified in the SC. The Consultants shall notify the Client as soon as cumulative charges incurred for the Services have reached 80% of the ceiling.
- (c) Notwithstanding Clause 6.1 (b) hereof, if pursuant to Clause 5.4 hereof, the Parties shall agree that additional payments shall be made to the Consultants in order to cover any necessary additional expenditures not envisaged in the cost estimates referred to in Clause 6.1 (a) above, the ceiling set forth in Clause 6.1 (b) above shall be increased by the amount or amounts, as the case may be, of any such additional

payments.

6.2 Currency of Payment

The payment shall be made in Indian Rupees.

6.3 Milestone achievements and payment schedule

The Consultant will be paid consultancy fee as a percentage of the contract values as per the following milestone achievements and payment schedule given in the Draft Contract Agreement:

Milestone	Time of	Condition of Fulfillment	Payment Schedule
	Achievement (within.....of Agreement)		
0	15thDays	Demonstration of NSV, MBIU, Retro reflectometer and FWD Equipment with Competent Manpower for fulfillment of mentioned output	
1	6thMonth	Completion, submission & uploading of NSV, MBIU, Retro reflectometer and FWD for eligible length (1st Cycle)	Length of lane km X Rate Per lane per km
2	12thMonth	Completion, submission& uploading of NSV, MBIU, Retro reflectometer for eligible length (2nd Cycle)	Length of lane km X Rate Per lane per km
3	18th Month	Completion, submission & uploading of NSV, MBIU, Retro reflectometer and FWD for eligible length (3rd Cycle)	Length of lane km X Rate Per lane per km
4	24thMonth	Completion, submission & uploading of NSV, MBIU, Retro reflectometer for eligible length (4thCycle)	Length of lane km X Rate Per lane per km
5	30th Month	Completion, submission & uploading of NSV, MBIU, Retro reflectometer and FWD for eligible length (5thCycle)	Length of lane km X Rate Per lane per km
6	36thMonth	Completion, submission & uploading of NSV, MBIU, Retro reflectometer for eligible length (6th Cycle)	Length of lane km X Rate Per lane per km

6.4 Mode of Billing and Payment

(a) Billing and payments in respect of the Services shall be made as follows:-

Sl. No.	Activity	Payment %	Method of billing
1a	Conducting, submission & uploading Network Survey with NSV	60% of billed amount	On Completion of 1 cycle for Min. 50% of Notified length / Contract length.
1b	Acceptance of NSV data by RAMS Centralised Cell	40% of billed amount	
2a	Conducting, submission & uploading pavement condition survey with FWD	60% of billed amount	On completion of 1 Cycle for Min. 50% of Notified length / Contract length
2b	Acceptance of FWD data by RAMS Centralised cell	40% of billed amount	
3a	Conducting, submission & uploading pavement condition survey with MBIU	On completion of 1 Cycle for Min. 50% of Notified length / Contract length. 100% of billed amount	
4a	Conducting, submission & uploading pavement condition survey with Road signs inspection using Retro Reflectometer	On completion of 1 Cycle for Min. 50% of Notified length/Contract length. 100% of billed amount	

- (b) The Concerned Regional officer or his authorized representative shall ensure and certify at least 5% test check of all the data collected by the Consultant before recommending the payment to the Consultant.
- (c) Beginning 13th months from the bid due date, billing rates shall be increased to cover all items of contract @ 5% every 12 months. However, for evaluation and award of the Bid proposals, the quoted initial rate (as applicable for first 12 months from last date of submission of bid) shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates.
- (d) All payments shall be made in Indian Rupees and shall be subjected to applicable Indian laws withholding taxes if any.
- (e) All payments under this contract shall be made to the account of the consultants specified in SC.

7. Responsibility for Accuracy of Project Documents

7.1 General

The Consultant shall be responsible for accuracy of the data collected by him. He shall indemnify the Authority against any inaccuracy in the work which might surface during data application by client. The Consultant will also be responsible for correcting, at his own cost and risk the data deficiencies.

7.2 Retention Money

An amount equivalent to 5% of the contract value shall be retained at the end of the contract for accuracy of data and the same will be released after 3 years from completion of consultancy services. The retention money will however be released by the Client on substitution by Bank Guarantee of the same amount valid up to the period as above. Out of this 5%, 2.5% shall be in the form of Bank Guarantee and 2.5% shall be the amount retained from Consultancy fee payable to the Consultant.

7.3 Penalty

7.3.1 Penalty for Error/variation

For inaccuracies in survey/investigation work the penalties shall be imposed as per details given in Table below:

Item	Penalty (%age of contract value for the item concerned)
Data found to be varying by more than 25% on re survey data later date, unless there are justifiable reasons.	10%-20%

7.3.2 Penalty for delay

In case of delay in completion of services, a penalty equal to 0.01% of the contract price per day subject to a maximum of 1% of the contract value will be imposed. However, in case of delay due to reasons beyond the control of the consultant, suitable extension of time will be granted on case-to-case basis. Total amount of recovery delay penalties shall be limited to 4% of the Consultancy Fee.

7.3.3 Recovery of Penalty

Penalties shall be recovered from payments due/performance security/demand note.

- 7.3.4 [Client] is in process of evolving performance-based rating system for Survey Consultants. Performance of Consultants shall be monitored by [Client] and will be taken into account in technical evaluation of future projects. For this purpose, performance of consultant in the current project shall also be taken into account to create rating of consultant.

7.4 ACTION FOR DEFICIENCY IN SERVICES

7.4.1 Consultants liability towards the Client

Consultant shall be liable to indemnify the client for any direct loss or damage accrued or likely to accrue due to deficiency in service rendered by him.

7.4.2.1 Non Performing:

The firm shall be declared as non-performing in the case of major deficiencies in the surveys involving cost implications and adverse effect on reputation of [Client].

7.4.2.2 Debarring-

If the firm is declared as non-performing under clause 7.4.2.1, the firm will not be eligible for participating in future projects of the Ministry (including NHAI, NHIDCL, BRO, etc.) for a period of 5 years.

8. FAIRNESS AND GOOD FAITH

8.1 Good Faith

The Parties undertake to act in good faith with respect to each other's rights under this Contract and to adopt all reasonable measures to ensure the realization of the objectives of this Contract.

8.2 Operation of the Contract

The Parties recognize that it is impractical in this Contract to provide for every contingency which may arise during the life of the Contract, and the Parties hereby agree that it is their intention that this Contract shall operate fairly as between them, and without detriment to the interest of either of them, and that, if during the term of this Contract either Party believes that this Contract is operating unfairly, the Parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with Clause-9 hereof..

9. SETTLEMENT OF DISPUTES

9.1 Amicable Settlement

The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or the interpretation thereof.

9.2 Dispute Resolution

- 9.2.1 Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the "Dispute") shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure

set forth in Clause 9.3.

- 9.2.2 The Parties agree to use their best efforts for resolving all Disputes arising under or in respect of this Agreement promptly, equitably and in good faith, and further agree to provide each other with reasonable access during normal business hours to all non - privileged records, information and data pertaining to any dispute.

9.3 Conciliation

In the event of any Dispute between the Parties, either Party may call upon [Chairman of [Client]] and the Chairman of the Board of Directors of the Consultant or a substitute thereof for amicable settlement, and upon such reference, the said persons shall meet no later than 10 (ten) days from the date of reference to discuss and attempt to amicably resolve the Dispute. If such meeting does not take place within the 10 (ten) day period or the Dispute is not amicably settled within 15(fifteen) days of the meeting or the Dispute is not resolved as evidenced by the signing of written terms of settlement within 30 (thirty) days of the notice in writing referred to in Clause 9.2.1 or such longer period as may be mutually agreed by the Parties, either Party may refer the Dispute to arbitration in accordance with the Provisions of Clause 9.4.

9.4 Arbitration

- 9.4.1 Any Dispute which is not resolved amicably by conciliation, as provided in Clause 9.3, shall be finally decided by reference to arbitration by an Arbitral Tribunal appointed in accordance with Clause 9.4.2. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the "Rules"), or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996 as amended. The venue of such arbitration shall be***** and the language of arbitration proceedings shall be.

- 9.4.2 Each dispute submitted by a Party to arbitration shall be heard by a sole arbitrator to be appointed as per the procedure below

- a) Parties may agree to appoint a sole arbitrator or, failing agreement on the identity of such sole arbitrator within thirty(30) days after receipt by the other Party of the proposal of a name for such an appointment by the Party who initiated the proceedings, either Party may apply to the President, Indian Roads Congress, New Delhi for a list of not fewer than five nominees and, on receipt of such list, the Parties shall alternately strike names therefrom, and the last remaining nominee on the list shall be sole arbitrator for the matter in dispute. If the last remaining nominee has not been determined in this manner within sixty (60) days of the date of the list, the president, Indian Roads Congress, New Delhi, shall appoint, upon the request of either Party and from such list or otherwise, a sole arbitrator for the matter in dispute.

9.4.3 Substitute Arbitrator

If for any reason an arbitrator is unable to perform his function, a substitute shall be appointed in the same manner as the original arbitrator.

9.4.4 Qualifications of Arbitrator

The sole arbitrator selected pursuant to Clause 9.2.1 hereof shall be expert with extensive experience in relation to the matter in dispute. Preference will be given to the person having adequate experience in the Infrastructure Field/ Civil Engineering.

- 9.4.5 The Arbitrators shall make a reasoned¹⁴⁴ award (the "Award"). Any Award made in any

arbitration held pursuant to this Clause 9 shall be final and binding on the Parties as from the date it is made, and the Consultant and the Authority agree and undertake to carry out such Award without delay.

9.4.6 The Consultant and the Authority agree that an Award may be enforced against the Consultant and/or the Authority, as the case may be, and their respective assets wherever situated.

9.4.7 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder

9.4.8 Miscellaneous

In any arbitration proceeding here under:

- (a) Proceedings shall, unless otherwise agreed by the parties be held in Delhi.
- (b) The English language shall be the official language for all purposes;
- (c) The decision of sole arbitrator shall be final and binding and shall be enforceable in any court of competent jurisdiction, and the Parties hereby waive any objections to or claims of immunity in respect of such enforcement; and
- (d) The schedule of Expenses and Fee payable to the Arbitrator shall be/as per the Schedule IV of Arbitration & Conciliation Act, 1996 as amended.

In exceptional cases, such as cases involving major legal implications/wider ramifications/higher financial stakes etc. a special fee structure could be fixed in consultation with the Contractor/Supervision Consultants and with the specific approval of the [Client] before appointment of the Arbitrator,

10. Change of Scope

The change of Scope on account of variation of total length from the indicative length as given in Letter of Invitation of the RFP shall be dealt as follows

- i) During the course of consultancy indicative Length as given in the RFP by the client may change (Positive or Negative) due to certain reason like Notification of New NH and award of work on particular stretch. The claim of consultant will not be entertained by client for reduction in indicative length due to award of work on particular stretch etc. Further, Change of Scope for increase/decrease will be considered as per quoted price per lane per km only for NSV and FWD separately...

11. Deleted

SPECIAL CONDITIONS OF CONTRACT

Number of GC Clause

A. Amendments of, and Supplements to, Clauses in the General Conditions

1.1 (a) The words "in the Government's country "are amended to read "in INDIA"

1.4 The language is: English 1.6.1 The

addresses are:

For the Client: [Client], <Address>

Attention: [Client], <Address>

Extn.....; Fax: 011-.....

E-mail: <Email>

For the Consultants:

Attention: Name

Designation

Address

Tel: Fax: E-mail address

1.6.2 Notice will be deemed to be effective as follows:

- (a) In the case of personal delivery or registered mail, on delivery;
- (b) In the case of facsimiles, 24 hours following confirmed transmission.
- (c) In case of E mail, 24 hours following confirmed transmission.
- (d) In the case of telexes, 24 hours following confirmed transmission;
- (e) In the case of telegrams, 24 hours following confirmed transmission; and

1.9 The Authorized Representatives are:

For the Client : (--)

Director, [Client] (--)

For the Consultant: Name

Designation

1.10 The Consultants and the personnel shall pay the taxes, duties, fees, levies and other impositions levied under the existing, amended or enacted laws (prevailing 7 days before the last date of submission of bids) during life of this contract and the Client shall perform such duties in regard to the deduction of such tax as may be lawfully imposed.

2.2 The effectiveness conditions are the following:

- a) The contract has been approved by [Client].
- b) The consultant will furnish within 15 days of the issue of Letter of Acceptance (LOA), an unconditional Bank Guarantee equivalent to 3.0% of the total contract value with validity period of [Contract period+12 months] from a Nationalized Bank, IDBI or ICICI/ICICI Bank/Foreign Bank/EXIM Bank / Any Scheduled Commercial Bank approved by RBI
- c)

- d) having a net worth of not less than Rs. 1000 crore as per latest Annual Report of the Bank. In the case of a Foreign Bank (issued by a Branch in India) the net worth in respect of Indian operations shall only be taken into account. In case of Foreign Bank, the BG issued by Foreign Bank should be counter guaranteed by any Nationalized Bank in India.
- 2.3 The time period shall be "months" or such other time period as the parties may agree in writing.
- 2.4 The time period shall be ".....days" or such other time period as the Parties may agree in writing.
- 2.5 The time period shall be "..... months or such other time period as the parties may agree in writing.

2.9.7 Foreclosure with mutual consent (New Clause)

2.9.7. Without prejudice to any provision of this Agreement, the Authority and Consultant may foreclose this Agreement by mutual consent in circumstances which does not constitute either party's default without any liability or consequential future liability for either party except as mentioned in this Clause.

2.9.7.2 Should a Party intend to foreclose this Agreement by mutual consent, the intending Party shall issue a notice to the other Party and upon issuance of such notice, the other Party may within 15 days from receipt of such notice either agree to such foreclosure or raise objection(s) to the same by intimating either of the two possible positions to the intending Party in writing. In case the contract is foreclosed on mutual consent, payment up to the completed stage will be paid as per Contract provision and remuneration beyond completed stage will be paid as per actual using the rates quoted in Consultants' financial proposal.

2.9.7.3 Any attempt or endeavor for foreclosure by mutual agreement shall be without prejudice to the rights and obligations of the Parties herein and the factum of such an attempt or exercise shall not stop either of the Parties from discharging their contractual obligations under this Agreement.

2.9.7.4 For the avoidance of doubt, it is clarified that such foreclosure will be without prejudice to the Consultant and shall not affect the Consultant in any way if it wishes to bid in future projects of the Authority.

3.4 Limitation of the Consultants' Liability towards the Client

- (a) Except in case of negligence or willful misconduct on the part of the Consultants or on the part of any person or firm acting on behalf of the Consultants in carrying out the Services, the Consultants, with respect to damage caused by the Consultants to the Client's property, shall not be liable to the Client:
 - (i) For any indirect or consequential loss or damage; and
 - (ii) for any direct loss or damage that exceeds (A) the total payments expected to be made to the Consultants hereunder, or (B) the proceeds the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of (A) or (B) is higher.
- (b) This limitation of liability shall not affect the Consultants' liability, if any, for damage to Third Parties caused by the Consultants or any person or firm acting on behalf of the Consultants in carrying out the Services.

3.5 The risks and the coverage shall be as follows:

- (a) Third Party motor vehicle liability insurance as required under Motor Vehicles Act, 1988 as amended in respect of motor vehicles operated in India by the Consultants or their Personnel or any Sub consultants or their Personnel for the period of consultancy.

- (b) Third Party liability insurance with a minimum coverage, for Rs.1.00 million for the period of consultancy.
 - (c) (i) The Consultant shall provide to [Client] Professional Liability Insurance (PLI) for a period of Five years beyond completion of Consultancy services or as per Applicable Law, whichever is higher.
 - (ii) The Consultant will maintain at its expense PLI including coverage for errors and omissions caused by Consultant's negligence in the performance of its duties under this agreement, (A) For the amount not exceeding total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder OR (B) the proceeds, the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of (A) or is higher.
 - (iii) The policy should be issued only from an Insurance Company operating in India.
 - (iv) The policy must clearly indicate the limit of indemnity in terms of "Any One Accident" (AOA) and "Aggregate limit on the policy" (AOP) and in no case should be for an amount less than stated in the contract.
 - (v) If the Consultant enters into an agreement with [Client] in a joint venture, the policy must be procured and provided to [Client] by the joint venture entity and not by the individual partners of the joint venture.
 - (vi) The contract may include a provision whereby the Consultant does not cancel the policy midterm without the consent of [Client]. The insurance company may provide an undertaking in this regard.
- (d) Employer's liability and workers' compensation insurance in respect of the Personnel of the Consultants and of any Subconsultant, in accordance with the relevant provisions of the Applicable Law, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate; and all insurances and policies should start from the date of commencement of services and remain effective as per relevant requirements of contract agreement.
- 3.9 The Consultants shall not use these documents for purposes unrelated to this Contract without the prior written approval of the Client.
- 6.1 (b) The ceiling amount in local currency is Rs (Excluding Goods & Services Tax)
- 6.3 No advance payment will be made.
- 6.3 (e) The account is:
- Account Number: _____
- IFSC Code _____
- 9.2 Disputes shall be settled by arbitration in accordance with the following provisions:
- 9.2.1 Selection of Arbitrators
- Each dispute submitted by a Party to arbitration shall be heard by a sole arbitrator to be appointed as per the procedure below
- a) Parties may agree to appoint a sole arbitrator or, failing agreement on the identity of such sole arbitrator within thirty (30) days after receipt by the other Party of the proposal of a name for such an appointment by the Party who initiated the proceedings, either Party may apply to the President Indian Roads Congress, New Delhi for a list of not fewer than five nominees and, on receipt of such list, the Parties shall alternately strike names therefrom, and the last remaining nominee on the list shall be sole arbitrator for the matter in dispute. If the last remaining nominee has not been determined in this manner within sixty (60) days of the date of the list, the president, Indian

Roads Congress, New Delhi, shall appoint, upon the request of either Party and from such list or otherwise, a sole arbitrator for the matter in dispute.

Appendix A

Terms of reference containing, inter-alia, the Description of the Services

Appendix B:

Reporting requirement

Appendix C
Duties of the Client

[List here under:

D-1 Services, facilities and property to be made available to the Consultants by the Client.

D-2 Counterpart personnel to be made available to the Consultants by the Client.]

Please refer TOR

Appendix D

Cost Estimate

List here under cost estimate in INR:

Appendix E:

Copy of letter of invitation

Appendix F:
Copy of letter of acceptance

Appendix-G

(E- PERFORMANCE BANK GUARANTEE)

To
Executive Director (P),
National Highways & Infrastructure Development Corporation Limited,
3rd Floor, UDD Building, Shakuntala Road extension,
near Rabindra Bhawan, Agartala,
Tripura-799001, e-mail: edp-agartala@nhidcl.com

WHEREAS _____ [Name and address of consultants] (hereinafter called "the consultants") has undertaken, m pursuant of Contract No. _____ dated _____ to provides the services on terms and conditions set forth in this Contract _____ [Name of contract and brief description of works] (hereinafter called the "the Contract").

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

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

NOW THEREOF where by affirm that we are the Guarantor and responsible to you, on behalf 2 _____ [in words], such sum of the Consultants up to a total of [amount of Guarantee] being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without avail or argument, any sum or sums within the limits of [amount of Guarantee] as aforesaid without your needing to prove or to Show grounds or reasons for your demand for the sum specified therein.

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

We further agree that no change or addition to or other modification of the terms of the Contractor of the services to be performed there under or of any of the Contract documents which may be made between you and the Consultants shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

The liability of the Bank under this Guarantee shall not be affected by any change in the constitution of the consultants or of the Bank.

This guarantee shall also be operatable at our Branch at Agartala, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

Notwithstanding anything contained herein before, our liability under this guarantee is restricted to Rs. _____ (Rs. _____) and the guarantee shall remain valid till _____. Unless a claim or a

demand in writing is made up on us on or before _____ all our liability under this guarantee shall cease.

Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below: -

S. No.	Particulars	Details
1	Name of Beneficiary	Executive Director (P), NHIDCL, AGARTALA
2	Beneficiary Bank Account No.	79901010002266
3	Beneficiary Bank Branch	IFSC CNRB0017990
4	Beneficiary Bank Branch Name	CANARA BANK, AGARTALA-II BARNCH
5	Beneficiary Bank Address	CANARA Bank, Agartala-II Branch, Durgabari Road, 1 st Floor above RMS Office, Agartala, Tripura-799001

This guarantee shall be valid for a period of..... months i.e. upto 12 months beyond the expiry of Contract of months.

Signature and Seal of the Guarantor _____ In presence

Name and Designation

1. _____

(Name, Signature & Occupation)

Name of the Bank _____

Address 2. _____

(Name & Occupation)

Date _____

Give names of all partners if the Consultants is a Joint Venture.

Appendix H:
Response to Pre- bid queries