



“Detailed survey of NH-208 using Road survey equipment’s in the State of Tripura for 80.2 Km”

Contract No. NHIDCL/RO-Agt/Roadsurvey/2023-24/422

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

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

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

December, 2023

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SECTION-I

**NOTICE INVITING
BID/TENDER
(E-TENDERING MODE
ONLY)**

National Highways and Infrastructure Corporation Ltd
Notice Inviting BID/TENDER
(National Competitive Bidding through e-Tendering mode only)

File No NHIDCL/RO-Agt/Roadsurvey/2023-24/422

Date: 30.12.2023

National Highways and Infrastructure Corporation Ltd. (hereinafter called “the Employer”) 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: -

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	4 years
		Pavement strength measurement using FWD			
		Bridge inspection using Mobile Bridge Inspection Unit			
		Road signs inspection using Retro Reflectometer			

Cost of Bid Documents (Non-refundable): Rs. 10,000/- + 18% GST (Non-Refundable). The bidder must make online payment of tender document fee i.e., Rs. 11,800/- , through the RTGS/NEFT/Demand Draft (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

However, Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or Start-ups as recognized by Department of Industrial Policy & Promotion (DIPP) are exempt from submitting the Tender Fee / cost of Tender document/Bid Security, on submission of documents to the extent as per the Government of India notifications in this regard.

2. Date of Publishing is from 30.12.2023.
3. The complete BID document can be viewed/downloaded from web portal www.eprocure.gov.in from 30.12.2023 - 20.01.2024 (up to 15.00 Hrs. IST).
4. Bidder must submit its financial and technical bid at <https://eprocure.gov.in> on or before 20.01.2024 (up to 15.00 Hrs. IST). Bids received online shall be opened on 22.01.2024 (at 1530 hours IST).
5. Bid documents can be seen at and downloaded from the website www.nhidcl.com and <https://eprocure.gov.in> Bid documents contain qualifying criteria for bidder, specification, bill of quantities, conditions and other details.
6. The details of cost of documents, Bid Security specified in the tender documents should submitted online (Scanned copies) and same shall be considered for evaluation otherwise bid will not be accepted.

Schedule Of Bidding
Process / Critical Date
Sheet

S. No	Description	Period
1.	Date of issue of NIT	30.12.2023
2.	Date of issue of Sale of Tender Documents	30.12.2023
3.	Date of receipt of pre-bid queries	08.01.2024
4.	Date of Pre-Bid meeting	08.01.2024
5.	Date of uploading of reply to the pre-bid queries	08.01.2024
6.	Date of close of sale of Tender Documents (through online)	20.01.2024 (1500 Hours)
7.	Last Date of submission of Tender/Bid (online)	20.01.2024 (1500 Hours)
8.	Date of Opening of Technical Bid	22.01.2024 (1530Hrs)
9.	Date of Uploading of list of Technically Qualified Applicants	To be intimated later
10.	Date of Opening of Financial Bids of Qualified Applicants	To be intimated later
11.	Date of issue of letter of award (LOA)	To be intimated later
12.	Validity of Bid	120 days
13.	Date of Signing of Agreement	Within 15 days of award of LOA

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 Tripura)
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.

National Highways and Infrastructure Corporation Ltd
Notice Inviting BID/TENDER
(National Competitive Bidding through e-Tendering mode only)

File No NHIDCL/RO-Agt/Roadsurvey/2023-24/422

Date: 30.12.2023

Letter of Invitation

Dear Sir,

Sub: Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km

1. NHIDCL invites online bids from Consultancy firms as per schedule given hereunder:

Name of the work: Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km

2 Brief Scope of Work

Any Guidelines and circular issued by MoRTH & Govt. of India shall be part of RFP.

2.1 The scope of services shall comprise (minimum parameter not limited to):

(i) Surface defects detection and roughness measurement using Network Survey Vehicle;

GPS coordinates, Pavement Type, Pavement Width, Terrain, Land use, Shoulder type and width, Drain Type and Width, Median Type and Width, Wayside Amenities, Crash barrier, Sign-ages etc. Roughness, Rutting, Distresses (cracking, Potholes, Bleeding, Surface failure etc.); (Note- All inventory items shall be recorded for each lane and Geo-tagged)

(Note- All inventory items shall be recorded both side of road and Geo-tagged with images)

(ii) Pavement strength measurement using FWD

- i. The Consultant carry out structural strength surveys for existing pavements using Falling Weight Deflectometer technique in accordance with the procedure given in IRC:115 (latest Revision may prevail) (Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique) and IRC: 117 (latest Revision may prevail) (Guidelines for the Structural Evaluation of Rigid Pavement by Falling Weight Deflectometer) The interval at which deflection measurements are to be taken up are as per IRC:115 (latest Revision may prevail) / IRC:117 (latest Revision may prevail). 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 (latest Revision may prevail). For rigid pavements, the deflection data may

be collected at interiors, corners, transverse joints and longitudinal joints in the outer lanes at intervals as specified in IRC:117(latest Revision may prevail).

- ii. The following are the set of deliverables which should be submitted after completion of inspection test as part of Monthly Progress Report

Data report covering following parameters

-
- Deflection Bowl (Transient Deflections at seven different points)
- CorrectedElasticModulusBituminousE1
- CorrectedElasticModulusGranularE2
- CorrectedElasticModulusSubgradeE3
- Subgrade CBR

Interpretation report covering summary of entire survey results and analysis of key parameters

iii. **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.

- i. The following criteria shall be met by the process of bridge condition assessment
 - Automatic folding and unfolding of platform
 - 90-degree rotation of platform
 - Sufficient safety features to be incorporated such as dedicated power supply, emergency cut off system, etc
 - Complete access to hidden parts of the bridge by the raters
- ii. Detailed bridge inspection report shall be submitted as per the Inspection Proforma provided in IRC-SP 35 (latest Revision may prevail)

(iv) Road signs inspection using Retro Reflectometer (as per IRC)

(i) The Consultant shall measure Coefficient of retro reflected luminance R_A (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

- Measurement of retro reflective signs shall be conducted in accordance with ASTM E1709 and ASTM E2540
- Measurement time after pressing trigger shall be less than or equal to 1 sec
- Observation angle adjustment from 0.2 degrees to 2.0 degrees
- Entrance angle adjustment from -45 degrees to +45 degrees Self-contained commercially available battery
- Inbuilt data storage of at least 2,000 measurements so that data transfer requirement is minimized while the survey is being conducted
- Interface for transferring data from device to Computer Built in GPS to capture GPS coordinates of road sign
- Range shall be at least 0-2000 cd/lx/m²

2.2 The minimum length of road for which indent can be issued shall be 50 Km.

2.3 Disclaimer- Quantities are indicative and may vary as per requirement at site.

3. Time for completion: The Consultant shall complete and submit the study/detailed report as per scope of work, as and when required by NHIDCL. The Indent for the roads under the jurisdiction of NHIDCL shall be placed as and when needed. **The contract shall be in force for a period of 4 years from signing of the contract agreement.**

4. Cost of Bid Document: Rs. 10,000/- + 18% GST (Non-Refundable). The bidder must make online payment of tender document fee i.e., Rs. 11,800/-, through the RTGS/NEFT/Demand Draft (in favour of Executive Director, Regional Office-Agartala, Tripura) in Establishment Account of ED (P), RO Agartala: -

However, Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or Start-ups as recognized by Department of Industrial Policy & Promotion (DIPP) are exempt from submitting the Tender Fee / cost of Tender document/Bid Security, on submission of documents to the extent as per the Government of India notifications in this regard.

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Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited Establishment Account
Beneficiary Bank Account No.	79901010002270
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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. Cost of e-tender processing fee: As per the CPPP norms. The Bidders are requested to visit the website <https://eprocure.gov.in>. The bid document can be downloaded from the <https://eprocure.gov.in>. Corrigendum, if any, would appear on this web site only and shall not be published elsewhere.

6. The intending bidder(s) must read the General Conditions of this contract carefully. He/ She should only submit his/her bid if eligible and in possession of all the documents required.

7. Information and instructions for bidders posted on website shall form part of the bid document.

8. The bid document consisting of scope of work and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and can be downloaded from website <https://eprocure.gov.in> and can also be viewed at www.nhidcl.com.

9. The intending bidder(s) must have valid class-III Digital Signature Certificate to submit the bid.

10. Notwithstanding anything stated above, NHIDCL reserves the right to assess the capabilities and capacity of the bidder to perform the contract in the overall interest of NHIDCL.

11. The bidder(s) is/are required to quote strictly as per the terms and conditions, given in the tender documents and not to stipulate any deviations.

12. NHIDCL reserves the right to reject any or all tenders or cancel/withdraw the invitation for bids without assigning any reason whatsoever and in such case no bidder/intending bidder shall have any claim arising out of such action.

13. Deleted.

14. Set of Tender Documents:

The following documents will constitute the set of tender documents:

- a. Notice inviting e-Tender
- b. RFP

- c. Technical Proposal.
- d. Financial Proposal.
- e. Bid securing declaration
- f. Demand Draft for cost of documents
- g. Written Power of Attorney of the signatory (whose digital signature certificate is used during e-tender submission) of the bidder to commit the bid
- h. An affidavit on a Stamp Paper, duly attested from the Notary Public, that the information furnished with the bid documents is correct in all respects
- i. Undertaking for not blacklisted in NHIDCL, NHAI, MoRTH
- j. Corrigendum, if any
- k. Other documents, if any

15. Mode of Submission

The bid submitted online shall be considered for evaluation. However, the bidder must submit the Technical Bid in sealed envelope before signing of contract addressed to **Executive Director (P), Regional office, National Highway & Infrastructure Development Corporation, 3rd Floor UD Bhawan, Near Ravindra Bhawan, Sakuntala Road, Agartala, Tripura-799001**. The envelope shall contain the following documents:

- a. Proof of RTGS (Bank A/c 79901010002266)/Demand Draft of any Scheduled Bank towards cost of Bid Document/Bid security.
- b. Letter of Acceptance of tender conditions in the prescribed format as enclosed in the section IV of RFP.
- c. Power of Attorney
- d. Proof of average turnover of Rs. 2 Crore during past three years in the Infrastructure Consultancy Business/Services.

The technical of those bidders shall be evaluated, who's above said document would be found in order, as per RFP. The Financial bid of those bidders whose documents are found to be in order and who qualify in the technical evaluation shall be opened. The date of opening of Financial Bid shall be informed to the bidder on CPPP Portal.

The following documents are to be submitted online as Technical Bid.

- a. Scan Copy of proof of RTGS (Bank A/c 79901010002266 Demand Draft or Banker's Cheque of any Scheduled Bank towards cost of Bid Document/bid security.
- b. Scan Copy of Letter of Acceptance of tender conditions in the prescribed format as enclosed in the section IV of RFP.
- c. Scan Copy of Power of Attorney
- d. Proof of average turnover of Rs. 2 Crore during past three years in the Infrastructure Consultancy Business/Services.
- e. Scan Copy of Debarment/Enforcement (if any).
- f. Proof of experience
- g. Any other document

16. Before the last date and time of submission of bid as notified, the bidder can submit revised bid any number of times.

17. Only Financial bids having rate for Road survey equipment's (Surface defects detection and roughness measurement using Network Survey Vehicle, Pavement strength measurement using FWD, Bridge inspection using Mobile Bridge Inspection Unit & Road signs inspection using Retro Reflectometer) in the BOQ provided shall be considered for financial evaluation, otherwise the bid shall be deemed as financially non-responsive.

18. Requirement of suitable Key Personnel

Consultant shall engage required Personnel as per Standard Engineering Practice. The details of followings Key personnel shall be submitted.

S. No	Designation	Qualification & experience
1	Highway Engineer	B.Tech/BE in Civil with at-least 10 years experience
2	Survey Engineer	B.Tech/BE in Civil with at-least 5 years experience
3	Software specialist	B.Tech/BE/PG Diploma in IT with at-least 3 years experience

Section-II
INSTRUCTIONSTOBIDDERS

1. Proposal Evaluation will be done as given in Clause 16 under.
2. The bid for the works shall remain open for acceptance for a period of 120 days from the Last date of submission of bid including the extension given, if any. In case any bidder withdraws his/her bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to NHIDCL. Further the bidders shall not be allowed to participate in the re-bidding process, if any
3. The acceptance of any or all tender(s) will rest with the NHIDCL which does not bind itself to accept the lowest bid and reserves to itself the right to reject any or all of the tenders received without assigning any reason thereof.
4. On acceptance of tender, the name of the accredited representative(s) of the Consultant Firms who would be responsible for taking instructions from Engineer-in-charge / ED, NHIDCL or its authorized representative shall be intimated within 07 days of the issue of letter of award by NHIDCL.
5. Date of start of work shall be reckoned from the date of letter to proceed.
6. The award of consultancy work, execution and completion of work shall be governed by tender documents consisting of (but not limited to) Letter of Award /Letter of Indent, Price Bid, TOR, Conditions of Contract etc. The bidders shall be deemed to have gone through the various conditions while making/preparing their technical & financial proposals & submitting the Bid(s) including site conditions, topography of the land, drainage and accessibility etc. or any other condition which in the opinion of bidder will affect his/her price/rates before quoting their rates.
7. Any entity which has been barred by the MoRT&H, NHAI & NHIDCL from participating in any project, and the bar subsists as on the date of Application, would not be eligible to submit the BID
8. The Bidder should, in the last 3 (three) years, 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 Bidder, as the case may be, nor should have been expelled from any project or contract by any public entity nor should have had any contract terminated by any public entity for breach by such Bidder.
9. The Bidder shall provide details of all their on-going projects along with updated stage of litigation, if so, against the Authority / Governments.
10. The Bidder shall also provide details of updated on-going process of blacklisting if so, under any contract with Authority / Government.
11. The Authority reserves the right to reject an otherwise eligible bidder on the basis of the information. The decision of the Authority in this case shall be final.
12. **Introduction**

12.1. The Consultant firms are invited to submit Technical bid together with a Financial Bid. Indent for a certain road to be surveyed shall be issued as and when required by NHIDCL till the culmination of contract period of the firm.

12.2 Consultant firms should familiarize themselves with local conditions and take them into account while preparing their Proposals. To obtain first-hand information on the assignment and local conditions, Consultant firms may visit the site before submitting their proposal. Consultant firms or their authorized representatives should contact the following regarding site specific information and site visit enquiry.

Executive Director (P)

Regional Office-Agartala

National Highways & Infrastructure Development Corporation Limited.

(Ministry of Road Transports & Highways, Government of Tripura)

Regional Office, 3rd floor, UD bhawan, Near Ravindra bhawan, Sakuntala, Agartala, Tripura

Email: edp-agartala@nhidcl.com

13.1 deleted 13.2 deleted

13.3 (a) The NHIDCL will provide the inputs to the consultant firms, if available. However, NHIDCL does not assume any Responsibility for any loss or financial damages on account of use of such information by consultant & consultants are advised to collect their own information for preparation, submission of bids & execution of services after award of work.

(b) The Consultant firms shall be responsible for obtaining licenses and permits to carry out the services.

13. 4 Consultant firms shall bear all costs associated with the preparation and submission of their proposals and contract negotiation, site visits etc.

13.5 The NHIDCL is not bound to accept any proposal and reserves the right to annul the selection process at any time prior to Contract award, without thereby incurring any liability to the Consultant firms.

14. Confidentiality

Information relating to the examination, clarification, evaluation and recommendation for the short-listed Bidders would not be disclosed to any person not officially concerned with the process. NHIDCL would treat all information submitted as part of the Proposal in confidence and will ensure that all who have access to such material treat it in confidence. NHIDCL would not divulge any such information unless ordered to do so by any Government authority that has the power under law to require its disclosure

15. Clarifications by Bidders

To assist in the process of evaluation of Proposals the Bidder should provide required clarifications. The request for such clarification or substantiation and the response shall be in writing, e-mail or by facsimile. No material change in the substance of the Proposal would be permitted by way of such clarification/substantiation.

16. Criteria for evaluation

Technical

- i. The bidder should have done similar individual work of at-least 200 km on an NH/ SH in last 3 years each for each technology (NSV, FWD, MBIU and Retro Reflectometer). 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.
- ii. 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.

Financial

- i. The Average financial turnover of last 3 years should be more than Rs. 2 Crore (experience certificate of bids for an overall concessionaire/contract shall not be considered)

17 Bid Evaluation:

- i. The Technical Bid of the Proposal would first be checked for eligibility in terms of the requirements stipulated under section I and II.
- ii. In case the Technical Proposal is found fulfilling the above qualification criteria, the financial proposal of all such technically qualified bidders shall be opened.
- iii. NHIDCL reserves the right to reject the Proposal of a Bidder without opening the Financial Bid if, in its opinion, the contents of the Technical Proposal do not fulfill the requirements of this RFP.
- iv. 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 L-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 L-1 bidder.

17.1 Criteria for award of work.

- i **L1 bidder shall be awarded the work based on the lowest quote. .**
- ii If, due to any reason, L1 bidder expresses his inability to carry out the work at the cost quoted by him, the L2 bidder shall be eligible for the award of work at the rate quoted by L1 with condition as mentioned in 17 (iv) above. Further, If the L2 bidder refuses to work at the rate quoted by the L1 bidder, the bids shall be re invited.

18 Award of Contract

i. Declaration of Successful Bidder

Upon acceptance of the Proposal of the L-1 Bidder, NHIDCL shall declare the L-1 Bidder as the Successful Bidder.

ii. Notification/s

NHIDCL will notify the L-1 Bidder by e-mail or/and by a Letter of Acceptance (LOA) that it's Proposal has been accepted.

iii. NHIDCL's Right to Accept or Reject Proposal

1. NHIDCL reserves the right to accept or reject any or all of the Proposals without assigning any reason and to take any measure as it may deem fit, including annulment of the bidding process, at any time prior to award of Contract, without liability or any obligation for such acceptance, rejection or annulment.
 2. NHIDCL reserves the right to invite revised Proposals from Bidders with or without amendment of the RFP at any stage, without liability or any obligation for such invitation and without assigning any reason.
 3. NHIDCL reserves the right to reject any Proposal if at any time:
 - a. A material misrepresentation made at any stage in the bidding process is uncovered;
- Or
- b. The Bidder does not respond promptly and thoroughly to requests for supplemental information required for the evaluation of the Proposal.

19 Letter of Award (LOA) and Execution of Contract Agreement

- i. The Successful Bidder shall execute the Contract Agreement within Two (2) weeks of the issue of LOA there after the Letter of Proceed shall be issued.
- ii. The Consultant shall fully mobilize at site within One (1) week from the date of issue of the Letter of Proceed.

20 Taxes

- a. All taxes, income tax and any other leviable tax (except GST) in connection with the execution of the contract levied by the statutory Authorities/State/Central Govt. of India/State Govt. or any local authorities on the consultant in accordance with the applicable law shall be borne by the consultant and are deemed to be included in their bid price. The tenderers shall note that the Tax Deduction at Source (TDS) as per applicable law shall be made from the payments due/made to the consultants which shall not be reimbursed.

- b. GST as applicable shall be reimbursed by NHIDCL on actual production of receipt of deposit duly authenticated by Chartered Accountant. However, consultant has to mention GST Number in the invoice, and amount of GST should be shown separately in the bill.
- c. Any enhancement of taxes/duties by the authorities/Government of India/State Government, during currency of this contract shall be borne by the Consultant only, which shall not be reimbursed by NHIDCL.

21 Performance Security/Guarantee

- i. For the due performance of the contract in accordance with the terms and conditions specified, the consultant shall on the day of, or before signing the contract which shall not be later than 10 days from the issue of the "Letter of Award" furnish E-performance security/Guarantee (on the format prescribed by NHIDCL enclosed in RFP) from a Nationalized/Scheduled Bank to the extent of 5% of the value of total consultancy fees of consultant. The Bank Guarantee shall remain valid till stipulated time for completion of work plus 180 days.
- ii. The E-Bank Guarantee shall be in favour of Executive Director (P), NHIDCL payable at Agartala. The E-Bank Guarantee should be (in the prescribed format of NHIDCL as per Section-6D) issued from any Nationalized Bank/Scheduled Bank.
- iii. It is expressly understood and agreed that the performance security is intended to secure the performance of entire contract. It is also expressly understood and agreed that the performance security is not to be construed to cover any damages detailed/ stipulated in various clauses in the Contract document.
- iv. The performance security will be discharged by NHIDCL and returned to the Consultancy firms after 6 months of successful completion of the services to NHIDCL.
- v. NHIDCL reserves the right of forfeiture of the performance guarantee in addition to other claims and penalties in the event of the consultant's failure to fulfill any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract.
- vi. Should the stipulated time for completion of work for whatever reason get extended, the consultant, shall at his own cost, get the validity period of Bank Guarantee in respect of performance security furnished by him extended and shall furnish the extended / revised Bank Guarantee to NHIDCL before the expiry date of the Bank Guarantee originally furnished.

22. Penalty

- i The penalty for delay in submission of report after issuance of indent shall be Rs. 1000 per day to a maximum of 5 % of the indent.
- ii In case of unsatisfactory report, the penalty would be encashment of performance security followed by termination of contract.

23 *Participation of JV/Association*

(i) Consultants may apply either as a sole firm or forming Joint Venture with other consultants along with associations. In case of Joint Venture, the maximum number of Joint Venture partners is limited to 2 (i.e. one lead + 1 JV partners). Formulation of more than one JV/association with different partners for the same work is not allowed and all such proposal involving the firms shall be treated as non-responsive. If the Consultant submits bids as sole applicant and also in JV/Association with another consultant, both bids shall be summarily rejected. No Consultant shall submit more than one bid.

(ii) Either lead or the other partner of the JV must fulfill 100% of requirements as mentioned in Para 16 of section II (Instruction to bidders).

(iii) The details of work as required by clause 16 of section II (Instruction to bidders) in the RFP shall also be furnished by the JV partners, separately.

SECTION III
QUALIFICATION INFORMATION

Deleted

SECTION IV

FORM OF BANK GUARANTEE, AGREEMENT & LOA

SECTION IV A

FORM OF TECHNICAL PROPOSAL

From: **(On the letter head of the company by the authorized signatory having power of attorney)**

To

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

Sub: **Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km.**

Sir,

This has reference to above referred tender. I/We are pleased to submit our proposal for the above work and I/We hereby unconditionally accept the tender conditions and tender documents in its entirety for the above work.

1. I/we are eligible to submit the bid for the subject tender and I/We are in possession of all the documents required.
2. I/We have viewed and read the terms and conditions of bid document carefully. I/We have uploaded the scan copy of the following documents forming part of the tender document:
 - a. Proof of RTGS (Bank A/c)/Demand Draft of any Scheduled Bank towards cost of Document Fee/Tender cost.
 - b. Form of technical proposal as per Section IV-A.
 - c. Power of Attorney as per Section IVG.
 - d. Experience Certificate.
 - e. Undertaking for not Black listed as per Section IV-E

Yours faithfully,

(Signature of the tenderer) With rubber stamp
Dated: _____

SECTION IV B

FORM OF FINANCIAL PROPOSAL

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

Sub: **Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km.**

Sir,

1. In accordance with the Conditions of Contract and Specifications furnished by NHIDCL for execution of the above-named works, we the undersigned offer to provide the Project Management Consultancy Services for the work of **Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km** for the amount quoted by us in the uploaded Financial Proposal in accordance with the conditions of the bid document.
2. We undertake, if our Bid is accepted, to commence the Works as soon as possible after the receipt of the notice to proceed and subsequent issuance of indent, and to complete the whole/part of the Works comprised in the Contract within the time stated in the Bid/indent issued to us.
3. We agree to abide by this Bid for 120 days and it shall remain binding upon us and may be accepted at any time before the expiration of that date.
4. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us.
5. We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this day of....., 2023

Signature..... in the capacity of

.....duly authorized to sign bids for and on behalf of

..... (in block letters or typed)

Contd...

Address:
.....

Witness:

Address:
.....

Occupation:

SECTION IVC

FORM OF AGREEMENT

Name of work:- Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km.

This CONTRACT (hereinafter called the "Contract") is made the _____ day of the month of _____ 2023 between, on the one hand, National Highways and Infrastructure Development Corporation Limited (NHIDCL) (hereinafter called the "employer") and, on the other hand, _____ Called the "Consultants") (hereinafter)

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 hereto hereby agree as follows:

1. The following documents attached hereto shall be deemed to form an integral part of this Contract:
 - a. The Agreement
 - b. Letter of Acceptance
 - c. Addenda to the RFP Document, if any
 - d. Form of Bid duly filled up
 - e. Information to consultancy firm
 - f. Personnel's Job Descriptions and Qualifications of the Supervising Team
 - g. The General Conditions of Contract
 - h. Financial Offer containing Billing Schedule.
 - i. Undertaking for not blacklisted
 - j. Notice Inviting Request For Proposal
 - k. Other Documents as agreed upon
2. The mutual rights and obligations of the Client and the Consultant shall be as set forth in the Contract; in particular:
 - a. The Consultant shall carry out the Services in accordance with the provisions of the Contract, and
 - b. The Client shall make payments to the Consultant in accordance with the provisions of the Contract.

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

**FOR AND ON BEHALF OF
OF
CLIENT
T**

BY _____

**Authorized Representative
Representative**

Witness 1:
.....

Witness 2:
.....

**FOR AND ON BEHALF

CONSULTAN**

BY

Authorized

Witness 1 :

Witness 2:

SECTION IV D
FORM OF BANK GUARANTEE FOR PERFORMANCE SECURITY

To

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

WHEREAS _____
[Name and address of consultants] (hereinafter called "the consultants") has undertaken, in pursuance of Contract No. _____ dated _____ to provide 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 we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Consultants up to a total of _____
[Amount of Guarantee] _____ [In words], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of Guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

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

We further agree that no change or addition to or other modification of the terms of the Contract or 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.

Notwithstanding anything contained herein before, our liability under this guarantee is restricted to (Rs. _____) and the guarantee shall remain valid till _____. Unless a claim or a demand in writing is made upon us on or before _____ all our liability under this guarantee shall cease.

The Bank Guarantee shall remain valid till stipulated time for completion of work or completion of civil works whichever comes later plus 180 days.

This guarantee shall also be operatable at our Branch located at, 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 there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

Signature and Seal of the Guarantor _____ In presence of

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.

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

Account Name : Executive Director (P), NHIDCL, AGARTALA
Bank Account No. : 79901010002266
Bank & Branch : Canara Bank, Agartala-II Branch, Durga
Bari Road, 1st floor above RMS office, Agartala, Tripura: 799001
IFSC Code : CNRB0017990

SECTION IV E
UNDERTAKING FOR NOT BLACKLISTED

(On Rs. 100 Stamp Paper duly attested by public Notary)

We do hereby undertake that we have not been blacklisted or debarred by MoRT&H, NHAI & NHIDCL and also that none of our work was rescinded by the client during last 5 years and never were we termed Non-Performer by Client due to unsatisfactory performance.

.....

STAMP & SIGNATURE OF AUTHORIZED SIGNATORY

SECTION IV G

FORMAT FOR POWER OF ATTORNEY FOR SIGNING OF PROPOSAL

(On Rs. 100/- Stamp paper duly attested by Public Notary) POWER OF ATTORNEY

Know all men by these presents, we_(name and address of the registered office) do hereby constitute, appoint and authorize Mr. / Ms._____ (name and residential address) who is presently employed with us and holding the position of_____ as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to the work of **Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km** including signing and submission of all documents and providing information/ responses to NHIDCL in all matters in connection with our Proposal. We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us. Dated this the _ day of _____ 2023

For_(Name, Designation and Address) Accepted

Signature) (Name, Title and Address of the Attorney)

Date: _____

Note:

1. The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants and when it is so required the same should be under common seal affixed in accordance with the required procedure.
2. Also, wherever required, the Bidder should submit for verification the extract of the charter documents and documents such as a resolution/power of attorney in favor of the Person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder.
3. In case the Proposal is signed by an authorized Director / Partner of the Applicant, a certified copy of the appropriate resolution/ document conveying such authority maybe enclosed in lieu of the Power of Attorney.

4. In case of partnership firm: name and address of principal office of the partnership firm to be provided.
5. The POA must be executed in the name of person whose Digital Signature has been used for uploading the Technical and Financial Proposal.

SECTION IV H

FORM OF LETTER OF ACCEPTANCE

No.

Dated

To

M/s.....

Sub: Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km

Sir,

Based on your bid submitted on in compliance of bidding document of NHIDCL for execution of the work of Detailed survey of Road using Network Survey Vehicle, Pavement strength measurement using FWD, Bridge inspection using Mobile Bridge Inspection Unit & Road signs inspection using Retro Reflectometer in the State of Tripura, it is hereby notified that your bid for a contract price of **Rs..... (Rupees in words...)** has been accepted for and on behalf of NHIDCL.

2. You are hereby requested to furnish Performance Security plus additional security in the form detailed in ITB for an amount equivalent to **Rs..... (Rupees in words...)** within 10 days as per provisions of ITB of the bid document and sign the contract agreement failing which the actions as stipulated in clause 33.3 of ITB shall be taken.

Thanking you,

Yours faithfully,

(.....)
Executive Director (P)

Bid Securing Declaration

I hereby submit a declaration that the bid submitted by the undersigned, on behalf of the bidder, (Name of the bidder), wither sole or in JV, shall not be withdrawn or modified during period of validity i.e. not less than 180 (one hundred eighty) days from the bid due date.

I, on behalf of the bidder, (Name of the bidder), also accept the fact that in case the bid is withdrawn or modified during the period of it 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 21 of the request of proposal (RFP), then (Name of bidder) will be suspended for participating in the tendering process for the work of MoRTH/NHAI/NHIDCL and work under other Centrally Sponsored Scheme, for a period of one year from the bid due date of this work.

(Signature of the Authorized Signatory)
(Official-Seal)

Affidavit

of Mr./Ms _____
(on Rs. 100/- non-judicial paper)

To
Executive Director
Address

Sir/Madam,

We, M/s _____ do hereby declare that the information
furnished by us with the bid documents is correct in all respects.

Signature of the Authorized Signatory
(Name of the Firm)

Solemnly affirmed at _____

On date _____

SECTION V

CONDITIONS OF CONTRACT

&

TERMS OF REFERENCE (TOR)

GENERAL CONDITIONS OF CONTRACT

1. Definitions

- i. "NHIDCL" means **the Executive Director, NHIDCL and his successors**
- ii. Engineer –in – charge / "Shall be Nominated by NHIDCL" shall mean the person from NHIDCL, who may appoint his/their authorized representative at site who will be administrating the contract, certifying payments, issuing and valuing variations to the contract, awarding extension of time and valuing compensation of events as per the directions of NHIDCL.
- iii. "Contract", "Consultancy Contract", "Consultancy Contract/Services" means the contract between NHIDCL and the Consultant consisting of this Contract and the documents listed therein.
- iv. "Consultant" means the Consultant who may be engaged for the survey consultancy work.
- v. "Department", "Employer" means NHIDCL or its authorized representative.

2. **Communications between parties**, which are referred to in the conditions, are effective only when in writing or by E-mail.

3. Time of Completion

- The period of service for shall be 4 years and which may be extended as per requirement by approval of competent authority.
- Extra time for any additional work/ works involved or delay due to any extreme weather conditions or delay due to any other reasons which are not in the control of contract only may be allowed for time extension.

4. Law Governing Contract

This Contract, its meaning and interpretation, and the relation between the parties shall be governed by the Applicable law.

5. Taxes and Duties

The consultant shall pay their own taxes of all kinds including corporate income taxes and personnel income taxes, duties, fees, levies and other impositions in connection with providing the services under this contract. The GST, as applicable, shall be paid on reimbursement basis.

6. Effectiveness of contract

This contract shall come into force and effect on the date (the "Effective Date") of the Client's notice of award of contract to the Consultants.

7. 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.

8. Liability to the Consultants

The consultants shall be liable to the Client for the performance of the services in accordance with the provisions of this contract and for any loss suffered by the Client as a result of a default of the Consultants in such performance, subject to the following limitations:

- a. The Consultant shall not be liable for any damage or injury caused by or arising out the act, neglect, default or omission of any persons other than the consultants, its sub- consultants or the Personnel of either of them, and
- b. The Consultant shall not be liable for any loss or damage caused by or arising out of circumstances over which the consultants had no control.

9. Indemnification of the Client by the Consultants

The Consultants shall keep the client, both during and after the term of this contract, fully and effectively indemnified all losses, damage, injuries, deaths, expenses, actions, proceedings, demands, costs and claims, including but not limited to, legal fees and expenses, suffered by the client or any Third Party, where such loss, damage, injury or death is the result of a wrongful action, negligence or breach of contract of the consultants or their sub-consultants, or the personnel or agent of either of them, including the use or violation of any copyright work or literary property or patented invention, article or appliance.

10. Indemnification of the Consultants by the Client

The Client shall keep the Consultants, both during and after the term of this Contract, fully and effectively indemnified all losses, damage, injuries, deaths, expenses, actions, proceedings, costs and claims, including but not limited to, legal fees and expenses, suffered by the Consultants or any Third Party where such loss, damage, injury or death is the result of a wrongful action, negligence or breach of contract of the Client or his employees or agents.

11. Payment to the consultant

Payment will be made on completion of each indent and subsequent submission of Invoices/Bills in duplicate to the engineers. Price of services as quoted by the consultant in the "Financial Proposal" which has been finally accepted by the employer shall be the basis of payment.

12. Reporting Requirement

The Consultant shall maintain a record of manpower engaged in the survey work along with the equipment deployed. Report shall be submitted as and when the indent raised has been completed. The Consultant shall also submit the Data, images and videos from all surveys and investigations conducted for the work in soft as well as hard copy.

13. Expiration of Contract

Unless terminated earlier pursuant to Clause 16 of GCC hereof, this Contract shall expire when all the services and project have been completed in all respect and all payments have been made at the end of such time period.

14. Force Majeure

14.1 Definition

(a) For the purpose 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), lockdown due to corona virus infection, 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 Sub-consultants 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.

14.2 No Breach of Contract

The failure of a Party to fulfill any of its obligations hereunder 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.

14.3 Measures to be Taken

- a. 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.

14.4 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.

14.5 Payments

Payments shall be made to the consultant in the account as forwarded by the authorized signatory of the consultant.

14.6 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.

15. Suspension

The 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.

16. Termination

16.1 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 (g) of this Clause GC 14.1 terminate this Contract.

- a. if the Consultants fail to remedy a failure in the performance of their obligations hereunder, as specified in a notice of suspension pursuant to Clause GC 19 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 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 GC 16 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:

"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 non-competitive levels and to deprive the Borrower of the benefits of free and open competition.

16.2 By the Consultants

The Consultant may, by not less than thirty (30) days' written notice to the Client, such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause GCC 16.2 , 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 18 hereof within sixty (60) 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 sixty (60) 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 Consultants 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 16 hereof.

16.3 Cessation of Services

Upon termination of this Contract by notice of either Party to the other pursuant to Clause 16.1 or 16.2 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.

16.4 Payment upon Termination

Upon termination of this Contract pursuant to Clauses 16.1 or 16.2 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):

- (a) remuneration for Services satisfactorily performed prior to the effective date of termination;
- (b) reimbursable expenditures actually incurred prior to the effective date of termination; and
- (c) except in the case of termination pursuant to paragraphs (a) through (d) of the Clause GCC 16.1 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

17 Fairness and Good Faith

17.1 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.

17.2 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 GCC 18 hereof.

18. Settlement of Disputes

18.1 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.

18.2 Dispute Settlement

Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in-before mentioned and as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, design drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the work or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter :

18.2.1 If the Consultant considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge on any matter in connection with or arising out of the contract of carrying out of the work to be unacceptable, he shall promptly within 15 days request the Executive Director, NHIDCL or equivalent, in writing for the written instructions or decision. Thereupon, the Executive Director or equivalent, shall give his written instructions or decision within a period of one month from the receipt of the consultant's letter.

18.2.2 If the Executive Director, NHIDCL or equivalent fails to give his instructions or decision in writing within the aforesaid period or if the consultant is dissatisfied with the instructions or decision of the Executive Director or equivalent, the consultant may, within 15 days of receipt of the Executive Director or equivalent's decision, appeal to the Director (Technical) or equivalent, who shall afford an opportunity to the consultant to be heard, if the latter so desires, and to offer evidence in support of his appeal. The Director (Technical) or equivalent shall give his decision within 30 days of receipt of the representation of the consultant failing which matter can be taken with the Managing Director NHIDCL for final decision

19. The Client (or Employer) may inspect and review the progress of works and may issue appropriate directions to the Consultant / members of the supervision team for taking necessary action. NHIDCL may also undertake Third Party Audit or otherwise test

check the quality and quantity of the materials brought to the site for use in the permanent works and may also test check the quantity, quality and workmanship of the work executed as and when required.

20. Conflict of interest

- i. Applicants shall not have a conflict of interest (the “Conflict of Interest”) that affects the RFP Process. Any Applicant found to have a Conflict of Interest will be disqualified. A Applicant may be considered to have a Conflict of Interest that affects the RFP Process, if:
- ii. Such Applicant (or any constituent thereof) and any other Applicant (or any constituent thereof) have common controlling shareholders or other ownership interest; provided that this qualification shall not apply in cases where the direct or indirect shareholding in a Applicant or a constituent thereof in the other Applicant (s) (or any of its constituents) is less than 1% of its paid up and subscribed capital; or
- iii. A constituent of such Applicant is also a constituent of another Applicant; or
- iv. Such Applicant receives or has received any direct or indirect subsidy from any other Applicant, or has provided any such subsidy to any other Applicant; or
- v. Such Applicant has the same legal representative for purposes of this Proposal as any other Applicant; or
- vi. Such Applicant has a relationship with another Applicant, directly or through common third parties, that puts them in a position to have access to each other’s information about, or to influence the Proposal of either or each of the other Applicant; or such Applicant has participated as a consultant to NHIDCL in the preparation of any documents, design or technical specifications of the Project.
- vii. The lowest found bidder will not participate in main project tendering directly or indirectly or firm (which should not be in conflict of interest). In this regard an undertaking is to be submitted by the consultant

21 Deleted

22 Variation: In case the total length of any of the works increases/ decreases up to 25% of length given in the RFP: No change in quoted rate

(ii) Indent for Survey of the all item or individually can be issued. Further, case might arise wherein for a long period of time no item may need to be surveyed, during the current period of the contract in that case no financial implication shall be attributable to NHIDCL for idling of resources.

Special conditions of contract

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"

1.2 The language is: **English**

1.3 The addresses are:

For the Client: **Executive Director (P)**
 ADDRESS

Attention: **General Manager (P),**
 Regional office,
 National Highway & Infrastructure Development Corporation
 [Address]
 Email:.....

For the Consultants:

Attention: Name

Designation

Address

Tel: Fax: E-
mail address

1.4 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.

1.5 Entity to Act as Member in charge (In case of Joint Venture of Consultants) with or without an Associate:

1.6 The Authorized Representatives are:

For the Client: (--)

Managing Director, NHIDCL (--)

For the Consultant: Name

Designation

1.7 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.

2.1 The effectiveness conditions are the following:

- a) The contract has been approved by NHIDCL.
- b) The Consultant will furnish within 15 days of the issue of letter of acceptance, an unconditional Bank Guarantee 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 500 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. In case of JV, the BG shall be furnished on behalf of the JV or lead partner of JV for an amount equivalent to 10% of the total contract value to be received by him towards Performance Security valid for a period of three years beyond the date of completion of services.

2.2 The time period shall be "Five years" or such other time period as the parties may agree in writing.

3 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 for Professional Fees and Reimbursable Expenditure 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 (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.

3.1 The risks and the coverage shall be as follows:

(a) Third Party motor vehicle liability insurance as required under Motor Vehicles Act, 1988 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. 10 Lakh for the period of survey work

(c)

- i. The Consultant shall provide to NHIDCL Professional Liability Insurance (PLI) for a period of **One year** 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 (B) 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 NHIDCL in a joint venture or 'in association', the policy must be procured and provided to NHIDCL by the joint venture/in association entity and not by the individual partners of the joint venture/ association.
- vi. The contract may include a provision whereby the Consultant does not cancel the policy midterm without the consent of NHIDCL. 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 Sub Consultant, 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.

4 The Consultants shall not use these documents for purposes unrelated to this Contract without the prior written approval of the Client.

The account is: As provided by the Consultant.

1) ARBITRATION

The procedure for arbitration will be as follows:

- a) In case of Dispute or difference arising between the Employer and a domestic contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 3 arbitrators one each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a

consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the Secretary General of Indian Road Congress.

- b) If one of the parties fails to appoint its arbitrator in pursuance of sub-clause (a) and (b) above within 30 days after receipt of the notice of the appointment of its arbitrator by the other party, then the Secretary General of Indian Road Congress shall appoint the arbitrator. A certified copy of the order of the Secretary General of Indian Road Congress making such an appointment shall be furnished to each of the parties.
- c) Arbitration proceedings shall be held at New Delhi, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.
- d) The decision of the majority of arbitrators shall be final and binding upon both parties.
- e) The cost and expenses of Arbitration proceedings will be borne equally by both parties in accordance with the following fee structure (the signing of the contract shall be the acceptance of the fee structure given below by both the parties):

Sl. No.	Particulars of fee and other charges	Schedule Amount payable per Arbitrator/ per case
1.	Arbitrator fee	Rs.15,000/- per day subject to a publishing the Award within 12 months. 12 months will be reckoned from the date of first meeting.
2.	Reading Charges	Rs.15,000/-
3.	Secretarial Assistance and Incidental Charges (telephone, fax, postage etc.)	Rs.20,000/-
4.	Charges for Publishing/ declaration of the Award	Maximum of Rs.20,000/-
5.	Other expenses (As per actual Against bills subject to maximum of the prescribed ceiling given below) Traveling Expenses, Lodging and Boarding	Economy class by air, first class AC by train, AC car by road. i. Up to Rs.15,000/- per day (metro cities) ii. Up to Rs.7,000/- per day (other cities) iii. Rs.3,000/- per day own arrangement)
6.	Local Travel	Rs.1,500/- per day
7.	Extra charges for days other than hearing / meeting days (maximum for 2 days)	Rs.3,500/- per day
Note:	Lodging, boarding and traveling expenses shall be allowed only for those members who are residing 100kms. Away from place of meeting. Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad shall be considered as Metro Cities.	

However, the expenses incurred by each party in connection with the preparation, presentation, etc. of its proceedings shall be borne by each party itself.

(f) Performance under the contract shall continue during the arbitration proceedings and payments due to the contractor by the employer shall not be withheld, unless they are the subject matter of the arbitration proceedings.

TOR (Term fo Reference)

Subject Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km

Terms of Reference for Services (TOR)

General

11 National Highways & Infrastructure Development Corporation Limited (NHIDCL) has decided to conduct a detailed survey of NH-208 in the State of Tripura using Network Survey Vehicle, Pavement strength measurement using FWD, Bridge inspection using Mobile Bridge Inspection Unit & Road signs inspection using Retro Reflectometer.

1.2 Consultant shall carry out survey & investigation in close association with representative of the client and any person seemed necessary for the project.

2. Scope of Services

The scope includes survey of road with help of Surface defects detection and roughness measurement using Network Survey Vehicle, Pavement strength measurement using FWD, Bridge inspection using Mobile Bridge Inspection Unit & Road signs inspection using Retro Reflectometer as per LOA.

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)	The frequency of using NSV vehicle shall be before start of the work, before issue of provisional/final completion certificate and every 6 months after completion of work i.e at least twice a year during maintenance period.
2	Strength of pavement	Falling Weight Reflectometer (FWD)	At least once a year
3	Bridges	Mobile Bridge Inspection Unit (MBIU)	At least twice a year
4	Road signs	Retro-reflectometer	At least twice a year

The inspections shall be conducted before and after the rainy seasons, except for FWD testing which shall be conducted once a year. Road Inventory data/road condition data surveyed/captured by NSV/FWD to be submitted mandatorily in excel formats as circulated by the RAMS Cell of NHAI which is available in the RAMS Portal.

Calibration of equipment, wherever needed, is required to be done in presence of Competent Authority. Once approval of equipment, the settings and a sample data set is provided by Competent Authority, network level data for entire project stretch can be collected.

2.1. (A) Data to be collected with means of Network Survey Vehicle

(i) Surface defects detection and roughness measurement using Network Survey Vehicle & Survey Condition of Road;

GPS coordinates, Pavement Type, Pavement Width, Terrain, Land use, Shoulder type and width, Drain Type and Width, Median Type and Width, Wayside Amenities, Crash barrier, Sign-ages etc. Roughness, Rutting, Distresses (cracking, Potholes, Bleeding, Surface failure etc.); (Note- All inventory items shall be recorded for each lane and Geo-tagged)

(Note- All inventory items shall be recorded both side of road and Geo-tagged with images)

- (ii) The Consultant shall use Network Survey Vehicles mounted with equipment such as Laser based automatic crack detection , high resolution digital cameras for RoW and pavement, high accuracy DGPS receiver and in vehicle data processing software or better technology to accurately measure following pavement surface properties

Surface defect	Dimensions to be reported
Cracking	<ul style="list-style-type: none"> Length Width Depth
Potholes	<ul style="list-style-type: none"> Area Depth
Raveling	<ul style="list-style-type: none"> Indicator % Area
Rutting	<ul style="list-style-type: none"> Depth Width
Concrete Joint/ Faulting	<ul style="list-style-type: none"> Length
Roughness	<ul style="list-style-type: none"> IRI in both wheel paths

- iii. The following criteria shall be met by the process of defects detection

- Measurement of 3D road profile using such technologies as laser scanning or other proven technologies.
 - Ability to operate (collect data) at different speeds with a minimum speed of 30km/hr and upto at least 75 km/ hr.
 - Profile depth accuracy of 0.5mm
 - Capability for lane tracking to control driver wander' and ensure high repeatability of data between surveys.
 - Measure at least 3.5m width of highway lane.
 - 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).
 - Pavement images with capability to automatically identify and rate distresses
 - Roughness measurement with outputs of both raw longitudinal profiles and International Roughness Index (IRI) calculation shall be reported at least 100m referenced to the preceding Location Reference Post (LRP). The roughness must meet ASTM-E950 (equivalent to Class I road profiler). The IRI shall be determined in both wheel paths.
 - Ability to record images at user-defined intervals (e.g. every 5, 10m, etc.)
 - Minimum images resolution of 1600x1200
 - Outputs must include Standard JPEG image or similar industry standard
 - Distance resolution of <1mm,
 - Capable of achieving distance accuracy of 0.1% (i.e. within 1m over 1km distance)
 - All data outputs should be in a non-proprietary format (e.g. .CSV, .MDB, Excel) and not require specialist software in order to view or format data
 - Data should also be capable of being easily formatted into data compatible with HDM-4
- iv. The following are the set of deliverables which should be submitted after completion of survey as part of Monthly Progress Report
- i. Raw data generated from the equipment which are part of Network Survey covering the parameters mentioned in above table. It should also include
 - ii. Survey ID, Description, Date, Lane
 - iii. GPS referenced data for GIS mapping
 - iv. Video logging
 - 1. Pavement imagery (AVI/JPEG)
 - 2. 360 degree imagery (JPEG)
 - v. Interpretation report covering summary of entire survey and analysis of defects and deficiencies

(ii) Pavement strength measurement using FWD

(i) The Consultant carry out structural strength surveys for existing pavements using Falling Weight Deflectometer technique in accordance with the procedure given in IRC:115 (latest Revision may prevail) (Guidelines for Structural Evaluation

and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique) and IRC: 117 (latest Revision may prevail) (Guidelines for the Structural Evaluation of Rigid Pavement by Falling Weight Deflectometer) The interval at which deflection measurements are to be taken up are as per IRC:115(latest Revision may prevail) / IRC:117-(latest Revision may prevail). 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(latest Revision may prevail). For rigid pavements, the deflection data may be collected at interiors, corners, transverse joints and longitudinal joints in the outer lanes at intervals as specified in IRC:117(latest Revision may prevail).

(ii) The following are the set of deliverables which should be submitted after completion of inspection test as part of Monthly Progress Report

Data report covering following parameters

- Deflection Bowl (Transient Deflections at seven different points)
- Corrected Elastic Modulus Bituminous E1
- Corrected Elastic Modulus Granular E2
- Corrected Elastic Modulus Subgrade E3Subgrade CBR
- Interpretation report covering summary of entire survey results and analysis of key parameters

(iii) 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

- Automatic folding and unfolding of platform
- 90-degree rotation of platform
- Sufficient safety features to be incorporated such as dedicated power supply, emergency cut off system, etc
- 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)

(iv) Road signs inspection using Retro Reflectometer

(a) The Consultant shall measure Coefficient of retro reflected luminance R_A (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

- Measurement of retro reflective signs shall be conducted in accordance with ASTM E1709 and ASTM E2540
- Measurement time after pressing trigger shall be less than or equal to 1 sec
- Observation angle adjustment from 0.2 degrees to 2.0 degrees
- Entrance angle adjustment from -45 degrees to +45 degrees
- Self-contained commercially available battery
- Inbuilt data storage of at least 2,000 measurements so that data transfer requirement is minimized while the survey is being conducted
- Interface for transferring data from device to Computer
- Built in GPS to capture GPS coordinates of road sign
- Range shall be at least 0-2000 cd/lx/m²

(b) The following are the set of deliverables which should be submitted after completion of survey as part of Monthly Progress Report

- System generated coefficient of retro reflected luminance R_A (nighttime retro reflection) of all road signs
- Interpretation report covering analysis of road signs falling in different range of R_A and actions to be taken

2.2 The consultant shall implement the tasks as listed below:

- (i) Preparation of detailed work plan, including time schedule and required equipment

- (ii) Negotiation with land owners and/or relevant organizations for permission to enter and conduct the Works in their lands
- (iii) Preparation, mobilization, transportation, setting and/or dismantling of equipment, tools, and materials;
- (iv) Videography of the length surveyed.

2.3. Deliverables.

On completion of the Works, the consultant shall prepare survey report and submit it to the ED(P) & GM(P). The survey report shall be prepared in English, in proper forms. The report shall include the followings

1. **Inventory survey**
 - i. GPS coordinates of the road.
 - ii. Pavement Type of the existing pavement
 - iii. Pavement Width
 - iv. Terrain
 - v. Land use (Dry or Wet)
 - vi. Shoulder type and width
 - vii. Drain Type and Width
 - viii. Median Type and Width
 - ix. Wayside Amenities
 - x. Crash barrier
 - xi. Sign-ages
 - xii. Any other feature

2. **Survey for Condition of Road**

- i. Roughness
- ii. Rutting
- iii. Distresses (cracking, Potholes, Bleeding, Surface failure etc.)

(Note- All inventory items shall be recorded for each lane and Geo-tagged)

2.3.1 Sample format for collection and presentation of data is attached at Annexure -I

3.1 The consultant shall submit one **(1)** hard copy and soft copy (original data of MS-Word/Excel and CAD) of the report to the client

4 General

4.1 Standards and Codes of Practices

1. All activities related to field studies and documentation shall be done as per the latest guidelines/ circulars of MoRT&H and relevant publications of the Indian Roads Congress (IRC) and Bureau of Indian Standards **(BIS)**. For aspects not covered by IRC and BIS, international

standard practices, such as, British, Japanese or American Standards may be adopted. The Consultants, upon award of the Contract, may finalize this in consultation with NH1DCL and reflect the same in the inception report.

2. All notations, abbreviations and symbols used in reports, documents and drawings shall be as per IRC: 71-1977(latest Revision may prevail).

5. Time period for the service

- i. Time period envisaged for the study of the project is indicated LOI. The final reports and documentation shall be completed within this time schedule.

6. Project Team and Project Office of the Consultant

- i. The Consultants shall be required to form a multi-disciplinary team for this assignment. The consultants Team shall be manned by adequate number of experts with relevant experience in the execution of similar assignments.
- ii. Deleted.

7. Report to be submitted by the Consultant to NHIDCL

7.1 All reports, documents and drawings are to be submitted separately for each of the Sub-section of the Project Road. The analysis of data and the design proposals shall be based on the data derived from the primary surveys and investigations carried out during the period of assignment. The sources of data and model relationships used in the reports shall be indicated with complete details for easy reference.

7.2 Project preparation activities will be split into three stages as brought out below.

Stage 1 : Inception Report

Stage 2: Survey report on Indent basis

Stage 3: Consolidated report

7.3 The report shall be submitted in a period of 30-60 days from the issue of indent depending upon length of road to be surveyed. Accordingly, the time line is as follows:

S. No	Length of road to be surveyed.	Timeline
1	0-50	10 Days
2	50 and above	30 days

8. Reports and Documents to be submitted by the Consultant to NHIDCL

- i. The Consultant shall submit to the employer, the reports and documents in bound volumes (and not spiral binding form) after completion of each stage of work in the number of copies as sought by NHIDCL, limited to maximum of 5. Further, the reports shall also be submitted in floppy diskettes /CD's/Pen Drives in addition to the hard copies. Consultant shall submit all other reports mentioned specifically in the preceding Paras of the TOR
- ii. The time schedule for various submissions prescribed at SI.No.7.3 above shall be strictly adhered to. No time-over-run in respect of these submissions will normally be permitted. Consultant is advised to go through the entire terms of reference carefully and plan his work method in such a manner that various activities followed by respective submissions as brought out at SI.No.7.2 above are completed as stipulated. Consultant is, therefore, advised to deploy sufficient number of supporting personnel, both technical and administrative, to undertake the project preparation activities in construction package (Section) simultaneously.

Stage -1

8.1 Inception Report (IR)

The report shall cover the following major aspects

- i. Project appreciation
- ii. Detailed methodology to meet the requirements of the TOR finalised in consultation with the NHIDCL officers; including scheduling of various sub-activities to be carried out for completion of various stages of the work; stating out clearly their approach & methodology for project preparation after due inspection of the entire project stretch and collection/ collation of necessary information.
- iii. Task Assignment and Manning Schedule;
- iv. Work programme on issuance of indent.
- v. Proforma for data collection
- vi. Key plan and Linear Plan
- vii. Development plans being implemented and / or proposed for implementation in the near future by the local bodies and the possible impact of such development plans on the overall scheme for field work and design for the stud
- viii. Quality Assurance Plan (QAP) Finalized in consultation with NHIDCL
- ix. Deleted.

STAGE 2

8.3 Based on the Indent issued by NHIDCL, the consultant shall be asked to conduct survey using the network survey vehicle and submit their report clearly outlining the information as sought by NHIDCL. The time period for conducting the survey shall be a period of 10 days from the issuance of the Indent and 10 days for compilation of report and submitting the same to NHIDCL. The survey shall consist of the following:

S. No	Item	Lane & Length (80.2 Km)
1	Surface defects detection and roughness measurement using Network Survey Vehicle	2 lanes with paved shoulder & Length 80.2 Km
2	Pavement strength measurement using FWD	
3	Bridge inspection using Mobile Bridge Inspection Unit	
4	Road signs inspection using Retro Reflectometer	

STAGE-3

8.4 Final consolidated Report

A Final Consolidated report of the length surveyed shall be submitted to NHIDCL after the completion of the period of the service.

9. Interaction with NHIDCL

- i. During entire period of services, the Consultant shall interact continuously with NHIDCL and provide any clarification as regards methods being followed and carry out modification as suggested by NHIDCL. A programme of various activities shall be provided to NHIDCL and prior intimation shall be given to NHIDCL regarding start of key activities such survey etc. so that inspections of NHIDCL officials could be arranged in time
- ii. The NHIDCL officers and other Government officers may visit the site at any time, individually or collectively to acquaint themselves with the field investigation and survey works
- iii. The consultant shall be required to send 3 copies of concise monthly Progress Report by the 5th day of the following month to the designated officer at his Head Quarter so that progress could be monitored by the NHIDCL. These reports will indicate the dates of induction and de-induction of various key personnel and the activities performed by them. Frequent meetings with the consultant at site office or in Delhi are foreseen during the currency of project preparation
- iv. All equipment, software and books etc. required for satisfactory services for this project shall be obtained by the Consultant at their own cost and shall be their property.

10. Payment Schedule

Sl. No	Description	Payment	Duration
1	Inception Report/QAP	-	15 days from issue of Letter to proceed
2	49 Survey Report on Indent Basis	95 % (Payment shall be made on Per Km Basis at the rate quoted by the consultant, for the length indicated on the indent.	On specified in the indent.

		5 % of every bill shall be retained and released at the end after submission of Final consolidated Report)	
3	Final Project Report	5 %	15 days

11. Data and Software

- The pen drive/CD's/Pen drives containing all basic as well as the proposed data from all field studies and investigations, report, appendices, annexure, documents and drawings shall be submitted to NHIDCL at the time of the submission of the final Report.
- Software: The Consultant shall also hand-over to NHIDCL CD's/Pen Drives containing any general software including, –the-financial-model which has been specifically developed for the project.
- The pen drive/CD's should be properly indexed and a catalogue giving contents of all DVD's/CD's and print-outs of the contents should be handed over to NHIDCL at the time of submission of the Final Report.

12. Requirement of suitable Key Personnel

Required as per scope of work. Consultant shall engage required Personnel as per Standard Engineering Practice. Basic Requirement is as below:

S. No	Designation	Qualification & experience
1	Highway Engineer	B.Tech/BE in Civil with at-least 10 years experience
2	Survey Engineer	B.Tech/BE in Civil with at-least 5 years experience
3	Software specialist	B.Tech/BE/PG Diploma in IT with at-least 3 years experience

13. Additions, Alterations & Variation.

(i) In case the total length of any of the works increases/ decreases up to 25% of length given in the RFP: **No change in quoted rate**

(ii) Indent for Survey of all the items together or individually can be issued. Further, case might arise wherein for a long period of time no item may need to be surveyed, during the current period of the contract in that case no financial implication shall be attributable to NHIDCL for idling of resources.

14. Taxes

- All taxes, income tax and any other leviable tax (except Service Tax) in connection with the execution of the contract levied by the statutory Authorities/State/Central Govt. of India/State Govt. or any local authorities on the consultant in accordance with the applicable

law shall be borne by the consultant and are deemed to be included in their bid price. The bidders shall note that the Tax Deduction at Source (TDS) as per applicable law shall be made from the payments due/made to the consultants which shall not be reimbursed.

b.

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c. The GST as applicable shall be reimbursed by NHIDCL on actual production of receipt of deposit duly authenticated by Chartered Accountant. However, consultant has to mention Service Tax Number in the invoice, and amount of Service Tax should be shown separately in the bill

d.

c. Any enhancement of taxes/duties by the authorities/Government of India/State Government, during currency of this contract shall be borne by the Consultant only, which shall not be reimbursed by NHIDCL.

15. Performance Security/Guarantee

16.1 For the due performance of the contract in accordance with the terms and conditions specified, the consultant shall on the day of, or before signing the contract which shall not be later than 10 (ten) days from the issue of the Letter of Award, furnish performance security/Guarantee on the Pro-forma prescribed by NHIDCL from a Nationalized/Scheduled Bank to the extent of 5% of the value of total consultancy fees of consultant. The Bank Guarantee shall remain valid till stipulated time for completion of work plus 200 days.

16.2 The Bank Guarantee shall be in favour of Executive Director payable at RO-Agartala (as per enclosed format). The Bank Guarantee should be (in the prescribed format of NHIDCL as per Section-6) issued from any Nationalized Bank and shall be transmitted online through SFMS gateway to NHIDCL banker.

16.3 It is expressly understood and agreed that the performance security is intended to secure the performance of entire contract. It is also expressly understood and agreed that the performance security is not to be construed to cover any damages detailed/ stipulated in various clauses in the Contract document.

16.4 The performance security will be discharged by NHIDCL and returned to the Consultancy firms after 100 days of successful completion of the services to NHIDCL and statutory bodies.

16.5 NHIDCL reserves the right of forfeiture of the performance guarantee in addition to other claims and penalties in the event of the consultant's failure to fulfill any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract.

16.6 Should the stipulated time for completion of work for whatever reason get extended, the consultant, shall at his own cost, get the validity period of Bank Guarantee in respect of performance security furnished by him extended and shall furnish the extended / revised Bank Guarantee to NHIDCL before the expiry date of the Bank Guarantee originally furnished.

17. Determination or Rescission of Agreement

The NHIDCL without any prejudice to its right against the Consultant in respect of any delay by notice in writing absolutely may determine the contract in any of the following cases:

- iii. If the consultants being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of the creditor shall be appointed or if circumstances shall arise which entitle the court or creditor to appoint a receiver or a manager which entitles the court to make up a winding order.
- iv. If the consultants commit breach of any of the terms of agreement. When the consultants have made themselves liable for action under any of the clauses aforementioned, the NHIDCL shall have powers:
 - d. to determine or rescind the agreement.
 - e. to engage another consultant(s) to carry out the balance work at the risk and cost of the consultant and debiting the consultant(s) the excess amount, if any, so spent.

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In case contract of consultant is determined, the Performance Guarantee and Security Deposit of the consultant shall stand forfeited. The decision of NHIDCL in this regard shall be final and binding on the consultant.

18. Withholding and Lien of Payment

Whether any claim or claims for payment of money arises out of or under the contract against the Consultant, the NHIDCL shall be entitled to withhold and also to have a lien to retain in whole or in part, the security deposit, performance guarantee and or to withhold and have a lien to retain in part or in full the payments due to the consultant, or any claims of the consultant, so as to cover the claimed amount till the claim arising out of or under the contract is determined by the competent court.

19. Jurisdiction

The agreement shall be governed by the Indian Law for the time being in force and the Courts in Delhi alone will have jurisdiction to deal with matter arising there from

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Format for Indent

File

No. _____

Dated: XX.XX.XXXX

To,

The Authorized Representative,

[Name of Consultancy]

[Address]

Sub: Detailed survey of NH-208 using Road survey equipment's in the State of Tripura for 80.2 Km

Sir,

1. Please refer to the subject work. In this regard, you are requested to survey the below mentioned stretch with Surface defects detection and roughness measurement using Network Survey Vehicle, Pavement strength measurement using FWD, Bridge inspection using Mobile Bridge Inspection Unit & Road signs inspection using Retro Reflectometer:

S. No	Name of Road	Type of Survey (Inventory or condition)	(Chainage)		Total Km
			From	To	
1					
2					

2. The timeline for completion of survey and submission of report shall be _____ days from the issue of this indent.
3. The value of this work as per rates in the contract agreement is Rs. _____ (Rupeesin words) excluding GST.
4. You are requested to submit the invoice after completion of work and submission of report.

5. This is for your kind information further necessary action please.

Yours sincerely,

**Name of the RO,
Designation
NHIDCL**

Annexure I: OUTPUT FORMAT FROM NETWORK SURVEY VEHICLE

SECTION 1 - ROAD INVENTORY DATA

Road inventory data consists of parameters which provide basic information about roads such as pavement type, number of lanes, topography, etc. These parameters are largely static in nature, and therefore a survey to update this dataset shall be conducted only once at the time of completion testing. The road inventory data shall be used to update specific worksheets listed below.

Further, reports also to be submitted as per latest format issued by RAMS cell of NHAI for acceptance of reports in RAMS portal.

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
LRP Name	Name of location reference post (LRP)	Km stone 17
Chainage	Chainage of the survey point (in km)	17
Direction	Direction of survey <input type="checkbox"/> Increasing (chainage) <input type="checkbox"/> 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	LRP Name	Chainage	Direction	Latitude	Longitude	Altitude	Survey Date	Old NH Number	Section Code
NH0xx x	Road Start	1.230	Increasing	9.98897	78.02671	63.07767	23-12-15	NH0yy y	ABC-DEF
NH0xx x	Km Stone 8	8.000	Increasing	9.98444	78.02934	68.60126	23-12-15	NH0yy y	ABC-DEF
NH0xx x	Km Stone 8	8.030	Increasing	9.98341	78.03004	68.15520	23-12-15	NH0yy y	ABC-DEF
NH0xx x	Km Stone	9.008	Increasing	9.98107	78.03078	65.17153	23-12-15	NH0yy y	ABC-DEF

NH0xx x	Km Stone	12.012	Increasin g	9.96328	78.04160	56.03436	23-12-15	NH0yy y	ABC-DEF
NH0xx x	Km Stone 1 7	17.085	Increasin g	9.95385	78.05255	56.24748	23-12-15	NH0yy y	ABC-DEF

1.2 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: <ul style="list-style-type: none"> 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

1.3 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
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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
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 	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:

NHNumber	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

1.4 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 <ul style="list-style-type: none"> • Increasing (chainage) • Decreasing (chainage) 	Increasing

Pavement Type	Classification of pavement based on type of surface:	Asphalt
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Field	Description	Example
	<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

1.5 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 <ul style="list-style-type: none"> 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	Both	7 – 10.5 m	7.00	06-05-17	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Both	7 – 10.5 m	7.00	06-05-17	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Both	7 – 10.5 m	7.00	06-05-17	9.98341	78.03004
NH00xx	ABC-DEF	2.810	4.335	Both	7 – 10.5 m	7.00	06-05-17	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Both	7 – 10.5 m	7.00	06-05-17	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Both	7 – 10.5 m	7.00	06-05-17	9.95385	78.05255

1.6 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 <ul style="list-style-type: none"> • Increasing (chainage) 	Increasing

	<ul style="list-style-type: none"> Decreasing (chainage) 	
Shoulder Type	Type of shoulder, classified into one of the below categories: <ul style="list-style-type: none"> 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

A sample output is shown below for reference:

NH Number	Section Code	Start Chainage	End Chainage	Direction	ShoulderType	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.763	Increasing	No Shoulder	09-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.763	0.834	Increasing	Gravel	09-01-16	9.98444	78.02934
NH00xx	ABC-DEF	0.834	1.254	Increasing	Gravel	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

1.7 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 <ul style="list-style-type: none"> 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"> No shoulder < 1m >= 1m and <= 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

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	78.02934
NH0xxx	ABC-DEF	2.612	3.170	Increasing	1-2m	2.0	03-01-16	9.98341	78.03004
NH0xxx	ABC-DEF	3.170	5.194	Increasing	1-2m	2.0	03-01-16	9.98107	78.03078
NH0xxx	ABC-DEF	5.194	6.793	Increasing	1-2m	2.0	03-01-16	9.96328	78.04160
NH0xxx	ABC-DEF	6.793	11.404	Increasing	1-2m	2.0	03-01-16	9.95385	78.05255

1.8 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)	1. 500
End Chainage	Chainage of the end point (in km)	• 500

Topography	Topography of the road, classified into one of the below categories <ul style="list-style-type: none"> Flat Rolling Hilly 	Flat
Survey Date	Date of survey in the format <DD-MM-YY>	06-05-17
Latitude	Latitude of survey point	<ul style="list-style-type: none"> 98897
Longitude	Longitude of survey point	<ul style="list-style-type: none"> 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	Flat	05-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	1.254	2.828	Flat	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-DEF	6.724	12.933	Flat	05-01-16	9.95385	78.05255

1.9 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 <ul style="list-style-type: none"> Increasing (chainage) Decreasing (chainage) 	Increasing
Cross Section	Cross section type, classified into one of the below categories	Fill

Field	Description	Example
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	<ul style="list-style-type: none"> • Cut • Fill • Cut and Fill • 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	Start Chainage	End Chainage	Direction	Cross Section	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	78.03078
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

1.10 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 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 <ul style="list-style-type: none"> • Increasing (chainage) • Decreasing (chainage) 	Increasing
Drain Type	Type of drain, classified into one of the below categories <ul style="list-style-type: none"> • Open unlined drain • Open lined drain • Covered line drain 	Open lined drain

	<ul style="list-style-type: none"> No 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 Lined Drain	09-01-16	9.98444	78.02934
NH0xxx	ABC-DEF	0.288	0.000	Decreasing	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

1.11 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 <ul style="list-style-type: none"> Increasing (chainage) Decreasing (chainage) 	Increasing
Median Type	Type of median, classified into one of the below categories <ul style="list-style-type: none"> Raised; Depressed; Barrier; None. 	Raised

Field	Description	Example
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:

NHNumber	Section Code	Start Chainage	End Chainage	Direction	Median Type	Median Width	Survey Date	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.794	Both	Raised	0.5	05-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.794	1.000	Both	Raised	0.5	05-01-16	9.98444	78.02934
NH00xx	ABC-DEF	1.000	2.810	Both	No Median	0.0	05-01-16	9.98341	78.03004
NH00xx	ABC-DEF	2.810	4.335	Both	Raised	1.5	05-01-16	9.98107	78.03078
NH00xx	ABC-DEF	4.335	6.666	Both	No Median	0.0	05-01-16	9.96328	78.04160
NH00xx	ABC-DEF	6.666	12.906	Both	No Median	0.0	05-01-16	9.95385	78.05255

1.12 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 <ul style="list-style-type: none"> 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	1.000	2.000	Increasing	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	9.96328	78.04160

1.13 Pavement composition

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-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 <ul style="list-style-type: none"> Increasing (chainage) Decreasing (chainage) 	Increasing

Pavement Type	Type of pavement <ul style="list-style-type: none"> Asphalt Cement concrete 	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	Year of construction of BSC layer in flexible pavements	2015
Bituminous Base Course Type	Type of bituminous base course	DBM
Bituminous Base Course Thickness	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 Thickness	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 MM	Thickness of DLC layer in mm	100
Dry Lean 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
Field	Description	Example
Longitude	Longitude of survey point	78.02671

A sample output is shown below for reference:

NH No.	Section Code	Start Chainage	End 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
NH00xx	AB C-DEF	0.0	5.0	Both side	Asphalt	BC	40.0	2015	DBM	100	2015	WM	250
NH00xx	AB C-DEF	5.0	11.0	Both side	Asphalt	BC	40.0	2015	DBM	80	2015	WM	250
NH00xx	AB C-DEF	11.0	20.0	Both side	Asphalt	SDBC	25.0	2015	BM	115	2015	WM	250
NH00xx	AB C-DEF	20.0	22.0	Both side	Asphalt	BC	40.0	2015	DBM	100	2015	WM	250
NH00xx	AB C-DEF	22.0	30.0	Both side	Asphalt	SDBC	25.0	2015	BM	115	2015	WM	250
NH00xx	AB C-DEF	30.0	31.0	Both side	Asphalt	BC	40.0	2015	DBM	100	2015	WM	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 Subbase Type	Granular Subbase Thickness	GSB Construction Year	Design CB R	Survey Date	Latitude	Longitude
2015	NA	NA	NA	NA	NA	NA	GSB	300	2015	5%	05-05-15	9.99	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	9.98	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

1.14 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 <ul style="list-style-type: none"> Increasing (chainage) Decreasing (chainage) 	Increasing

Field	Description	Example
Wayside Amenity Type	Wayside amenities classified into one of the below categories: <ul style="list-style-type: none"> Crash barriers Signs Street Lights Km stone 	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 Light End	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
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1.15 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 <ul style="list-style-type: none"> Increasing (chainage) Decreasing (chainage) 	Increasing
Wayside Amenity	Wayside amenities classified into one of the below categories: <ul style="list-style-type: none"> Bus shelter; Culverts; Restaurant/Motel; Toilet/Public convenience; Rest Rooms for short stay; Toll Plaza; First aid/Medical centre; 	Restaurant/Motel

Field	Description	Example
	<ul style="list-style-type: none"> Telephone booth; Petrol pump/minor repair shop (optional); Police Station; Temple /Mosque; Bridges. 	
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	Data Source	Remarks	Latitude	Longitude
NH00xx	ABC-DEF	0.650	Increasing	Restaurant/Motel	05-01-16			9.98897	78.02671

NH00xx	AB C- 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	AB C- DEF	11.413	Increasing	Restaurant/Motel	05-01-16		9.98107	78.03078

1.16 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 <ul style="list-style-type: none"> Increasing (chainage) Decreasing (chainage) 	Increasing
Land Use	Land use classified into one of the below categories: <ul style="list-style-type: none"> Residential; Commercial; Industrial; Agricultural; Water bodies; Mixed. 	Commercial
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:

NHNumber	SectionCode	StartChainage	EndChainage	Direction	LandUse	SurveyDate	Latitude	Longitude
NH00xx	ABC-DEF	0.000	0.797	Increasing	Mixed	03-01-16	9.98897	78.02671
NH00xx	ABC-DEF	0.511	0	Decreasing	Mixed	03-01-16	9.98444	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	9.98107	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	78.05648
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	78.03458
NH00xx	ABC-DEF	2.699	3.234	Increasing	Agriculture	03-01-16	9.88489	78.02995

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 NHAI 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

	Increasing (chainage) Decreasing (chainage)	
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
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

	3 - Fair (10-20%) 4 - Good (1-10%) 5 - Very Good (<1%)	
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	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

(table continued...)

Disintegration	Depression	Bleeding	Patching	Drain Condition	Shoulder Condition	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 N umber	Section Code	Start Ch ainage	End Ch ainage	Directi on	Lane N umber	Ruttin g Left	Rutting Right	Ruttin g Avg	Speed	Surve y Date	Latitud e	Longitu de
NH00 xx	ABC- DEF	0.0	0.5	Increas ing	L1	15	14	15	20	06-05- 17	9.9889 7	78.026 71
NH00 xx	ABC- DEF	0.5	1.0	Increas ing	L1	20	18	19	37	06-05- 17	9.9844 4	78.029 34
NH00 xx	ABC- DEF	1.0	1.5	Increas ing	L1	10	8	9	42	06-05- 17	9.9834 1	78.030 04
NH00 xx	ABC- DEF	1.5	2.0	Increas ing	L1	5	6	6	46	06-05- 17	9.9810 7	78.030 78
NH00 xx	ABC- DEF	2.0	2.5	Increas ing	L1	10	10	10	42	06-05- 17	9.9632 8	78.041 60
NH00 xx	ABC- DEF	2.5	3.0	Increas ing	L1	7	5	6	49	06-05- 17	9.9538 5	78.052 55
NH00 xx	ABC- DEF	3.0	3.5	Increas ing	L1	20	18	19	42	06-05- 17	9.9310 2	78.056 48
NH00 xx	ABC- DEF	3.5	4.5	Increas ing	L1	5	5	5	33	06-05- 17	9.9122 9	78.049 61
NH00 xx	ABC- DEF	4.5	5.0	Increas ing	L1	5	5	5	32	06-05- 17	9.8904 1	78.034 58

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

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 n0	Deflection n1	Location 1	Deflection n2
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 n3	Location 3	Deflection n4	Location 4	Deflection n5	Location 5	Deflection n6	Location 6	Deflection n7	Location 7	Deflection n8
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	GS BL Layer	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	Chai n-age	Directi on	Lan e No.	Air Temp erature	Surface T emperatur e	Pea k L oad	Deflecti on 1	Deflecti on 2	Deflecti on 3	Deflecti on 4	Concrete Slab Thi cknessh
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

(table continued...)

Area of Deflection Basin	Radius of Relative Stiffness	Normalized Deflection d1	Normalized Deflection d2	Normalized Deflection d3	Normalized Deflection d4	Modulus of Subgrade Reaction k	Elastic Modulus of Concrete Ec	Cube Strength of Concrete fck	Flexural strength of concrete fmr	Date Of Testing	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	28-0 6-16	9.984 44	78.029 34
684	580	3	3	2	1	246	12051	6	2	25-0 6-16	9.983 41	78.030 04
796	1014	3	3	3	2	87	39783	63	6	28-0 6-16	9.981 07	78.030 78
761	823	3	3	2	2	131	26118	27	4	25-0 6-16	9.963 28	78.041 60
800	1040	3	3	3	2	79	39908	64	6	28-0 6-16	9.953 85	78.052 55
789	971	3	3	3	2	107	41290	68	6	25-0 6-16	9.931 02	78.056 48
814	1150	3	3	3	2	66	50086	100	7	28-0 6-16	9.912 29	78.049 61
826	1257	3	3	3	2	59	64082	164	9	28-0 6-16	9.890 41	78.034 58