



**National Highways and Infrastructure Development Corporation Ltd. (NHIDCL)**  
**(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)**  
NHIDCL, 2nd Floor, Tower-A, World Trade Center  
Nauroji Nagar, New Delhi-110029

**Consultancy Services as Independent Engineer during Operation  
and Maintenance of Z-Morh tunnel including approaches on  
Srinagar Sonamarg section connecting National Highway no. 1 in the  
UT of J&K on DBFOT annuity basis**

**REQUEST FOR PROPOSAL (RFP)**

**(January, 2025)**

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**REQUEST FOR PROPOSAL (RFP)****SECTION 1: INFORMATION TO CONSULTANTS**

**Sub.: Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.**

**GENERAL: -**

1. The National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) invites proposals for engaging an Independent Engineer (IE) on the basis of International Competitive Bidding for the following project in the UT of J&K.

**TABLE 1: DETAILS OF PROJECT**

| Consultancy Package                                                                                                                                                                                                        | NH No. | State           | Project Stretch     | Project Length | Estimated Project Cost (Rs. in Cr.) | Assignment period (months) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------|---------------------|----------------|-------------------------------------|----------------------------|
| Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis | NH-1   | Jammu & Kashmir | Km 0.00 to Km 11.98 | 11.98 km       | 2378.76                             | 36 months                  |

2. **The RFP has also been uploaded on “INFRACON” ([www.infracon.nic.in](http://www.infracon.nic.in)).** As such before submitting the proposal the Consultant (the firm and all key personnel) shall mandatorily register and enlist themselves, on the MoRTH portal “INFRACON” and furnish registration details along with its RFP. A copy of Infracon Operation Procedure is also enclosed for bidder’s reference.
3. **All the bidders registered on Infracon shall form a Team on Infracon and which would be assigned unique Infracon Team ID. Bidders while submitting the proposal shall quote the Infracon Team ID.**
  - 3.1 Restriction under Rule 144 (xi) - Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority as per Stipulated provision in Ministry of Finance Department of Expenditure (Public Procurement Division) office Memorandum No F. No. 6/18/2019-PPD dated 23.07.2020.
4. Bid must be submitted online at e-procurement portal of **National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)** i.e., <https://eprocure.gov.in> on or before **08.02.2025 upto 1500 Hrs.**

5. Selection of IE shall be as per selection procedures given in the Model Concession Agreement and general procurement methods followed in **National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)**. The selected IE shall be intimated to the Concessionaire.
6. The proposal shall be submitted in English Language and all correspondence would be in the same language.
7. The DBFOT projects basically constitute up-gradation involving construction of 2/4/6-lane highway including Bridges; widening and rehabilitation of bridges and culverts; construction of high embankment/elevated structures/ROBs wayside amenities etc. along the existing highways including provision of realignment and bypasses. The proposed construction works will involve use of modern equipment and construction practices/techniques.
8. National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) intends to appoint a Consultant to act as Independent Engineer for implementation of this DBFOT project. As per the Terms and Conditions of the Concession Agreement(s), the Independent Engineer is broadly required to: (i) independently review activities associated with design, design review, during construction, required quality assurance and quality control tests and operation and maintenance of the project on behalf of both National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) and Concessionaire so as to ensure compliance of the requirements of the provisions of Concession Agreement (ii) report to National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) on the Financial, Technical and physical progress of implementation aspects of the project, (iii) assist the parties in arriving at an amicable settlement of disputes, if any. The selection of Independent Engineer shall follow the laid down procedures given in the Concession Agreement signed between National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) and the Concessionaire for this DBFOT project.
9. The interested consultancy firms may download the RFP document from NHIDCL website [www.nhidcl.com/e-portal](http://www.nhidcl.com/e-portal) of the Employer (i.e. CPP Portal) w.e.f **09.01.2025 to 08.02.2025 upto 1100 hrs**. The Consultant who download the RFP document from the e-portal will be required to pay the non-refundable fee of Rs. 5,900/- including GST facility provided by the IndusInd Bank to the NHIDCL's Bank account as specified in Datasheet. A copy of payment receipt (RTGS/NEFT/Other online mode) must be submitted. The RFP will be invited through e-tendering portal. Refer Procedure under e-tendering for submission of RFP through e-tendering. For further details and step by step process regarding e-BG and online payment, NHIDCL Office Order dated 22nd March 2023 may be referred, which is attached as Appendix-A. The RFP will be invited through e-procurement portal. Refer Procedure under e-procurement for submission of RFP through e-procurement.

| S. No. | Particulars                  | Details                                                            |
|--------|------------------------------|--------------------------------------------------------------------|
| 1.     | Name of Beneficiary          | National Highways & Infrastructure Development Corporation Limited |
| 2.     | Beneficiary Bank Account No. | 90621010002610                                                     |

| S. No. | Particulars                              | Details                                                                               |
|--------|------------------------------------------|---------------------------------------------------------------------------------------|
| 3.     | Beneficiary Bank Branch Name and Address | Canara Bank, Transport Bhawan, 1 <sup>st</sup> Parliamentary Street, New Delhi 110001 |
| 4.     | Beneficiary Bank Branch IFSC             | CNRB0019062                                                                           |

10. The Consultant shall furnish as part of its Proposal, a Bid Security of Rs. 2,00,000/- (Rupees Two lakhs only) in the form of, Insurance Surety Bond (issued by Insurance Company authorized by Insurance Regulatory and Development Authority of India in the format at Appendix-B-12) ,E- Bank Guarantee/BG (as per the format specified in Appendix B11 of this RFP document) & (the “Bid Security”) or may be deposited through online facility provided by the IndusInd Bank in favour of National Highways & Infrastructure Corporation Ltd. payable at New Delhi, valid for 45 days beyond the validity of the Proposal. The Proposal submitted without Bid Security will be summarily rejected. The Bid Security of the successful Consultant will be returned when the Consultant has signed the Contract Agreement with the Client and has furnished the required Performance Guarantee as specified in the document within 15 days from the receipt of the Letter of Acceptance. The Bid Security will be forfeited: (a) If a consultant withdraws its Proposal during the period of bid validity; or (b) If the Consultant fails to accept the Client’s corrections of arithmetic errors in the Consultant’s Proposal (if any); or (c) If the Successful Consultant fails to sign the contract agreement with the Client within the prescribed period; or (d) If the Successful Consultant fails to furnish the Performance Security within the stipulated time. Unsuccessful Consultants would be informed regarding their non-qualification, without any explanation and thereafter Bid Security would be returned unopened after the evaluation of the financial proposal and signing the contract agreement with the successful Consultant. For further details and step by step process regarding e-BG and online payment, NHIDCL Office Order dated 22nd March 2023 may be referred, which is available on NHIDCL website.
11. Unqualified bidders would be informed regarding their non qualification, without any explanation.
12. The proposal should be submitted by consultancy firms in two parts. The two parts of the proposal are **Part 1: Technical Proposal** and **Part 2: Financial Proposal**. **Both Technical and Financial Proposal are to be submitted only in Electronic Form (to be uploaded on e-portal)**. For a given DBFOT Project, Stage -1 of the Evaluation shall consider the evaluation of the Technical Proposal (i.e. Part 1). *The firms scoring the qualifying marks (minimum 75%) as mentioned in RFP shall be listed in the descending order of their technical score and 5 top ranking firms shall only be considered for further evaluation provided none of them is in conflict of interest with the Concessionaire. The firms in conflict of interest shall be substituted by next ranking firm not having conflict of interest with the Concessionaire. Under stage 2, the financial proposal of such five firms as selected above shall be opened and evaluated.* The weightage of Technical and Financial score shall be 80% & 20% respectively. The final selection of the firm shall be based on the highest combined score of Technical and Financial Proposal.

13. A Bidder is required to submit, along with its technical BID, a Self-Certification for meeting local content requirement – A bidder is required to submit, along with its technical BID, a self-certification that the item offered meets the local content requirement for ‘Class-I local bidder’ / ‘Class-II local bidder’ as the case may be. The self-certification shall also have details of the location(s) at which the local value addition is made. In case, bidder has not submitted the aforesaid certification the bidder will be treated as ‘Non local Supplier’. The Class-I local bidder, Class-II local bidder and Non-Local Supplier are defined as under
- (i) ‘Class-I local bidder’ means a bidder, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for ‘Class-I local bidder’ under this RFP. The local content requirement to categorize a bidder as ‘Class-I local bidder’ is minimum 50%.
  - (ii) ‘Class-II local bidder’ means a bidder, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for ‘Class-II local bidder’ under this RFP. The ‘local content’ requirement to categorize a bidder as ‘Class-II local bidder’ is minimum 20%.
  - (iii) Non-local bidder’ means a bidder, whose goods, services or works offered for procurement, has local content less than that prescribed for “Class-II local” under this RFP.
  - (iv) ‘Local Content’ means the amount of value added in India which shall be total value of item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent

In case estimated project cost is above Rs.10 crores, the ‘Class-I local bidder’ / ‘Class-II local bidder’ shall provide a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

14. The total time period for the assignment as Independent Consultant will be for 36 -Months.
15. Consultants may apply either as a sole firm or forming Joint Venture with other consultants. In case of Joint Venture, the maximum number of Joint Venture partners is limited to 2 (i.e. one lead + 1 JV partner). Formulation of more than one JV with different partners for the same work is not allowed and all such proposal involving the firms shall be treated as non-responsive.
- 15.1 Restriction under Rule 144 (xi) - Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority as per Stipulated provision in Ministry of Finance Department of Expenditure (Public Procurement Division) office Memorandum No F. No. 6/18/2019-PPD dated 23.07.2020
16. (A) The Applicant whether a sole applicant or lead member with joint venture may include any number of Associate to provide technology in assignment (refer para 10 (iii) of data sheet). The associate firm can provide equipment based road inspection services

for any of the 5 equipment viz., (i) Network Survey Vehicle including all modules required as per technical specifications, (ii) Falling Weight Deflectometer, (iii) Mobile Bridge Inspection Unit and (iv) Retro Reflectometer. However, the associate(s) cannot be common for 2 or more bidders. If any associate is common with 2 or more bidders, all those bids shall be declared non-responsive. Hence, the bidder may ensure on his own that the associate proposed by him is not proposed by any other bidder participating in the same assignment and the bidder is solely responsible in this regard.

(B) In addition, the applicant whether a sole applicant or lead member with joint venture may also include an Associate for providing key personnel. In such case, the applicant should submit a MOU with associate regarding role and responsibility of Associate Company. **However, the maximum no. of key personnel from Associate firm during RFP proposal and implementation of contract should be limited to two (2).**

17. The Applicant, by submitting its Application pursuant to this RFP, shall be deemed to have acknowledged that without prejudice to the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) any other right or remedy hereunder or in law or otherwise, the Applicant shall be debarred from participating in the future projects of the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) in the following situations

- (a) If an Applicant withdraws its Proposal during the period of its validity as specified in this RFP and as extended by the Applicant from time to time.
- (b) In the case of a Selected Applicant, if the Applicant fails to sign the Agreement.

18. Consulting firms meeting the following criteria are only eligible for applying for this assignment. Firms not meeting these criteria need not apply.

\* For time period more than 36 months, specific approval with higher time period may be got approved by Competent Authority on case to case basis before inviting the RFP

A) Eligibility criteria for sole applicant firm.

| S No   | Experience of the firm in last 7 years                                                                                                                                                                                                                               |                                                                                                                                                                                                       | Annual Turnover                                                                                                                                       |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | Preparation of DPR (NH/SH/Equivalent)                                                                                                                                                                                                                                | Project Supervision/IC (NH/SH/Equivalent)                                                                                                                                                             |                                                                                                                                                       |
| 1 (a). | The firm should have minimum experience of preparation of detailed Project Report/ Feasibility Study cum Preliminary Design Report of Tunnel Project of aggregate length equal to the project tunnel length or more of 'Similar category** for which RFP is Invited. | The firm should have minimum experience of Project Supervision / IC of Tunnel project of aggregate length equal to the project tunnel length or more of 'Similar category** for which RFP is Invited. | Annual turnover (updated average of last 3 years) of the firm from consultancy business should be equal to or more than 2% of Estimated Project Cost. |

|       |                                                                                                                                                                                                   |                                                                                                                                                                                                                                           |  |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1 (b) | Firm should also have prepared DPR/ Feasibility Study cum Preliminary Design Report for at least one Tunnel project of similar category** of project length equal to 30% of project tunnel length | Firm should have also experience of Project Supervision/ Independent Engineer/ Authority's Engineer of at least one Tunnel project of similar category** of project length equal to 40% of the project tunnel length in O&M or DLP stage. |  |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

\*\* Similar Category of project means Tunnel project having twin tube (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (**each tube**) or **2lane highway tunnel** for which RFP is invited. For this tunnel project having twin tube (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (**each tube**) or **2 lane highway tunnel** experience of more than twin tubes (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 4/6 lane highway tunnel also to be considered with a multiplication factor of 1.5. Experience of single tube tunnel (including tunnel(s) for Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 m diameter will be considered with a multiplication factor of 0.4.

- B) Eligibility Criteria for partner in case of JV (not more than 1 JV partner shall be allowed) shall be as under :

The lead partner must fulfill atleast 50% of requirements at 1(a) of table in para (A) above and other JV partner should fulfill atleast 40% of eligibility criteria as indicated at 1(a) of table in para (A) above. Also the lead partner and JV partner jointly should meet not less than 1.20 times the eligibility criteria as mentioned at 1(a) of table in para (A) above. Lead partner should meet the criteria 1 (b) of table in para (A) above.

Note: The weightage given for experience of a firm would depend on the role of the firm in the respective assignments. The firm's experience would get full credit if it was the sole firm in the respective assignment. Experience weightage for firms joining Lead partner JV partner shall be considered in the same proportion as payment has been received \*\*\* by the firm towards consultancy work in the project.

In case the financial figures and values of services provided are in foreign currency, the above enhancement factors will not be applied. Instead, current market exchange rate (State Bank of India BC Selling rate as on last date of submission of the bid) will be applied for the purpose of conversion of amount in foreign currency into Indian Rupees.

17. The Bidder including individual or any of its Joint Venture Member should, in the last 2 years, have neither failed to perform for the works of Expressways, National Highways, ISC (Inter State Connectivity) & EI (Economic Importance) works, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder including individual or any of its Joint Venture Member, as the case may be, nor has been expelled or terminated by Ministry of Road Transport & Highways or its implementing agencies for breach by such Bidder including individual or any of its Joint Venture Member. Consultants (sole firm or lead

firm and any of the JV partners) who do not fulfil the aforesaid condition as on last date of submission of proposal, need not apply as their RFP proposal will not be entertained.

18. National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) will not be responsible for any delay, loss or non-receipt of RFP document sent by post/courier. Further, National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) shall not be responsible for any delay in receiving the proposal and reserves the right to accept/reject any or all applications without assigning any reason thereof.
19. The two parts of the Proposal (Technical proposal and Financial proposal) must be submitted on-line only with all pages numbered serially, along with an index of submission as per procedure under e-tendering. Physical submission of the proposal shall not be accepted. In the event, any of the instructions mentioned herein have not been adhered to, the Employer may reject the Proposal.
20. Employer will be at liberty to keep the credentials submitted by the Consultants at bidding stage, in public domain and the same may be uploaded by Employer on Employer's web-site. Consultants should have no objection if Employer uploads the information pertaining to their credentials as well as of their key personnel.
21. The individual key personnel proposed in the bid by the consultants or any replacement thereof should undertake that they shall have no objection in uploading/hoisting of their credentials by Employer in public domain.
22. For determining the eligibility of bidder from a country which shares a land border with India the following shall apply: -
  - i. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
  - ii. "Bidder (including the term 'tenderer', 'consultant' or 'service provider in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated herein before, including any agency branch or office controlled by such person, participating in a procurement process.
  - iii. 'Bidder from a country which shares a land border with India' for the purpose of this Order means: -
    - a. An entity incorporated, established or registered in such a country; or
    - b. A subsidiary of an entity incorporated, established or registered in such a country; or
    - c. An entity substantially controlled through entities incorporated, established or registered in such a country, or
    - d. An entity whose beneficial owner is situated in such a country; or
    - e. An Indian (or other) agent of such an entity; or
    - f. A natural person who is a citizen of such a country; or

g. A consortium or joint venture where any member of the Consortium or joint venture falls under any of the above.

iv. The beneficial owner for the purpose of para (iii) above will be as under:

23. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means,

Explanation—

- a. "Controlling ownership interest" means Ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company;
  - b. "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits -of such-association or body of individuals;
4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial Owner is the relevant natural person who holds the position of senior managing official;
5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

### **Model Certificate for Tenders**

*" I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a Country or, if from such a country, has been registered with the Competent Authority. I hereby*

*certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached]"*

24. RFP submission must be received not later than 1500 hrs on 08.02.2025 in the manner specified in the RFP document at the address given below.

**Address of Employer:**

**(Ashish Gupta)**  
**Dy. General Manager (Tech)**  
**NHIDCL, 2<sup>nd</sup> Floor, Tower-A**  
**World Trade Center, Nauroji Nagar**  
**New Delhi-110029**  
**Email: [gmt8@nhidcl.com](mailto:gmt8@nhidcl.com)**  
**Ph: 011-26768908**

## **SECTION 2: LETTER OF INVITATION TO CONSULTANTS**

### **1. INTRODUCTION**

- 1.1** Bids are invited from consulting firms either as a sole firm/ joint venture with other consultant willing to act as IE to submit a proposal for providing consulting services required for the assignment named in the attached Letter of Invitation.
- 1.2** A brief description of the assignment and its objectives are given in the Terms of Reference (TOR).
- 1.3** Deleted
- 1.4** This RFP is neither an agreement nor an offer by the Authority to the prospective Applicants or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in the formulation of their Proposals pursuant to this RFP. This RFP includes statements and assumptions, which reflect various assessments arrived at by the Authority in relation to the Consultancy. Such assessments and statements do not purport to contain all the information that each Applicant may require. The information contained in this RFP, may not be complete, accurate, adequate or correct. Each Applicant should, therefore, conduct its own investigations about the assignment and the local conditions before submitting the proposal by paying a visit to the Client and the project site, sending written queries to the client, before the date and time specified in the Data Sheet.
- 1.5** Please note that (i) the costs of preparing the proposal and negotiating for the contract, including a visit to site, are not reimbursable as a direct cost of assignment and (ii) National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) is not bound to accept any of the proposals received by it and reserves the right to annul the selection process at any time prior to contract award, without thereby incurring any liability to the Consultants.
- 1.6** Consultant have an obligation to disclose any situation of actual or potential conflict that impacts their capacity to serve the best interest of their Client, or than may reasonably be perceived as having this effect. Failure to disclose said situations may lead to the disqualification of the Consultant or the termination of its Contract and/or any other action as deemed fit by the Authority at any stage.
- 1.7** It is the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) policy that the consultants observe the highest standard of ethics during the selection and execution of such contracts. In pursuance of this policy, the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) :
- a) Defines, for the purpose of this paragraph, the terms set forth below as follows:
- (I) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution;
- (II) "fraudulent practice" means a misrepresentation or omission of facts in order to influence a selection process or the execution of a contract;

- (III) “collusive practices” means a scheme or arrangement between two or more consultants with or without the knowledge of the Client, designed to establish prices at artificial, non-competitive levels;
  - (IV) “coercive practices” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract.
- b) will reject a proposal for award if it determines that the Consultant recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the contract in question;
  - c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract; and
  - d) will have the right to require that a provision be included requiring consultants to permit the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) to inspect their accounts and records relating to the performance of the contract and to have them audited by authorized representatives of National Highways & Infrastructure Development Corporation Ltd. (NHIDCL).
- 1.8** Consultants, their JV partner, their Sub-Consultants, and their associates shall not be under a declaration of ineligibility for corrupt and fraudulent practices. Furthermore, the Consultants shall be aware of the provisions on fraud and corruption stated in the specific clauses in the General Conditions of Contract.
- 1.9** Consultants shall furnish information on commissions and gratuities, if any, paid or to be paid to agents relating to this proposal and during execution of the assignment if the Consultant is awarded the Contract, in the Financial Proposal.
- 1.10** The Data Sheet indicates how long Consultants’ Proposals must remain valid after the submission date. During this period, Consultants shall maintain the availability of Professional staff nominated in the Proposal. The Client will make its best effort to complete the process within this period. Should the need arise, however, the Client may request Consultants to extend the validity period of their proposals. Consultants who agree to such extension shall confirm that they maintain the availability of the Professional staff nominated in the Proposal, or in their confirmation of extension of validity of the Proposal, consultants could seek replacement upto a maximum of 50% key personnel. If any consultant seeks any replacement(s), while extending the bid validity, then the same shall be evaluated for ascertaining suitability of replacement as per the provisions of the RFP and remuneration shall not be reduced for any such replacement(s). However, the technical evaluation shall take into account of the originally submitted CV(s) only irrespective of replacement sought. Consultants who do not agree have the right to refuse to extend the validity of their Proposals.

## **2. CLARIFICATIONS AND AMENDMENT OF RFP DOCUMENTS**

- 2.1** The Consultants may request a clarification of any of the RFP documents up to the number of days indicated in the Data Sheet before the Proposal submission date. Any request for clarification must be sent in writing by paper mail, facsimile, or electronic mail to the Client's address indicated in the Data Sheet. The Client will respond by cable, facsimile, or electronic mail to such requests and will send copies of the response (including an explanation of the query but without identifying the source of inquiry) to all consultants who have purchased the RFP document. Clarification/amendment will also be hosted on National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) e-portal.
- 2.2** At any time before the submission of Proposals, the Client may for any reason, whether at its own initiative or in response to a clarification requested by a Consulting firm, modify the RFP documents by amendment. Any amendment shall be issued in writing through addendum. Addendum may be sent by mail, cable, telex, facsimile or electronic mail to consultants or/and will be hosted on National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) e-portal which will be binding on them. The Client may at its discretion extend the deadline for the submission of Proposals.

## **3. PREPARATION OF PROPOSAL**

- 3.1** You are requested to submit your proposal in Two Parts strictly using the formats enclosed herewith (refer section 3,4 and 5). The two parts shall be:

### **Part 1: Technical Proposal and**

### **Part 2: Financial Proposal.**

The proposal shall be written in the English language as specified in the Data Sheet. All pages of the Proposal shall be signed by an authorized representative. The representative's authorization shall be confirmed by written Power of Attorney duly notarized to be submitted with the proposal. In case of JV a MoU indicating the specific Projects, input and role of each Partner etc. shall be submitted with the proposal.

### **Part 1: Technical Proposal**

- 3.2** You are expected to examine all terms and conditions included in the documents.

Failure to act or to provide all requested information will be at your own risk and may result in rejection of your proposal.

- 3.3** During preparation of the Technical proposal you may give particular attention to the following:

- i) The man-months for the assignment shall be that stated in the Terms of Reference. The same shall be considered for the purpose of evaluation as well as award. In case the man months of TOR are amended in view of Client's own initiative or in response to clarification sought by any Consulting firm, the man months so amended and published shall be considered for the purpose of evaluation as well as award.

- ii) The Consultants should prefer to field as many of their permanent staff as possible and higher marks shall be given in this regard. The permanent staff would be considered those already employed with the firm prior to one year from the month during which this Tender Notice is issued. More weightage will be given to those key personnel who are employed with more years with the firm.
- iii) A good working knowledge of the language specified in the data sheet is essential for key professional staff on this assignment. Reports must be in the language (s) specified in the data sheet.
- iv) For Key Personnel e.g. Team Leader cum Senior Tunnel Expert, Residential cum Highway Engineer, Bridge/Structural Engineer and Senior Pavement Specialist, the Consultants should prefer candidates having worked on PPP Projects. Such personnel shall be rated higher than the candidates having no such experience at all”.

**3.4** Your Technical Proposal must provide the following information, using but not limited to the formats attached in the Section 3 & 4.

- (I) A brief description of the firm’s organisation and an outline of recent experience of the Consultants and, in the case of Joint Venture, for each partner, on assignments of a similar nature. The information which you shall provide on each assignment should indicate, *inter-alia*, the profiles of the staff provided, duration, contract amount and firm’s involvement. ***The details of assignments on hand shall also be furnished by the Consultant and their JV Partner separately.***
- (II) Any comments or suggestions on the ToR and a description of the methodology (work plan) which the firm proposes to execute the services, illustrated with bar charts of activities.
- (III) Site Appreciation: limited to four A4 size pages in 1.5 space and 12 font including photographs, if any;
- (IV) Proposed methodology for the execution of the services illustrated with bar charts of activities, including any change proposed in the methodology of services indicated in the TOR, and procedure for quality assurance: Maximum 4 pages;
- (V) The proposed methodology should be accompanied by the consultants initial view, key challenges they foresee and potential solutions. It should also include details on adoption of superior technology along with proof: limited to six A4 size pages in 1.5 space and 12 font including photographs;
- (VI) The proposal shall indicate as to whether the firm is having the facilities for carrying out the following field activities or these are proposed to be outsourced to specialized agencies.
  - 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
- (VII) Proposed Quality Audit Methodology including Quality Assurance Plan
- (VIII) In case the consultant envisages outsourcing any or all of the above services to the expert agencies, the details of the same indicating the arrangement made with the agencies need to be furnished. These agencies would however, be subject to approval of the client to ensure quality input by such agencies before award of the work. For out-sourced services, proposed firms/consultants should have such experience on similar projects.
- (IX) The composition of the proposed staff team, the tasks which shall be assigned to each and their timing;
- (X) Requirement for submission of CVs.
- a. The CVs of the six key personnel (Team Leader cum Senior Tunnel Expert, Residential cum Highway Engineer, Bridge/Structural Engineer, Traffic cum Road Safety Expert, Senior Pavement Specialist, and Sr Geologist) in the format as per Appendix-B-6 is to be furnished on Infracon portal. It may please be ensured that the format is strictly followed and the information furnished therein is true and correct. The CV must indicate the work in hand and the duration till which the person will be required to be engaged in that assignment. The Firm shall ensure that details furnished in the CV by the personnel are correct. If any information is found incorrect/fake/inflated in the CV, at any stage, debarment of key personnel from future NHIDCL projects upto 2 years may be taken by NHIDCL.
  - b. The age limit for key personnel is 65 years as on the date of bid submission. The proof of age and qualification of the key personnel must be furnished in the technical proposal.
  - c. Key information should include years with the firm and degree of responsibility held in various assignments. In CV format, at summary, the individual shall declare his qualification & total experience (in years) against the requirements specified in TOR for the position (Ref. Enclosure-B of TOR). In case, the information contained in the CV for the duration in which the key personnel was employed by the firm, proposing his candidature is found incorrect/fake/inflated at any stage, action including termination of the consultancy agreement and debarment of the firm upto 2 years from future NHIDCL projects shall be taken by NHIDCL.
  - d. CVs of Key Personnel having intermittent inputs will be considered only if the assignments on hand as on 7 days before due date of proposal including those for which LOA has been received from the Client or for

which Consultant has been declared as H1 are such that the key personnel is able to proportionately devote the given man months for this project.

All the CVs which are to be evaluated should be complete in all respects including signing and certification by the individual and the firm.

- e. Minimum 75% marks required. CV of all Key Personnel will be evaluated CV of proposed Team Leader should score at least 75% marks. If not, the proposal shall not be considered further.
- f. If a CV scores less than 75% marks, whatever marks it score will be carried forward for maximum 3 nos key personnel for determining the total score of the firm. However, if the Key Personnel does not fulfil the minimum academic qualification (as mentioned at Enclosure-B of TOR of RFP), the overall score of his CV will be evaluated as zero. If the Key Personnel does not fulfil the minimum qualification related to experience (as mentioned at Enclosure-B of TOR of RFP), then zero marks will only be assigned for that sub criteria, but the marks obtained by the CV of the Key Personnel will be carried forward for maximum 3 nos key personnel for determining the total score of the firm. In case, a firm is H-1, then all such Key Personnel (whose CV scores less than 75% or who does not fulfill the minimum qualification) will have to be replaced by the firm before signing the contract. The reduction in remuneration of such replacements shall be 10% for each replacement. In case more than 3 CV scores less than 75% marks, the proposal shall be considered non-responsive.

In case, person permanently employed with the firm is to be replaced, Technical score of both the CVs shall be compared excluding the marks given for employment with firm. Replacement would be allowed when the technical score (excluding the marks given for employment with firm) of the new key person is equal or better than the existing key person's technical score excluding marks assigned for permanent employment with the firm. However, the remuneration of such replacement shall be reduced on proportionate basis in case the overall score of the replacement person is less than the overall score original person.

- g. In case, the information contained in the CV for the duration in which the key personnel was employed by the firm proposing his candidature is found incorrect/fake/inflated at any stage, the consultancy firms shall have to refund the salary and perks drawn including interest @12% per annum in respect of the person apart from other consequences. In addition to the above 10% of the salary and perks to be refunded shall be recovered from the firm as penalty.
- xi) It is also clarified that any key personnel, if debarred during the period between receipt of bid and award of the contract and is required to be replaced as per the

provisions of the RFP, then the replacement shall not be considered as part of replacement by the consultant and hence no deduction in remuneration shall be affected. However, in this case the original CV will be considered for evaluation purpose

- xii) Deployment Schedule for each key personnel should be formulated and incorporated in the Technical Proposal which will be reviewed on quarterly basis.
- xiii) Estimates of the total time effort (person x months) to be provided for the services, supported by bar chart diagrams showing the time proposed (person x months) for each professional staff and sub professional staff.
- xiv) Age limit for supporting staff to be deployed on project is 65 years as on the date of bid submission.
- xv) In case consultant Firm's experience/ document is found to be false at any stage i.e. from bidding to completion of services, the Consultancy contract shall be terminated and consultant firm shall be debarred for a period of 2 years.

**3.5** The technical proposal must not include any financial information.

## **Part 2: Financial Proposal**

- 3.7** Your Financial Proposal must be strictly using the formats attached in Section 5. No additional items/quantities other than that specified in the formats should be proposed by the Consultants since the same shall not be considered for the evaluation/award. For
- 3.8** the first 12 months from the Date of Commencement of Services, Consultants shall be paid billing rates as indicated above. Beginning 13<sup>th</sup> months of the services provided, billing rates shall be increased on all items of contract inter alia including vehicle hire, office rent, consumables, furniture etc @ 5% every 12 months for local currency for the subsequent period of services rendered by the personnel of all categories namely (i) key Personnel; (ii) sub-Professional personnel and (iii) Support staff. However, for evaluation and award of the Bid proposals, the quoted initial rate (as applicable for first 12 months) shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates. All payments shall be made in Indian Rupees and shall be subjected to applicable Indian laws withholding taxes if any.
- 3.9** The Financial Proposal should clearly identify as a separate amount, the local taxes (including social security), duties, fees, levies and other charges imposed under the applicable law, on the consultants, the sub-consultants, and their personnel (other than nationals or permanent residents of the government's country); unless the Data Sheet specifies otherwise. This cost, however, will not be considered in evaluation.
- 3.10** Consultants may express the price of their services in the Indian Rupees only.
- 3.11** Goods and Service tax as applicable shall be paid to the Consultant while making payment for services rendered. The Consultants shall then deposit the same with the tax

authorities and provide a proof of having done so within next 90 days in line with policy circulars issued by employer. Employer shall pay only the Goods and Service tax.

4. **SUBMISSION, RECEIPT AND OPENING OF PROPOSALS**

4.1 **PREPARATION & SUBMISSION OF APPLICATIONS:**

A. Detailed RFP may be downloaded from E-procurement portal of Employer and the Application may be submitted online following the instructions appearing on the screen.

B. The following shall be the form of various documents in the Application:

I. **Only Electronic Form (to be uploaded on the E-procurement portal of Employer)**

(a) Technical proposal as indicated in para 'B' below

(b) Financial proposal as per format prescribed in SECTION-5 OF RFP.

(I) **Technical Proposal {Only Electronic Form (to be uploaded on the E-procurement portal of Employer)}**

(a) Power of Attorney for signing the Application

(b) If applicable, the Power of Attorney for Lead Member of JV;

(c) Copy of Memorandum of Understanding between JV partners, if applicable;

(d) Copy of Memorandum of Understanding with Associate, if applicable.

(e) Firms credentials as per format prescribed in SECTION-3 OF RFP. (The details are to be submitted through INFRACON only)

(f) Technical proposal as per format prescribed in SECTION-4 OF RFP. (The details are to be submitted through INFRACON only.)

(II) Details of payment towards cost of RFP of Rs. 5,900/- (Rupees Five thousand nine hundred only) including GST in favour of NHIDCL. online to the Bank Account of Authority specifying the Tender ID & Bid Due Date (Account no.: 90621010002610, IFSC Code: CNRB0019062, Name of Bank: Canara Bank, Transport Bhawan, 1st Parliament Street, New Delhi 110001 & Name of Beneficiary: National Highways & Infrastructure Development Corporation Ltd. (NHIDCL);

(III) Bid Security (for the amount given in section 1 of this document) in the form of Insurance Surety Bond, electronic Bank Guarantee or Demand Draft and the format specified in this document; or may be deposited through online facility provided by the IndusInd Bank and the format specified in this document; For Further, details and step by step process regarding e-BG and online payment, NHIDCL Office order dated 22nd march 2023 may be referred, which is available on NHIDCL website.

(IV) Bidders have to comply with the OM No. 13030/09/2008-vig. dated 28th December 2013 (copy enclosed) regarding Integrity pact.

- i. The successful bidder shall submit the original documents specified above in point no. 4.1 B (I) (a), (b), (c), (d), ~~(g) & (h)~~ above together with their respective enclosures & Original Integrity Pact to the Authority after declaration of bid evaluation result by Authority. The bidder (including individual or any of its Joint Venture Members) failing to submit the original documents required shall be unconditionally debarred from bidding in NHIDCL projects for a period of 2 years. In case successful bidder fails to submit the original documents, the bidding process shall be annulled and Tender shall be re-invited.
- ii. The Applicant shall upload scanned copies of the Technical Proposal and Financial Proposal as specified in point nos. **4.1 B (I) , (II), (III) & (IV)** above on the E-tendering portal of Employer before 15:00 hours Indian Standard Time on the Application due date i.e. on 08.02.2025. **Financial Proposal is to be submitted On-line only and no hard submission is to be made.**

#### **4.2 Modification / Substitution/ Withdrawal of bids:**

- (i) The Bidder may modify, substitute or withdraw its e- bid, prior to the Bid Due Date. No Bid shall be modified, substituted or withdrawn by the Bidder on or after the Bid Due Date.
- (ii) Any alteration/ modification in the Bid or additional information supplied subsequent to the Bid Due Date, unless the same has been expressly sought for by the Employer, shall be disregarded.
- (iii) For modification of e-bid, bidder has to detach its old bid from e-tendering portal and upload / resubmit digitally signed modified bid.
- (iv) For withdrawal of bid, bidder has to click on withdrawal icon at e-tendering portal and can withdraw its e-bid.
- (v) Before withdrawal of a bid, it may specifically be noted that after withdrawal of a bid for any reason, bidder cannot re-submit e-bid again.

#### **4.3 OPENING AND EVALUATION OF APPLICATIONS:**

- (i) Opening of Proposals will be done through online for Financial Proposal and both on-line and manually for Technical Proposal.
- (ii) For participating in the tender, the authorized signatory holding Power of Attorney shall be the Digital Signatory. In case the authorized signatory holding Power of Attorney and Digital Signatory are not the same, the bid shall be considered non-responsive.

The Employer will open the Technical Proposal at 1400 hours Indian Standard Time on 09.02.2025 i.e., in the presence of the Applicants who choose to attend and evaluate the Applications in accordance with the provisions set out in the RFP.

- (iii) The Financial Proposal will be opened of the short-listed applicants who qualify for financial opening as per RFP. The date of opening of Financial Proposal will be notified later on.

## **5. PROPOSAL EVALUATION**

**5.1** A two -stage procedure shall be adopted for evaluating the proposals.

**5.2** Deleted

### **Technical Proposal**

**5.3** The Evaluation Committee appointed by the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) shall carry out its evaluation applying the evaluation criteria and point system specified in the data sheet. Each responsive proposal shall be attributed a technical score (St) The technical proposal should score at least 75 points to be considered responsive. The Authority shall shortlist 5 (five) top firms on the basis of their technical score not in the conflict of interest with the concessionaire.

### **Financial Proposal**

**5.4** After the evaluation of Technical Proposals is completed and the shortlist of 5 firms is finalised, National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) may notify those consultants whose proposals were not considered as per conditions of RFP. The National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) shall simultaneously notify the finally selected 05 (five) shortlisted firms indicating the date and time set for opening of the Financial Proposals.

**5.5** The Financial Proposals shall be opened publicly in the presence of the consultants' representatives who choose to attend. The name of the consultant, the technical scores, and the proposed prices shall be read aloud and recorded when the Financial Proposals are opened. The Client shall prepare minutes of the public opening.

**5.6** The Evaluation Committee will determine whether the submitted Financial Proposals are complete (i.e. whether they have included cost of all items of the corresponding proposals; if not, then the cost towards such missing items will be considered as NIL, but the Consultant shall, however, be required to carry out such obligations without any additional compensation. In case under such circumstances, if Client feels that the work cannot be carried out within the overall cost as per the submitted financial proposal, such proposals shall be considered non responsive.

**5.7** The Evaluation Committee shall determine if the financial proposal is complete and without computational errors. The lowest financial proposal (Fm) shall be given a financial score (Sf) of 100 points. The financial score of the proposals shall be computed as follows:  $Sf = 100 \times Fm / F$  (F-amount of financial proposal).

**5.8** Proposals shall finally be ranked according to their combined technical (St) and financial (Sf) scores as follows:

$$S = ST \times Tw + SF \times Fw$$

Where S is the combined score, and Tw and Fw are weights assigned to Technical Proposal and Financial Proposal that shall be 0.70 and 0.30 respectively.

**5.9** The selected Independent Engineer shall be the first Ranked Applicant (H-1, having the highest combined score). In the event the proposals of two or more consultants have the same scores in the final ranking, the proposal with the highest technical score should be ranked first.

**5.10** Subject to the provisions of Clause 5.3, the Bidder whose BID is adjudged as responsive. The bidder shall declared as most preferred bidder shall be the first Ranked applicant (having the highest combined Technical and Financial score as per RFP) as procedure defined as under:

- i) Among all the responsive bidder, the most preferred bidder will be termed as H-1. If H-1 is 'Class-I local bidder', the contract will be awarded to H-1.
- ii) If H-1 is not 'Class-I local bidder', then the most preferred bidder among the 'Class-I local bidder' (having Highest combined Technical and Financial Score as per RFP among 'Class-I local bidder'), will be invited to match H-1 price subject to Class-I local bidder's quoted price falling within the margin of purchase preference, and the contract will be awarded to such preferred 'Class-I local bidder' subject to 'Class-I local bidder' matching the financial quote of H-1 or his quote whichever is lower.
- iii) In case such preferred eligible 'Class-I local bidder' fails to match the H-1 price, the 'Class-I local bidder' with next highest combined score (having next Highest combined Technical and Financial Score as per RFP among Class-I local bidders), within the margin of purchase preference shall be invited to match the H-1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local bidder' within the margin of purchase preference matches the H-1 price, the contract shall be awarded to H-1 bidder.

'Margin of purchase preference' means the maximum extent to which the price quoted by 'Class-I local bidder' may be above/below the H-1 for the purpose of purchase preference.

The margin of purchase preference shall be 20%.

## **6. Award of Contract**

The Client shall issue letter of award to selected Consultant and ask the Consultant to provide Performance Security. If the selected Consultant fail to provide performance security within the prescribed time or the Consultant fail to sign the Contract Agreement within prescribed time, the Client may invite the 2<sup>nd</sup> highest ranking bidder Consultant and follow the procedure outlined in Para 6 and 8 of this Letter of Invitation.

## **7. PERFORMANCE SECURITY**

**7.1** The successful consulting firm shall have to submit a Bank Guarantee (BG) for an amount of 5% of the Contract Value within 15 days of issue of LOA. The BG shall be valid for a period of 38 months i.e. up to 2 months beyond the expiry of the Contract period of 36 months. Performance Security be furnished in the form of, Insurance Surety Bond

(issued by Insurance Company authorized by Insurance Regulatory & Development Authority of India Appendix-B-13), E-Bank Guarantee (E-BG) or in case it is not possible to furnish e-BG, a physical BG in the format specified in Appendix B-11 of draft contract form and furnished from a Nationalized Bank. The BG shall be in the format specified in Appendix H of draft contract form and furnished from a Nationalized Bank, IDBI or ICICI/ ICICI Bank/ Foreign Bank/ EXIM Bank / Any Scheduled Commercial Bank approved by RBI having a net worth of not less than Rs.1000 crore as per latest Annual Report of the Bank amongst the list of banks available at NHIDCL website (<https://nhidcl.com/>) only. 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 and not individually by the members.

7.2 In the event the Consultant fails to provide the security within 15 days of date of LOA, it may seek extension of time for a period of 15 (Fifteen) days on payment of damages for such extended period in a sum of calculated at the rate of 0.1% (Zero Point One Percent) of the contract price for each day until the performance security is provided. For the avoidance of doubt the agreement shall be deemed to be terminated on expiry of additional 15 days' time period.

7.3 Notwithstanding anything to the contrary contained in this Agreement, the Parties agree that in the event of failure of the Consultant to provide the Performance Security in accordance with the provisions of Clause 13.1 within the time specified therein or such extended period as may be provided by the Authority, in accordance with the provisions of Clause 13.2, all rights, privileges, claims and entitlements of the Consultant under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Consultant, and LoA shall be deemed to have been withdrawn by mutual agreement of the Parties. Authority may take action debar such firm for future projects for a period of 1-2 years.

## **8. Signing of Contract Agreement**

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

## **9. PENALTY PROVISIONS**

In case of deficiency in services, penal action shall be initiated in terms of clause 3.1.3 of General condition of contract.

## DATA SHEET

(As Mentioned in Letter of Invitation to Consultants)

### Sub clause No. in Letter of Invitation to Consultants

- 1 **Pre-Proposal Conference shall be held at:** National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) **HQ on 24.01.2025 at 15.00 hrs.**
- 2 The proposal shall be valid for 120 days after the last date of submission.
- 3 Clarification may be requested 7 days prior to Pre-Proposal Conference. The address for requesting clarification is:  
**Address of Employer:**  
(Sh. Ashish Gupta)  
Dy. General Manager (Tech)  
NHIDCL, 2<sup>nd</sup> Floor, Tower-A  
World Trade Center, Nauroji Nagar,  
New Delhi-110029  
**Email: gmt8@nhidcl.com**  
**Ph: 011-26768908**
- 4 **The Language** of documents and correspondence will be English
- 5 All the personnel shall have working knowledge of English and all the reports etc. shall be written in English.
- 6 National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) shall reimburse only Goods and Service Tax. Consultant has to assess all other taxes and should inbuilt them in their financial proposal. These taxes (other than Goods and service tax) should not be provided separately. Consultants are requested to consult Tax Consultants for details.
- 7 The Consultants to ensure that their firms and key personnel should register their credentials / modules on [www.infracon.nic.in](http://www.infracon.nic.in) as stipulated in MoRT&H Circular No. RW-NH-35075/1/2010-S&R(R) dt. 28.10.2015.
- 8 The Consultants to state cost in INR .
- 9 The time and date of submission: **1500 hrs on 08.02.2025.**
- 10 **The points assigned to Technical Evaluation criteria are:**

| S. No. | Description                                                       | Marks      |
|--------|-------------------------------------------------------------------|------------|
| 1      | Relevant experience for the assignment                            | 40         |
| 2      | Experience in use of technology for road inspection               | 20         |
| 3      | Qualifications and competence of the key staff for the assignment | 40         |
|        | <b>Total</b>                                                      | <b>100</b> |

i. **Sub criteria for Relevant Experience of the firm for the assignment**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Average Annual Turnover (last 5 years) from consultancy business (Min 5 crore)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2  |
| Nos of Highway* & Tunnel** Professionals with the firm<br>* The professionals who possess degree in Civil Engineering/Transport Planning/Transport Economics/Traffic Management / Geology/ Environment Science or Engineering and 8 years experience in highway/bridge/tunnel with employment in the firm for more than one year. The current Employment Certificate shall be uploaded by Key Personnel on INFRACON.<br>**Tunnel professionals who possess degree in Civil Engineering / Mining Engineering or equivalent and 8 years experience in Major tunnel with employment in the firm for more than one year. The current Employment Certificate shall be uploaded by Key Personnel on INFRACON. | 5  |
| Experience as Independent Engineer/Authority Engineer/Construction Supervision in Number of tunnel Projects of length equal to 40% of similar category for which RFP is invited or more in last 10 years*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10 |
| Experience in DPR preparation for Number of Tunnel Projects of length equal to 40% of similar category for which RFP invited) or more in last 10 years *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5  |
| In hand DPRs for Authority (Ministry /NHAI/NHIDCL-As applicable) Tunnel Projects (presently under progress)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5  |
| Experience in Construction Supervision/DPR /Design Review of Major structures having length of more than 500 meter in last 7 years.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3  |
| Experience as Independent Engineer/ Supervision consultants on O&M project under DBFOT/OMT of four/six laning** of 50% of project length completed during the last 7 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 10 |

Consultants should give details of the experience of the firm considering the completed and the on-going highway assignments, separately for PPP and non-PPP Projects along with experience certificates from clients. This list of the completed works should also include those assignments which are substantially (90% of Contract value) completed. No Qualification/Experience etc. shall be considered without proof of experience.

Experience of Authority's Engineer for having offered consultancy services to a private organization shall also be considered as relevant experience for current assignment, provided the experience is duly endorsed by the respective Government Agency.

In case, final DPR & 3D has been submitted and no further action is taken by the employer, the DPR shall be considered as completed after 3yr and submission of both final DPR and 3D.

\*\* Similar Category of project means Tunnel project having twin tube (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 2lane highway tunnel for which RFP is invited. For this tunnel project having twin tube (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 2 lane highway tunnel experience of more than twin tubes(including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 4/6 lane highway tunnel also to be considered with a multiplication factor of 1.5. Experience of single tube tunnel (including tunnel(s) for Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 m diameter will be considered with a multiplication factor of 0.4.

In case of JV the turnover and experience details of Lead and JV Employer's certificate should be submitted substantiating the experience claimed by the firm.

**ii. Sub criteria for Experience in use of technology for road inspection**

| Sr. No. | Description                                                                                             | Maximum Points | Sub-Points |
|---------|---------------------------------------------------------------------------------------------------------|----------------|------------|
| 1       | Experience in Network Survey Vehicle (NSV) or better technology for pavement inspection                 | 5              |            |
| 1.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 1.2     | Experience                                                                                              | 3              |            |
|         | (a)1-2 projects                                                                                         |                | 1          |
|         | (b)3-5 projects                                                                                         |                | 2          |
|         | (c)> 5 projects                                                                                         |                | 3          |
| 2       | Experience in Falling Weight Deflectometer (FWD) or better technology for pavement strength measurement | 4              |            |
| 2.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment /Equipment on MoU with Associate or on hiring basis                                       |                | 2          |
| 2.2     | Experience                                                                                              | 2              |            |
|         | (a)1-3 Projects                                                                                         |                | 1          |
|         | (b)>3 Projects                                                                                          |                | 2          |
| 3       | Experience in Mobile Bridge Inspection Unit or better technology for bridge inspection                  | 4              |            |
| 3.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 3.2     | Experience                                                                                              | 2              |            |
|         | (a)1-3 Projects                                                                                         |                | 1          |
|         | (b)>3 Projects                                                                                          |                | 2          |
| 4       | Experience in Retro reflectometer technology                                                            | 4              |            |
| 4.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 4.2     | Experience                                                                                              | 2              |            |
|         | (a)1-3 Projects                                                                                         |                | 1          |
|         | (b)>3 Projects                                                                                          |                | 2          |
| 5       | Experience in Automatic Traffic Counter cum Classifier (ATCC)                                           | 3              |            |
| 5.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 5.2     | Experience                                                                                              | 1              |            |
|         | (a)1-3 Projects                                                                                         |                | 0.5        |
|         | (b)>3 Projects                                                                                          |                | 1          |
|         | <b>Total</b>                                                                                            | <b>20</b>      |            |

**Notes: (i)** The consultants owning the equipment shall be required to submit proof of ownership.

**(ii)** The experience of the associate firms in use of technology shall also be counted in the evaluation. The experience of firm or associate firm in NSV, FWD, MBIU, Retro reflectometer, ATCC or equivalent technology shall be supported by experience certificate. The experience of a firm/ associate firm for a private concessionaire/contractor (client) shall be considered on self-certification along with the client certificate. Any false certification shall attract provision of Clause 2.9.1(g) of GCC.

**(iii)** In case, ownership document of equipment of Consultancy/ Associate Firm is found to be false, the consultancy/ Associate Firm, as the case may be, shall be put on holiday listing (temporary debarment) for a period upto 12 months.

- iii. **Qualification and competence of following professional/sub-professional staff** for the assignment shall be evaluated. The weightage for various key staff are as under:-

| S. No | Staff Position                       | Marks     |
|-------|--------------------------------------|-----------|
| 1     | Team Leader Cum Senior Tunnel Expert | 14        |
| 2     | Resident cum Highway Engineer        | 10        |
| 3     | Bridge/Structural Engineer           | 4         |
| 4     | Traffic cum Road Safety Expert       | 4         |
| 5     | Sr. Pavement Specialist              | 4         |
| 6     | Sr Geologist                         | 4         |
|       | <b>Total</b>                         | <b>40</b> |

Sub criteria for qualification of key Personnel (i.e. Professional staff)

|                          |            |
|--------------------------|------------|
| General qualifications   | 25         |
| Adequacy for the project | 70         |
| Employment with firm     | 5          |
| <b>Total</b>             | <b>100</b> |

The technical proposal should score at least 75 points to be considered responsive for financial evaluation.

- iv) Detailed evaluation criteria which is to be used for evaluation of technical bids is as indicated below as Appendix-EC.
  - v) The Consultant should carryout self-evaluation based on the evaluation criteria at Appendix-EC. While submitting the self-evaluation along with bid, Consultant shall make references to the documents which has been relied upon in his self-evaluation.
  - vi) Result of technical evaluation shall be made available on the website giving opportunity to the bidders to respond within 7 days in case they have any objection.
  - vii) The single currency for price conversion is INR. For evaluation of bid proposals, the foreign currency conversation rate of 1US Dollar = Rs. and 1 Euro = Rs. shall be used. (This will be the exchange rates as per Reserve Bank of India rounded off to nearest Rupee applicable at the time of RFP invitation).
  - viii) The weightage given to technical proposal is 80%. The weightage given to financial proposal is 20%.
11. **Commencement of Assignment:** The firm shall begin carrying out the services within one month of signing of the Consultancy Agreement.

**Remarks:** Based on experience and the Consulting Industry's Capacity, Project specific requirement etc., National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) may modify the above criteria for Selection of IE.

## **Appendix-EC**

### **1. Evaluation Criteria for Assessment of Experience of the Firm.**

| <b>S.No.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Max. Marks</b> | <b>Reference/Details of projects Claimed for self-assessment</b> | <b>Marks self-assessed by the bidder</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------|------------------------------------------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Average Annual Turnover (last 5 years) from consultancy business<br>< Rs. 2% of TPC– 0 marks<br>Rs. 2% of TPC - 1.5marks<br>Add for additional turnover 0.25 (Zero point two five) marks for every 1% of TPC above 2% of TPC subject to maximum 0.5 marks.                                                                                                                                                                                                 | 2                 |                                                                  |                                          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Nos. of Highway Professionals with the firm *                                                                                                                                                                                                                                                                                                                                                                                                              | 2                 |                                                                  |                                          |
| 2.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <10                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0                 |                                                                  |                                          |
| 2.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10-20                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1                 |                                                                  |                                          |
| 2.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | >20 but ≤30                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.5               |                                                                  |                                          |
| 2.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | >30                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                 |                                                                  |                                          |
| 2A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Nos. of Tunnel Professionals with the firm **                                                                                                                                                                                                                                                                                                                                                                                                              | 3                 |                                                                  |                                          |
| 2.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <5                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0                 |                                                                  |                                          |
| 2.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 05--08                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                 |                                                                  |                                          |
| 2.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | >08 but ≤10                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                 |                                                                  |                                          |
| 2.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | >10                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3                 |                                                                  |                                          |
| <p><b>*The professionals who possess degree in Civil Engineering/Transport Planning /Transport Economics/Traffic Management / Geology/ Environment Science or Engineering and 8 years experience in highway/bridge with employment in the firm for more than one year. The current Employment Certificate shall be uploaded by Key Personnel on INFRACON.</b></p> <p><b>** Tunnel professionals who possess degree in Civil Engineering / Mining Engineering or equivalent and 8 years experience in Major tunnel with employment in the firm for more than one year. The current Employment Certificate shall be uploaded by Key Personnel on INFRACON..</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                                                                  |                                          |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Experience as Independent Engineer/Authority Engineer/Construction Supervision in Number of tunnel Projects of length equal to 40% of similar category for which RFP is invited or more in last 10 years<br>1 project – 8 marks Add 1(one) mark extra for completed assignment of Authority Engineer/ Independent Engineer and add 0.5 (Zero point five) marks extra for completed assignment of supervision consultancy subject to maximum 2 (Two) marks. | 10                |                                                                  |                                          |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Experience in DPR preparation for Number of Tunnel Projects of length equal to 40% of similar category for which RFP invited) or more in last 10years .<br><br>1 project – 4 marks, Add 0.5 (Zero point five) marks extra for each additional project subject to maximum 1 mark.                                                                                                                                                                           | 5                 |                                                                  |                                          |

|     |                                                                                                                                                                                                                                                                |    |  |  |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--|--|
| 5   | In hand DPRs for Authority (Ministry /NHAI/NHIDCL-As applicable) Tunnel Projects (presently under progress)                                                                                                                                                    | 5  |  |  |
| 5.1 | <2                                                                                                                                                                                                                                                             | 0  |  |  |
| 5.2 | 2-5                                                                                                                                                                                                                                                            | 3  |  |  |
| 5.3 | >5                                                                                                                                                                                                                                                             | 5  |  |  |
| 6   | Experience in Construction Supervision/DPR/Design Review of Major structures having length of more than 500 meter in last 7 years.<br><br>1 project – 2.0 marks Add 0.5 (Zero point five) marks extra for each additional project subject to maximum 1.0 marks | 3  |  |  |
| 7   | Experience as Independent Engineer/ Supervision Consultants on O&M project under DBFOT/OMT/O&M of tunnel project** in last 10 years<br><br>· 1 project - 6 marks<br><br>· Add 1 (one) marks extra for each additional project subject to maximum 4 marks.      | 10 |  |  |

Note 1: In case of JV the turnover and experience details of Lead and JV partners to be added.

Note 2: Employer's certificate/ certificate from Statutory Auditor should be submitted substantiating the experience/turnover claimed by the firm.

Note 3: \*\* Similar Category of project means Tunnel project having twin tube (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (**each tube**) or **2 lane highway tunnel** for which RFP is invited. For this tunnel project having twin tube (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (**each tube**) or **2 lane highway tunnel** experience of more than twin tubes (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 4/6 lane highway tunnel also to be considered with a multiplication factor of 1.5. Experience of single tube tunnel (including tunnel(s) for Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 m diameter will be considered with a multiplication factor of 0.4.

Note-4: In case, final DPR & 3D has been submitted and no further action is taken by the employer, the DPR shall be considered as completed after 3yr and submission of both final DPR and 3D.

Note-5: Consultants should give details of the experience of the firm considering the completed and the on-going highway assignments, separately for PPP and non-PPP Projects along with experience certificates from clients. This list of the completed works should also include those assignments which are substantially (90% of Contract value) completed. No Qualification/Experience etc. shall be considered without proof of experience.

Note-6: Experience of Consultant for having offered consultancy services to a private organization shall also be considered as relevant experience for current assignment, provided the experience is duly endorsed by the respective Government Agency.

## 2. Evaluation Criteria for assessment of experience in use of technology for road inspection

| Sr. No. | Description                                                                                             | Maximum Points | Sub-Points |
|---------|---------------------------------------------------------------------------------------------------------|----------------|------------|
| 1       | Experience in Network Survey Vehicle (NSV) or better technology for pavement inspection                 | 5              |            |
| 1.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 1.2     | Experience                                                                                              | 3              |            |
|         | (a) 1-2 projects                                                                                        |                | 1          |
|         | (b) 3-5 projects                                                                                        |                | 2          |
|         | (c) > 5 projects                                                                                        |                | 3          |
| 2       | Experience in Falling Weight Deflectometer (FWD) or better technology for pavement strength measurement | 4              |            |
| 2.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 2.2     | Experience                                                                                              | 2              |            |
|         | (a) 1-3 Projects                                                                                        |                | 1          |
|         | (b) >3 Projects                                                                                         |                | 2          |
| 3       | Experience in Mobile Bridge Inspection Unit or better technology for bridge inspection                  | 4              |            |
| 3.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 3.2     | Experience                                                                                              | 2              |            |
|         | (a) 1-3 Projects                                                                                        |                | 1          |
|         | (b) >3 Projects                                                                                         |                | 2          |
| 4       | Experience in Retro reflectometer technology                                                            | 4              |            |
| 4.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 4.2     | Experience                                                                                              | 2              |            |
|         | (a) 1-3 Projects                                                                                        |                | 1          |
|         | (b) >3 Projects                                                                                         |                | 2          |
| 5       | Experience in Automatic Traffic Counter cum Classifier (ATCC)                                           | 3              |            |
| 5.1     | Equipment                                                                                               | 2              |            |
|         | Own Equipment / Equipment on MoU with Associate or on hiring basis                                      |                | 2          |
| 5.2     | Experience                                                                                              | 1              |            |
|         | (a) 1-3 Projects                                                                                        |                | 0.5        |
|         | (b) >3 Projects                                                                                         |                | 1          |
|         | <b>Total</b>                                                                                            | <b>20</b>      |            |

Notes:

- (i) The Consultants owning the equipment shall be required to submit proof of ownership.
- (ii) The experience of the associate firms in use of technology shall also be counted in the evaluation. The experience of firm or associate firm in NSV or equivalent technology, FWD or equivalent technology, MBIU or equivalent technology and Retro reflectometer or equivalent technology shall be supported by experience certificate. The experience of a firm/ associate firm for a private concessionaire/ contractor (client) shall be considered on self-certification along with the client certificate. Any false certification shall attract provisions of Clause 1.8, Section -2 (letter of Invitation) read with Clause 2.9.1(g) of GCC.
- (iii) In case, Ownership document of equipment of Consultancy/Associate Firm is found to be false. The consultancy/Associate firm, as the case may be, shall be put on holiday listing (temporary debarment) for a period upto 12 months.

### 3 Evaluation Criteria for assessment of score of Key Staff for adequacy of the Assignment.

#### 3.1 Team Leader cum Senior Tunnel Expert

| S. No.   | Description                                                                                                                                                                                              | Max. Points | Reference/ Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------|-----------------------------------|
| <b>1</b> | <b>General Qualification</b>                                                                                                                                                                             | <b>25</b>   |                                                            |                                   |
| i)       | Graduate in Civil/Mining Engineering or equivalent                                                                                                                                                       | 21          |                                                            |                                   |
| ii)      | Post-Graduate or chartered engineer in Mining Engineering/ Geotechnical Engineering /Structural Engineering/Rock Mechanics or equivalent                                                                 | 04          |                                                            |                                   |
| <b>2</b> | <b>Adequacy for the Project</b>                                                                                                                                                                          | <b>70</b>   |                                                            |                                   |
|          | <b>Total Professional Experience</b>                                                                                                                                                                     |             |                                                            |                                   |
| a i)     | Total Highway/Tunnel Professional Experience<br>< 10 years -0<br>10 years -16 marks<br>Add 1 mark extra for each additional year of experience subject to maximum 4 (Four) marks.                        | 20          |                                                            |                                   |
| a ii)    | Total professional experience in handling tunnelling projects<br><10 years – 0 marks<br>10 years – 6 marks<br>Add 1 mark extra for each additional year of experience subject to maximum 4 (four) marks. | 10          |                                                            |                                   |
| b        | Experience in Similar Capacity                                                                                                                                                                           |             |                                                            |                                   |
| b i)     | Experience as Team leader or in Similar Capacity* in O&M of completed tunnel projects (Road/Rail/Metro) of length equal to 40% of similar category for which RFP is                                      | 30          |                                                            |                                   |

|       |                                                                                                                                                                                        |            |  |  |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|--|
|       | invited or more<br><5 years – 0 marks<br>5 years–20marks<br>Add 2 marks extra for each additional year of experience<br>subject to maximum 10 marks                                    |            |  |  |
| b ii) | Experience in similar capacity* in Highway/Tunnel<br>Projects taken up under PPP<br>1 project - 4 marks<br>add 3 mark extra for additional projects<br>subject to maximum 6 (six) mark | 10         |  |  |
| 3     | Employment with the Firm<br><1 year- 0<br>1 year – 3 marks<br>Add 0.5 marks for each subsequent year subject to<br>maximum 2 marks                                                     | 5          |  |  |
|       | <b>Total :</b>                                                                                                                                                                         | <b>100</b> |  |  |

Note: As per RFP, Definition of Team Leader includes Project Manager/ Resident Engineer / or any equivalent position.

**\*\*tunnel projects, unless specifically mentioned, to be considered for evaluation has to be major tunnels of length equal to or more than 1.5 Km**

**Note:**

- (1) Similar Capacity includes the following positions
- i) On behalf of Consultant: Team Leader/Resident Engineer/  
Professional Engineer/ Chartered Engineer ( Construction Super vision /IE/AE)
  - ii) On behalf of Contractor: Project Manager // Professional Engineer/ Chartered  
Engineer (Construction/Construction Supervision)
  - iii) In Government Organizations: Superintending Engineer (or equivalent) and above.

**3.2 Resident cum Highway Engineer**

| Sr. No. | Description                                               |    | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---------|-----------------------------------------------------------|----|-------------|-----------------------------------------------------------|-----------------------------------|
| 1       | <b>General Qualification</b>                              |    | <b>25</b>   |                                                           |                                   |
|         | I) Graduate in Civil Engineering                          | 21 | 25          |                                                           |                                   |
|         | II) Post Graduation in Transportation/Highway Engineering | 04 |             |                                                           |                                   |
| 2       | <b>Adequacy for the Project</b>                           |    | <b>70</b>   |                                                           |                                   |
|         | <b>Professional Experience</b>                            |    |             |                                                           |                                   |

| Sr. No. | Description                                                                                                                                                                                                                                                                                                                           | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|-----------------------------------|
| i)      | Experience in Highway/Bridge/Tunnel works (inspection/ design/construction/maintenance)<br>$\square$ < 10 years -0 Marks<br>$\square$ 10 years -12 Marks<br>$\square$ Add two marks extra for each additional completed year of experience subject to maximum 8 (eight) marks.                                                        | 20          |                                                           |                                   |
| ii)     | Experience as Resident Engineer/Project Director/Project Manager/Superintending Engineer or equivalent/Executive Engineer or equivalent on O&M works (similar configuration (2/4/6 laning*) and above).<br>< 5 years -0<br>5 years -16<br>Add 1 marks extra for each additional year of experience subject to maximum 4 (four) marks. | 20          |                                                           |                                   |
| iii)    | Experience in similar capacity in handling major projects (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above)<br>< 2 nos -0<br>2 nos -19<br>Add three marks extra for each additional project subject to maximum 6 (Six) marks.                                                             | 25          |                                                           |                                   |
| iv)     | Experience in similar capacity of Highway Project of Construction/Construction Supervision/IC on PPP Mode (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above)<br>2.5 marks for each project subject to maximum 5 (five) marks                                                               | 5           |                                                           |                                   |
| 3       | Employment with the Firm<br>< 1 year -0<br>1 year -3<br>Add 0.5 marks for each subsequent year subject to maximum 2 marks                                                                                                                                                                                                             | 5           |                                                           |                                   |
|         | <b>Total :</b>                                                                                                                                                                                                                                                                                                                        | <b>100</b>  |                                                           |                                   |
|         | <b>Age Limit</b>                                                                                                                                                                                                                                                                                                                      |             | 65 years on the date of submission of proposal            |                                   |

**Note:**

- (1) Similar Capacity includes the following positions
- i) On behalf of Consultant: Resident / Highway Engineer
  - ii) On behalf of Contractor: Resident Engineer/ Highway Engineer / Project Manager (Construction/Construction Supervision)
  - iii) In Government Organizations: Executive Engineer (or equivalent) and above
- (2) Only those projects (in numbers) will be considered for evaluation above, where the input of the personnel is not < 12 months
- (3) In case of experience on behalf of Consultant or Contractor, the experience shall be duly endorsed by the respective Government agency. In case of non-availability of endorsement from Govt. Agency, the experience uploaded on Infracon Portal will be taken into consideration. However, the key personnel/ bidder will be solely responsible for any fake information/ CV, which may result in debarment.

### 3.3 Bridge/Structural Engineer

| Sr. No.  | Description                                                                                                                                                                                                                                                                                                                                   | Max. Points | Reference/Details of projects Claimed for self assessment | Marks self assessed by the bidder |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|-----------------------------------|
| <b>1</b> | <b>General Qualification</b>                                                                                                                                                                                                                                                                                                                  | <b>25</b>   |                                                           |                                   |
|          | I) Graduate in Civil Engineering<br>II) Post Graduation in Structural Engineering                                                                                                                                                                                                                                                             | 21<br>04    | 25                                                        |                                   |
| <b>2</b> | <b>Adequacy for the Project</b>                                                                                                                                                                                                                                                                                                               | <b>70</b>   |                                                           |                                   |
| i)       | Total Professional Experience in handling Highway/Bridge projects<br>< 10 years -0<br>10 years -11<br>Add one mark extra for each additional 2 year subject to maximum 4(four) marks                                                                                                                                                          | 15          |                                                           |                                   |
| ii)      | Experience in similar capacity in Design/Construction/Construction Supervision of Bridges/ROB/Flyover/ Interchanges/any other such structures (similar configuration (2/4/6 laning**) and above)<br>< 5 years -0<br>5 years -16<br>Add 1 (one) mark extra for each additional completed year of experience subject to maximum 4 (four) marks. | 20          |                                                           |                                   |
| iii)     | Experience in similar capacity in O&M of Major Highway Bridges/ROB/Flyover/ Interchanges/ any other structures                                                                                                                                                                                                                                | 20          |                                                           |                                   |

| Sr. No. | Description                                                                                                                                                                                                                                                         | Max. Points | Reference/Details of projects Claimed for self assessment | Marks self assessed by the bidder |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|-----------------------------------|
|         | < 2 Bridges -0<br>02 Bridge -16<br>Add 2 mark extra for each additional bridge subject to maximum 4 marks                                                                                                                                                           |             |                                                           |                                   |
| iv)     | Experience in similar capacity in supervision of Rehabilitation and repair of Major Bridges/ROB/Flyover/ Interchanges/ any other structures<br>< 2 - 0<br>2 nos -07<br>3 or more -10                                                                                | 10          |                                                           |                                   |
| v)      | Experience in similar capacity of modern bridge construction technology viz., Precast Segmental, Balanced Cantilever Construction, Extradosed Bridge, Full Span Launching, Incremental Launching.<br>Experience in 1 project - 4<br>More than one project - 5 marks | 5           |                                                           |                                   |
| 3       | Employment with the Firm<br>< 1 year -0<br>1 year -3<br>Add 0.5 marks for each subsequent year subject to maximum 2 marks                                                                                                                                           | 5           |                                                           |                                   |
|         | <b>Total :</b>                                                                                                                                                                                                                                                      | <b>100</b>  |                                                           |                                   |
|         | <b>Age Limit</b>                                                                                                                                                                                                                                                    |             | 65 years on the date of submission of proposal            |                                   |

**Note:**

- (1) Similar Capacity includes the following positions
  - i) On behalf of Consultant/Contractor: Bridge Engineer/Project Manager (Bridges)
  - ii) On behalf of Government: Executive Engineer
- (2) Only those projects (in numbers) will be considered for evaluation above, where the input of the personnel is not < 12 months
- (3) In case of experience on behalf of Consultant or Contractor, the experience shall be duly endorsed by the respective Government agency. In case of non-availability of endorsement from Govt. Agency, the experience uploaded on Infracon Portal will be taken into consideration. However, the key personnel/ bidder will be solely responsible for any fake information/ CV, which may result in debarment.

**3.4 Traffic cum Road Safety Expert**

- \* It is mandatory for the Road Safety Expert to have completed at least 15 days' certification course on Road Safety Audit from IAHE/IITs/NITs/CRRRI. The CV of the proposed key personnel not having completed minimum 15 days certification course shall not be evaluated. For avoidance of doubt, it is clarified herein that the certification training course may be either from a single institution or from multiple institutions.

| Sr. No. | Description                                                                                                                                                                                                                                                                          | Max. Points | Reference/ Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------|-----------------------------------|
| 1       | <b>General Qualification</b>                                                                                                                                                                                                                                                         | 25          |                                                            |                                   |
|         | I) Graduate in Civil Engineering<br>II) Post Graduation in Traffic/Transportation/Safety Engineering or equivalent                                                                                                                                                                   | 21<br>04    | 25                                                         |                                   |
| 2       | <b>Adequacy for the Project</b>                                                                                                                                                                                                                                                      | 70          |                                                            |                                   |
|         | <b>Professional Experience</b>                                                                                                                                                                                                                                                       |             |                                                            |                                   |
| i)      | Total Professional Experience in handling Highway/Bridge projects<br>< 10 years -0<br>10 years -11<br>Add one mark extra for each additional year of experience subject to maximum 4 (four) marks.                                                                                   | 15          |                                                            |                                   |
| ii)     | Experience in similar capacity in Road Safety works on Major Highway Project (similar configuration (2/4/6 laning**) and above).<br>< 5 years -0<br>5 years -11<br>Add one mark extra for each additional year of experience subject to maximum 4 (four) marks.                      | 15          |                                                            |                                   |
| iii)    | Experience in similar capacity in Road Safety Audits of 2/4/6-laning** Highway projects at different stages including at least one at design stage<br>< 2 nos -0<br>2 nos -16<br>Add 2 marks extra for each additional project subject to maximum 4 marks.                           | 20          |                                                            |                                   |
| iv)     | Experience in similar capacity in identification and improvement of black spots on Major Highway Project (similar configuration (2/4/6 laning**) and above)<br>< 2 nos -0<br>2 nos -7<br>Add 1 mark extra for each additional improvement of black spots subject to maximum 3 marks. | 10          |                                                            |                                   |

| Sr. No. | Description                                                                                                                                 | Max. Points | Reference/ Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------|-----------------------------------|
| v)      | Experience in similar capacity of preparing Road Safety Management Plans for Inter Urban Highway<br>1 project -4marks<br>2 or more -5 marks | 5           |                                                            |                                   |
| vi)     | Experience in similar capacity in field of Road Safety Management Plan<br>1 project -4 marks<br>2 or more -5 marks                          | 5           |                                                            |                                   |
| 3       | Employment with the Firm<br>< 1 year - 0<br>1 year - 3<br>Add 0.5 marks for each subsequent year subject to maximum 2 marks                 | 5           |                                                            |                                   |
|         | <b>Total :</b>                                                                                                                              | <b>100</b>  |                                                            |                                   |
|         | <b>Age Limit</b>                                                                                                                            |             | 65 years on the date of submission of proposal             |                                   |

Note:

- (1) Similar Capacity includes the following positions
  - i) On behalf of Consultant/Contractor: **Road Safety Expert**
  - ii) In Government Organizations: Executive Engineer (or equivalent) and above
- (2) Only those projects (in numbers) will be considered for evaluation above, where the input of the personnel is not < 6 months

### 3.5 Senior Pavement Specialist

| Sr. No. | Description                                                                                                                                                         | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|-----------------------------------|
| 1       | <b>General Qualification</b>                                                                                                                                        | 25          |                                                           |                                   |
|         | <div>I) Graduate in Civil Engineering</div> <div>II) Post Graduation in Transportation/Highway Engineering/Pavement engineering or equivalent</div> <div>2104</div> | 25          |                                                           |                                   |
| 2       | <b>Adequacy for the Project</b>                                                                                                                                     | 70          |                                                           |                                   |
|         | <b>Professional Experience</b>                                                                                                                                      |             |                                                           |                                   |
| i)      | Total Professional Experience of Pavement Design/Construction and Maintenance of Highways/Roads/Air Field Runway<br>< 10 years -0<br>10 years -16                   | 20          |                                                           |                                   |

| Sr. No. | Description                                                                                                                                                                                                                                                                                                                                 | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------|-----------------------------------|
|         | Add one mark extra for each additional year of experience subject to maximum 4 (four) marks.                                                                                                                                                                                                                                                |             |                                                           |                                   |
| ii)     | Experience in Similar capacity in Construction/Construction Supervision of 2/4/6-laning** of major Highway Projects (similar configuration (2/4/6 laning**) and above)<br>< 5 years -0<br>5 years -16<br>Add one mark extra for each additional year of experience subject to maximum 4 (four) marks.                                       | 20          |                                                           |                                   |
| iii)    | Experience in similar capacity as Pavement/Geo-technical Engineer in construction/ construction supervision of Major Highway projects (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above)<br>< 2 nos -0<br>2 nos -16<br>Add 2 marks extra for each additional project subject to maximum 4 marks. | 20          |                                                           |                                   |
| iv)     | Experience in similar capacity on major Highway projects (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above) in innovative/non traditional technology and design<br>1 Project -4<br>2 or more -5                                                                                                  | 5           |                                                           |                                   |
| v)      | Experience in similar capacity on PPP Projects (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above)<br>2.5 marks for each project subject to maximum 5 (five) marks                                                                                                                                | 5           |                                                           |                                   |
| 3       | Employment with the Firm<br>< 1 year -0<br>1 year -3<br>Add 0.5 marks for each subsequent year subject to maximum 2 marks                                                                                                                                                                                                                   | 5           |                                                           |                                   |

| Sr. No. | Description      | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---------|------------------|-------------|-----------------------------------------------------------|-----------------------------------|
|         | <b>Total :</b>   | <b>100</b>  |                                                           |                                   |
|         | <b>Age Limit</b> |             | 65 years on the date of submission of proposal            |                                   |

**Note:**

- (1) Similar Capacity includes the following positions
  - i) On behalf of Consultant/Contractor: Pavement Specialist/ Pavement Engineer/ Pavement Expert / Highway Engineer
  - ii) On behalf of Government: Executive Engineer
- (2) Only those projects (in numbers) will be considered for evaluation above, where the input of the personnel is not < 6 months
- (3) In case of experience on behalf of Consultant or Contractor, the experience shall be duly endorsed by the respective Government agency. In case of non-availability of endorsement from Govt. Agency, the experience uploaded on Infracon Portal will be taken into consideration. However, the key personnel/ bidder will be solely responsible for any fake information/ CV, which may result in debarment.

**3.6 Senior Geologist:**

| S. No.   | Description                                                                                                                                                                                                                                  | Max. Points | Reference/ Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------|-----------------------------------|
| <b>1</b> | <b>General Qualification</b>                                                                                                                                                                                                                 | <b>25</b>   |                                                            |                                   |
| i)       | Masters in Geology /Applied Geology from recognized university.                                                                                                                                                                              | 25          |                                                            |                                   |
| <b>2</b> | <b>Adequacy for the Project</b>                                                                                                                                                                                                              | <b>70</b>   |                                                            |                                   |
|          | <b>Total Professional Experience</b>                                                                                                                                                                                                         |             |                                                            |                                   |
| a i)     | <<20 years – 0<br>20 years – 15 marks<br>Add 1 mark extra for each additional year of experience subject to maximum 5 (five) marks.                                                                                                          | 20          |                                                            |                                   |
| A ii)    | Experience in major Tunnel construction/construction supervision Projects (Road/Rail/Metro) using NATM technology<br>< 5 years – 0<br>5 years – 12 marks<br>Add 1.5 marks extra for each additional year subject to maximum 3 (three) marks. | 15          |                                                            |                                   |
| b        | Experience in Similar Capacity                                                                                                                                                                                                               |             |                                                            |                                   |

|          |                                                                                                                                                                                                                                                                                        |            |  |  |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--|--|
| b i)     | Experience in major Tunnel(Road/Rail/Metro) Construction works in similar capacity<br>< 7 years – 0<br>7 years – 12 marks<br>Add 1 mark extra for each additional year of experience subject to maximum 3 (three) marks.                                                               | 15         |  |  |
| b ii)    | Experience in similar capacity in project preparation/DPR involving of major tunnel projects (Road/Rail/Metro). (Min 1 year experience in a project)<br><2 projects – 0<br>2 projects -7 marks<br>Add 1.5 marks extra for each additional projects subject to maximum 3 (three) marks. | 10         |  |  |
| b iii)   | Experience in similar capacity in highway tunnel construction/construction supervision with minimum length of 4 Km<br>< 2 projects – 0<br>2 project – 7 marks<br>Add 1.5 marks extra for each additional projects subject to maximum 3 (three) marks.                                  | 10         |  |  |
| <b>3</b> | Employment with the Firm<br><1 year- 0<br>1 year – 3 marks<br>Add 0.5 marks for each subsequent year subject to maximum 2 marks                                                                                                                                                        | <b>5</b>   |  |  |
|          | <b>Total :</b>                                                                                                                                                                                                                                                                         | <b>100</b> |  |  |

Note: Max Age = 65 Years

\*\* tunnel projects, unless specifically mentioned, has to be major tunnels of length equal to or more than 1.5 Km to be considered for evaluation

**Note:**

Similar Capacity includes the following positions: -

- i. on the behalf of Consultant/ Contractor: Senior Geologist
- ii. In Govt. Organizations: Executive Engineer (or equivalent) and above

Note applicable to all key personnel:

1. If a key personnel has worked in next lower category to the similar capacity, the marks allotted to key personnel in the category 'experience in similar capacity' shall be reduced to two thirds of marks in this category. This shall be applicable for evaluation of all key personnel.
2. \*\*Similar projects for road/highway works means 2/4/6 lane as applicable for the project for which RFP is invited. For 2-lane projects experience of 4/6 lane also to be considered with a multiplication factor of 1.5. Experience of 4/6 lane shall be considered interchangeably for 4/6 laning projects. For 4/6 laning projects, experience of 2 lane will be considered with a multiplication factor of 0.4.
3. \*\* Similar Category for tunnel project means Tunnel project having twin tube (including tunnel(s)

for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 2lane highway tunnel for which RFP is invited. For this tunnel project having twin tube (including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 2 lane highway tunnel experience of more than twin tubes(including tunnel(s) for roads/Railway /Metro rail/ irrigation/ hydro-electric etc.) having at least 5 meter diameter (each tube) or 4/6 lane highway tunnel also to be considered with a multiplication factor of 1.5. Experience of single tube tunnel (including tunnel(s) for Railway /Metro rail/ irrigation/ hydro-electric etc.)having at least 5 m diameter will be considered with a multiplication factor of 0.4.

### **SECTION 3: FORMATS FOR SUBMISSION OF FIRMS CREDENTIALS**

The proposal should contain the following information in enclosed format attached at Appendix A.

1. Year of Establishment of Firm
2. Average annual turnover (last five years)

**Note:** The Firm shall submit Certificate of Incorporation and audited balance sheet for the last five financial years (FY 2019-20, FY 2020-21, FY 2021-2022 and FY 2022-2023 and FY 2023-24). For claiming experience of Highway projects completion certificate from employer should be enclosed. The proposal should also contain the details of the key personnel viz. their name, qualification, expertise area, experience and years of association with the firm.

## Appendix A

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

(a) Name of the package applied for:-

(b) Year of establishment of firm \*

| Consultant                                                               | Year of Establishment | Country | Type of Organization |             |             |       |
|--------------------------------------------------------------------------|-----------------------|---------|----------------------|-------------|-------------|-------|
|                                                                          |                       |         | Individual           | Partnership | Corporation | Other |
| Individual/<br>Lead Partner (of JV)/<br>Minor Partner of<br>JV/Associate |                       |         |                      |             |             |       |

NOTE:- Year of Establishment of Lead Partner of JV shall be considered.

\*Copy of Certificate of incorporation shall be submitted.

(c) Office/Business Address/Telephone nos./Cable Address.

(d) Narrative description of firm (Not more than 2 sheets)

(e) Name of two(2) principals who may be contacted with title and telephone number/fax number/e-mail.

(f) Financial Statement of the last five years. \*\*

| Sr. No. | Particular                               | 2023-24 | 2022-23 | 2021-22 | 2020-21 | 2019-20 |
|---------|------------------------------------------|---------|---------|---------|---------|---------|
| i.      | Annual turnover from Consulting business |         |         |         |         |         |
| ii.     | Total Assets                             |         |         |         |         |         |
| iii.    | Current Assets                           |         |         |         |         |         |

Balance Sheet/ Auditor Certificate of last 5 years (FY 2019-20, FY 2020-21, FY 2021-2022 and FY 2022-2023 and FY 2023-24) shall be submitted as evidence of Annual Turnover.

\*\*a) The amount shall be stated in INR.

b) Deleted

(g) (i) Experience as Independent Consultant/Construction supervision of Highway projects, separately for PPP and non-PPP Projects during the last 7 years. \*\*\*

| S No | Projects Name/Year                                          | Type Services Rendered | Description of High way Project/Length (kms ) | Client (with complete address, contact person, telephone Nos. and Fax Nos.) | Total Fee for the Consultancy Assignment (INR) | Fee received by Applicant (in case of JV/ Association) | %age of total fee received by the firm | Approx cost of Highway Project | Period |
|------|-------------------------------------------------------------|------------------------|-----------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------|----------------------------------------|--------------------------------|--------|
|      | Sole consultant/p rime consultant of JV/minor consultant of |                        |                                               |                                                                             |                                                |                                                        |                                        |                                |        |

|   |                                              |                                                                                                                                 |   |   |   |   |   |   |    |
|---|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|----|
|   | JV/or sub consultant/as Associate consultant |                                                                                                                                 |   |   |   |   |   |   |    |
| 1 | 2                                            | 3                                                                                                                               | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|   |                                              | <b>A. Completed / Substantially completed projects :</b><br>1.<br>2.<br>3.<br><b>B. Projects in progress:</b><br>1.<br>2.<br>3. |   |   |   |   |   |   |    |

(ii) Experience as Independent Consultant/Construction supervision of Tunnel (Road/Rail/Metro), separately for PPP and non-PPP Projects during the last 10 years. \*\*\*

| Sr No | Projects Name / Year                                                 | Type of Services rendered                                                                                                | Description of Road/Rail/ Metro Tunnel Project /Length | Client (with Complete address, Contact person, Telephone | Total Fee for the Consultancy Assignment (INR) | Fee received by Applicant (in case of JV/ Associati | %age of total fee received by the firm | Approx. Cost of Road/Rail/ Metro Project | Period |
|-------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------|------------------------------------------------|-----------------------------------------------------|----------------------------------------|------------------------------------------|--------|
|       | Sole Consultant / Prime consultant of JV / minor consultant of JV/as |                                                                                                                          |                                                        |                                                          |                                                |                                                     |                                        |                                          |        |
| 1     | 2                                                                    | 3                                                                                                                        | 4                                                      | 5                                                        | 6                                              | 7                                                   | 8                                      | 9                                        | 10     |
|       |                                                                      | <b>A. Completed / Substantially completed projects:</b><br>1.<br>2.<br>3.<br><b>B. Projects in progress:</b><br>1.<br>2. |                                                        |                                                          |                                                |                                                     |                                        |                                          |        |

(h) (i) Experience in DPR preparation of 4/6 laning Highway Projects separately for the PPP and non-PPP projects during the last 7 years. \*\*\*

- a) 2/4/6 lane as applicable for the project for which RFP is invited. For 2-lane projects experience of 4/6 lane also to be considered with a multiplication factor of 1.5. Experience of 4/6 lane shall be considered interchangeably for 4/6 laning projects. For 4/6 laning projects, experience of 2 lane will be considered with a multiplication factor of 0.4, but only for those 2 lane projects whose cost of consultancy services was more than Rs.3.0 crores.
- b) Only those projects, to be included in the table which are Highways Projects and for which clients certificates from the concerned Government agencies are enclosed with the proposal.

- c) The details of bridges having length more than 200m (500m in case the project consist of bridges of length more than 500m) in the listed projects is to be specifically mentioned.
- d) The weightage given for experience of a firm would depend on the role of the firm in the respective assignments. The firm's experience would get full credit if it was the sole firm in the respective assignment. Experience weightage for firms as Lead partner/JV partner /Associate shall be considered in the same proportion as payment has been received by the firm towards consultancy work in the project.
- e) For weightage of experience in any past Consultancy assignment experience certificate from the client shall be accepted. In the absence of experience certificate from the client, proportion of payment received towards Consultancy work duly certified by statutory body like Chartered Accountant or Independent Auditors who are competent to do so as recognised by the State concerned shall be accepted. Annual turnover duly certified by Chartered Accountant shall be accepted. In case of non-availability of such documents no weightage of turnover/experience will be considered.

(ii) Experience in DPR/ Feasibility Study cum Preliminary Design Report of Tunnel projects for the PPP and non-PPP projects during the last 10 years. \*\*\*

| Sr No | Projects Name /<br>Sole Consultant/ Prime consultant of JV / minor | Type of Services Rendered                        | Length of Project (kms) | Client (with complete address, contact person, telephone Nos. , emails and Fax Nos.) | Total Fee for the Consultancy Assignment (INR) | Fee received by Applicant (in case of JV /Association) | %age of total fee received by the firm | Approx. Cost of | Period |
|-------|--------------------------------------------------------------------|--------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------|----------------------------------------|-----------------|--------|
| 1     | 2                                                                  | 3                                                | 4                       | 5                                                                                    | 6                                              | 7                                                      | 8                                      | 9               | 10     |
|       |                                                                    | A. Completed / Substantially completed projects: |                         |                                                                                      |                                                |                                                        |                                        |                 |        |
|       |                                                                    | 1.                                               |                         |                                                                                      |                                                |                                                        |                                        |                 |        |
|       |                                                                    | B. Projects in progress:                         |                         |                                                                                      |                                                |                                                        |                                        |                 |        |
|       |                                                                    | 1.                                               |                         |                                                                                      |                                                |                                                        |                                        |                 |        |

- \*\* a) Tunnel Works as applicable for the project for which RFP is invited. Road/Rail/Metro tunnel will be considered as part of transportation tunnel projects. For standalone Tunnel projects, experience in Tunnel work (either standalone project or as a part of road project) only be considered.
- b) Only those projects, to be included in the table which are Tunnel Projects and for which clients certificates from the concerned Government agencies are enclosed with the proposal.
- c) The details of bridges having length more than 200m (500m in case the project consist of bridges of length more than 500m) in the listed projects is to be specifically mentioned.
- d) The weightage given for experience of a firm would depend on the role of the firm

in the respective assignments. The firm's experience would get full credit if it was the sole firm in the respective assignment. If the applicant firm has completed projects as JV with some other firms, weightage shall be given as per the JV share\*\*\*. However if the applicant firm has executed the project as associate with some other firms, 25% weightage shall be given to the applicant firm for the projects completed under such association.

- e) For weightage of experience in any past Consultancy assignment, experience certificate from the client shall be accepted. In absence of clear demarcation of JV share in client certificate, the weightage will be treated as 60 % for lead partner and 40% for minor partner. Annual turnover duly certified by Chartered Accountant shall be accepted. In case of non-availability of such documents no weightage of turnover/experience will be considered.

- (i) Assignments on hand including those for which the Letter of Acceptance from the clients received as on 7 days prior to due date for submission of proposals: The details shall be given in the following format.

| S. No | Name of Assignment | Client | Role of the firm                          | Date of letter of Acceptance | Date of Agreement if signed | Present status of Assignment | Team Members provided by the firm |     |          |
|-------|--------------------|--------|-------------------------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------------|-----|----------|
|       |                    |        | Sole, Lead/ Other in JV or sub-consultant |                              |                             |                              | Name                              | DOB | Position |
| (1)   | (2)                | (3)    | (4)                                       | (5)                          | (6)                         | (7)                          | (8)                               | (9) | (10)     |
|       |                    |        |                                           |                              |                             |                              |                                   |     |          |

- (j) Number of Key Personnel (as defined in RFP) employed with the firm in highway sector with more than one year from bid submission date:

| Key Personnel                        | Number of key personnel employed           |        |  |
|--------------------------------------|--------------------------------------------|--------|--|
|                                      | Sole Applicant (Lead Member in case of JV) | JV (1) |  |
| Team Leader Cum Senior Tunnel Expert |                                            |        |  |
| Resident cum Highway Engineer        |                                            |        |  |
| Bridge/Structural Engineer           |                                            |        |  |
| Traffic cum Road Safety Expert       |                                            |        |  |
| Sr. Pavement Specialist              |                                            |        |  |
| Sr Geologist                         |                                            |        |  |

**SECTION 4:           FORMAT FOR SUBMISSION OF TECHNICAL PROPOSAL**

|                      |                                                                                                              |
|----------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Appendix B-1</b>  | Technical proposal submission form.                                                                          |
| <b>Appendix B-2</b>  | Site Appreciation                                                                                            |
| <b>Appendix B-3</b>  | Approach paper on methodology for performing the assignment                                                  |
| <b>Appendix B-4</b>  | Facility for field investigation and testing                                                                 |
| <b>Appendix B-5</b>  | Composition of the Team and Task(s) of each Team member                                                      |
| <b>Appendix B-6</b>  | Curriculum vitae of proposed Professional staff.                                                             |
| <b>Appendix B-7</b>  | Time schedule for deployment of Professional staff                                                           |
| <b>Appendix B-8</b>  | Activity (works) schedule.                                                                                   |
| <b>Appendix B-9</b>  | Affidavit – Correctness of Experience claimed by the Firms                                                   |
| <b>Appendix B-10</b> | Integrity Pact                                                                                               |
| <b>Appendix B-11</b> | Bank guarantee format for bid security                                                                       |
| <b>Appendix B-12</b> | FORM FOR INSURANCE SURETY BOND                                                                               |
| <b>Appendix B-13</b> | Certificate regarding Compliance with Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs) |

**APPENDIX B-1**

**Technical proposal submission form.**

|                            |                                         |
|----------------------------|-----------------------------------------|
| <u>FROM (Name of Firm)</u> | <u>To: (Name and Address of Client)</u> |
| <hr/>                      | <hr/>                                   |
| <hr/>                      | <hr/>                                   |
| <hr/>                      | <hr/>                                   |

Ladies/Gentlemen:

**Subject:** Submission of Technical and Financial Proposal for engagement as IE for the DBFOT Work

**Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis**

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

My/Our registration No. on Infracon is ..... and my/our Infracon Team ID is .....

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

We remain,

Yours sincerely,

Managing Director/Head of the  
firm/Authorised Representative of the  
firm + \*  
Name of the firm  
Address  
\*Lead Member in case of JV

## **APPENDIX B-2 : SITE APPRECIATION**

**Shall give details of site as per actual site visit and data provided in RFP and collected from site supported by photographs to demonstrate that responsible personnel of the Consultant have actually visited the site and familiarized with the salient details/complexities and scope of services.**

### **APPENDIX B-3 : APPROACH PAPER ON METHODOLOGY FOR PERFORMING THE ASSIGNMENT**

The approach and methodology will be detailed precisely under the following topics.

- 1) Methodology for services, surveying, road condition data collection and analysis [not more than 2 pages]
- 2) Key challenges foreseen and proposed solutions in carrying out the assignment [not more than 1 page]
- 3) Quality Audit methodology including Quality Assurance Plan [not more than 6 pages]

#### **APPENDIX B-4 : FACILITY FOR FIELD INVESTIGATION AND TESTING**

1. State whether applicant has in-house (created in house at site)/ outsourced/ not available facility for
  - 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
2. In-case answer to 1 is available (created in house at site) a list of field investigation and testing equipment is to be attached
3. In case answer to 1 is outsourced/not available – arrangements made or proposed to be made for each of the above field investigations is to be attached
4. For experience in NSV, FWD, MBIU, reflectometer references need to be provided in the following format:

#### **REFERENCES**

##### Relevant Services Carried Which Best Illustrate Qualifications

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

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

#### **Signature of Authorised Representative**

**(Certificate from Employer regarding experience should be furnished)**

#### **APPENDIX B-5: COMPOSITION OF THE TEAM PERSONNEL, AND TASK(S) OF EACH TEAM MEMBER**

1. Technical/Managerial Staff

| Sl. No. | Name | Position | Task |
|---------|------|----------|------|
| 1       |      |          |      |

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

|     |  |  |  |
|-----|--|--|--|
| 2   |  |  |  |
| 3   |  |  |  |
| 4   |  |  |  |
| ... |  |  |  |
| ... |  |  |  |

## 2. Support Staff

| Sl. No. | Name | Position | Task |
|---------|------|----------|------|
| 1       |      |          |      |
| 2       |      |          |      |
| 3       |      |          |      |
| 4       |      |          |      |
| ...     |      |          |      |
| ...     |      |          |      |

## APPENDIX B-6 : FORMAT OF CURRICULUM VITAE (CV) FOR PROPOSED PROFESSIONAL STAFF

Proposed Position : ..... Photograph

Name of Firm : .....

Name of Staff : .....

Profession : .....

Date of Birth :

Years with Firm/Entity: ..... Nationality: ..... Membership of Professional Societies : .....

Detailed Task Assigned : .....

Please attach printout of CV alongwith all the relevant details uploaded on infracon portal.

### Certification by the Candidate

I, the undersigned, (Name and Address) undertake that this CV correctly describes myself, my qualifications and my experience and National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) would be at liberty to debar me if any information given in the CV, in particular the Summary of Qualification & Experience vis-à-vis the requirements as per TOR is found incorrect. I further undertake that I have neither been debarred by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) nor left any assignment with the consultants engaged by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) / contracting firm (firm to be supervised now) for any continuing work of National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) without completing my assignment. I will be available for the entire duration of the current project (named.....). If I leave this assignment in the middle of the work, National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) would be at liberty to debar me from taking any assignment in any of the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) works for an appropriate period of time to be decided by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL). I have no objection if my services are extended by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) for this work in future.

I further undertake that if due to my inability to work on this project due to unavoidable circumstances, due to which consultant's firm is forced to seek replacement. In such unavoidable circumstances, I shall not undertake any employment in National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) projects during the period of assignment of this project and National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) shall consider my CV invalid till such time.

For Key Personnel having intermittent inputs, add the following:

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

I further certify that I am associated with the following assignments as on date (as on 7 days prior to due date for submission of proposal) including those for which LOA has been received by the firm and the inputs in these assignments shall not effect the work of the current assignment.

| Name of Assignment | Client | Date of LOA | Likely start (Month / Year) | Likely end (Month / Year) | Total input of the person (man-months) |
|--------------------|--------|-------------|-----------------------------|---------------------------|----------------------------------------|
|                    |        |             |                             |                           |                                        |

.....

Date

(Signature of Key Personnel)

(Day/Month/Year)

The Consultant should carryout self-evaluation based on the evaluation criteria at Appendix-EC and furnish the same here. While submitting the self-evaluation along with bid, Consultant shall make references to the documents which have been relied upon in his self-evaluation

#### **Certification by the firm**

The undersigned on behalf of -----( name of consulting firm) certify that Shri----- (name of proposed personnel) to the best of our knowledge has neither been debarred by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) nor left his assignment with any other consulting firm engaged by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) / Contracting firm (firm to be supervised now) for the ongoing projects. We understand that if the information about leaving the past assignment is known to National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) , National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) would be at liberty to remove the personnel from the present assignment and debar him for an appropriate period to be decided by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)

.

.....

Date

(Signature of Key Personnel)

(Day/Month/Year)

[Signature of authorised representative of the Firm]

## APPENDIX B-7: TIME SCHEDULE FOR PROFESSIONAL PERSONNEL

### A. Activity Schedule

| Sl. No. | Name | Position | Monthwise Program (in form of Bar Chart)<br>[1 <sup>st</sup> , 2 <sup>nd</sup> , etc. are months from the start of assignment] |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                                       |                  |
|---------|------|----------|--------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|---------------------------------------|------------------|
|         |      |          | 1 <sup>st</sup>                                                                                                                | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | 6 <sup>th</sup> | 7 <sup>th</sup> | 8 <sup>th</sup> | 9 <sup>th</sup> | 10 <sup>th</sup> | 11 <sup>th</sup> | 12 <sup>th</sup> and subsequent years | Number of Months |
| 1       |      |          |                                                                                                                                |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                                       | Subtotal (1)     |
| 2       |      |          |                                                                                                                                |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                                       | Subtotal (2)     |
| 3       |      |          |                                                                                                                                |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                                       | Subtotal (3)     |
| 4       |      |          |                                                                                                                                |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                                       | Subtotal (4)     |
| 5       |      |          |                                                                                                                                |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                                       | -                |
| 6       |      |          |                                                                                                                                |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                                       | -                |

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## APPENDIX B-8 : ACTIVITY (WORKS) SCHEDULE

### A. Activity Schedule

| Sl. No. | Item of Activity (Works) | Monthwise Program (in form of Bar Chart)<br><i>[1<sup>st</sup>, 2<sup>nd</sup>, etc. are months from the start of assignment]</i> |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |
|---------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|
|         |                          | 1 <sup>st</sup>                                                                                                                   | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | 6 <sup>th</sup> | 7 <sup>th</sup> | 8 <sup>th</sup> | 9 <sup>th</sup> | 10 <sup>th</sup> | 11 <sup>th</sup> | 12 <sup>th</sup> |
| 1       |                          |                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |
| 2       |                          |                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |
| 3       |                          |                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |
| 4       |                          |                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |
| -       |                          |                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |
| -       |                          |                                                                                                                                   |                 |                 |                 |                 |                 |                 |                 |                 |                  |                  |                  |

### B. Activity Schedule

| S.No | Reports :                                                                                   | Programme : (Date) |
|------|---------------------------------------------------------------------------------------------|--------------------|
| 1    | Monthly reports<br>(Design and Construction)                                                |                    |
| 2    | Quarterly Reports                                                                           |                    |
| 3    | Various others reports as provided in the Concession Agreement such as<br>Completion Report |                    |

**APPENDIX B-9: AFFIDAVIT FOR CORRECTNESS OF EXPERIENCE CLAIMED BY  
THE FIRMS**

**(To be submitted on non-judicial Stamp Paper)**

I, the undersigned, on behalf of \_\_\_\_\_ (name of the Consultant submitting the proposal), do hereby certify that the details furnished in this proposal including experience claimed by the firm/firms are true and correct to the best of my knowledge and belief.

**Managing Director/Head of the Firm/  
Authorised Representative of the firm\***

**Address**

**\*Lead Member in case of JV**

## APPENDIX B-10: INTEGRITY PACT

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

Tender No. \_\_\_\_\_

This integrity Pact is made at .....on this ..... day of.....2024.

Between

THE NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. (NHIDCL), which has been entrusted with the responsibility of development, maintenance and management of National Highways, having its office at NHIDCL, 2nd Floor, Tower-A World Trade Center, Nauroji Nagar New Delhi-110029 hereinafter referred to as "The Principal", which expression shall, unless repugnant to the meaning of contract thereof, include its successors and permitted assigns.

AND

.....herein after referred to as "The Bidder(s)/Contractor(s)/Concessionaire(s)/Consultant(s)" and which expression shall unless repugnant to be meaning or context thereof include its successors and permitted assigns.

### **Preamble**

Whereas, the Principal intends to award, under laid down organizational procedure, contract/s for **Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis** The Principal values full compliance with all relevant laws of the land, rules of land, regulations, economic of resources and of fairness/ transparency in its relations with its Bidder(s) and for Contractor(s)/ Concessionaire(s)/ Consultant(s).

And Whereas in order to achieve these goals, the Principal will appoint an Independent External Monitors (IEMs), who will monitor the tender process and the execution of the contract for compliance with the Principles mentioned above. The names of IEMs shall be made available by the Principal on its website.

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

### **Article-1: Commitments of the Principal**

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

a. No employee of the Principal, personally or through family members, will in connection Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

with the Tender for, or the execution of a Contract, demand, take a promise for or accept, for self, or third person, any material or immaterial benefit which the person is not legally entitled to.

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

**Article - 2: Commitments of the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s).**

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

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

- e) The Bidder(s)/Contractor(s)/Concessionaire(s)/Consultant(s) will, when

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presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract. He shall also disclose the details of services agreed upon for such payments.

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

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

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

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- 7) Subject to full satisfaction of the Principal, the exclusion of the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) could be revoked by the Principal if the Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) can prove that he has restored/ recouped the damage caused by him and has installed a suitable corruption prevention system in his organization.

**Article- 4: Compensation for Damages.**

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

**Article- 5: Previous Transgressions**

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

**Article - 6: Equal treatment of all Bidders/ Contractors/ Concessionaires/ Consultants/ Subcontractors.**

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

**Article- 7: Criminal charges against violating Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s)/ Sub-contractor(s).**

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If the Principal obtains knowledge of conduct of a Bidder/ Contractor/ Concessionaire/ Consultant or subcontractor, or of an employee or a representative or an associate of a Bidder/ Contractor/ Concessionaire/ Consultant or Subcontractor, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

#### **Article- 8: Pact Duration**

This Pact begins when both parties have legally signed it (in case of EPC i.e. for projects funded by Principal and consultancy services). It expires for the Contractor/ Consultant 12 months after his Defect Liability Period is over or 12 months after his last payment under the contract whichever is later and for all other unsuccessful bidders 6 months after this Contract has been awarded. (In case of BOT Projects) It expires for the concessionaire 24 months after his concession period is over and for all other unsuccessful Bidders 6 months after this Contract has been awarded. Any violation of the same would entail disqualification of the bidder and exclusion from future dealings.

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

#### **Article - 10: Other Provisions**

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

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

\_\_\_\_\_  
(For & On behalf of the Principal)

\_\_\_\_\_  
(For & On behalf of  
Bidder/Contractor/Concessionaire/Consulting

(Office Seal)  
Place \_\_\_\_\_

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Date \_\_\_\_\_

Witness 1:

(Name & Address) \_\_\_\_\_

\_\_\_\_\_

Witness 2:

(Name & Address) \_\_\_\_\_

\_\_\_\_\_

{COUNTERSIGNED and accepted by:  
JV Partner}

## **Appendix B-11**

### **BANK GUARANTEE FORMAT FOR BID SECURITY**

(To be stamped in accordance with Stamp Act if any, of the country of issuing bank)

Ref.: Tender No. \_\_\_\_\_, dated \_\_\_\_\_

Bank Guarantee:

Date:

WHEREAS, \_\_\_\_\_ (Name of Bidder) \_\_ (hereinafter called "the bidder") has submitted his bid dated \_\_\_\_\_ (date) for the Tender No. \_\_\_\_\_, dated \_\_\_\_\_ (hereinafter called "the Bid").

KNOW ALL MEN by these presents that We, \_\_\_\_\_ [Name of Bank] of \_\_\_\_\_ [Name of Country] having our registered office at \_\_\_\_\_ (hereinafter called "the Bank") are bound unto \_\_\_\_\_ [Name of Client] (hereinafter called "the Client") in the sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ Lakhs Only) for which payment will and truly to be made to the said Client the Bank binds himself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws his Bid during the period of bid validity specified in the Bid document; or

2. If the Bidder does not accept the correction of arithmetical errors of his Bid Price in accordance with the Instructions to Bidder; or

3. If the Bidder having been notified of the acceptance of his Bid by the Client during the period of bid validity,

a. fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

b. fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders, we undertake to pay the Client up to the above amount upon receipt of his first written demand, without the Client having to substantiate his demand, provided that in his demand the Client will note that the amount claimed by him is due to him owing to the occurrence of one or any of the conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date 180 (one hundred and eighty) days after the deadline for submission of bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Client, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

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

This guarantee shall also be operatable at our New Delhi 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

DATE \_\_\_\_\_

SIGNATURE OF THE BANK \_\_\_\_\_

SEAL OF THE BANK \_\_\_\_\_

SIGNATURE OF THE WITNESS \_\_\_\_\_

Name and Address of the Witness \_\_\_\_\_

The bank guarantee shall be issued by a bank (Nationalized/Scheduled) located in India

NOTE for Issuing Bank (Not to be included in the BG):-

1. The stamp papers of appropriate value shall be purchased in the name of bank, who issues the "Bank Guarantee".
2. The bank guarantee shall be from a Nationalized Indian Bank or reputed foreign commercial Bank acceptable to client for Foreign Consultant with counter guarantee from Nationalized Bank. Bank guarantee furnished by Foreign consultant shall be confirmed by any Nationalized Bank in India.
3. The bank guarantee(s) contain(s) the name, designation and Code number of the officer(s) signing the guarantee(s).
4. The address, telephone no. and other details of the Head Office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing Branch.
5. The bank guarantee for Rs. 10,000 and above is signed by at least two officials (or as per the norms prescribed by the RBI in this regard).
6. The Bank Guarantee shall be transmitted through SFMS gateway to our banker with following details:

| Sr. No. | Particulars                  | Details                                                            |
|---------|------------------------------|--------------------------------------------------------------------|
| 1       | Name of Beneficiary          | National Highways & Infrastructure Development Corporation Limited |
| 2       | Beneficiary Bank Account No. | 90621010002659                                                     |

|   |                              |                                                                      |
|---|------------------------------|----------------------------------------------------------------------|
| 3 | Beneficiary Bank Branch IFSC | CNRB0019062                                                          |
| 4 | Beneficiary Bank Branch Name | Transport Bhawan, New Delhi                                          |
| 5 | Beneficiary Bank Address     | Canara Bank Transport Bhawan, 1st Parliament Street, New Delhi-11000 |
| 6 | PAN No                       | AAECN7759E                                                           |

7. The confirmation with supporting details if any shall be specifically mentioned in the covering letter issued with the Bank Guarantee.

## **Appendix B-12: FORM FOR INSURANCE SURETY BOND**

**(See Clauses 2.21)**

### **[Performance Security/Additional Performance Security]**

To

[name of Authority]

[address of Authority]

WHEREAS\_\_\_\_\_ [name and address of Contractor] (hereafter called the "Contractor") has undertaken, in pursuance of Letter of Acceptance (LOA) No\_\_\_\_Dated\_\_\_\_\_ for construction of \_\_\_\_\_[Name of the project] (hereinafter called the "Contract")

AND WHEREAS the Contract requires the Contractor to furnish an {Performance Security/ Additional Performance Security} for due and faithful performance of its obligations, under and in accordance with the Contract, during the {Construction Period/ Defects Liability Period and Maintenance Period} in a sum of Rs.....Cr. (Rupees ..... crore) (the "Surety Bond Amount" 1).

AND WHEREAS we, ..... through our branch at .....(the "Surety Insurer") have agreed to furnish this Surety Bond by way of Performance Security.

NOW, THEREFORE, the Surety Insurer hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Surety Insurer hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Contract, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Surety Bond Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager of National Highways & Infrastructure Development Corporation Limited], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Contract shall be conclusive, final and binding on the Surety Insurer. The Surety Insurer further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Contract and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever. 1

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Surety Bond Amount for Performance Security and Additional Performance Security shall be calculated as per Contract.

3. In order to give effect to this Surety Bond, the Authority shall be entitled to act as if the Surety Insurer were the principal debtor and any change in the constitution of the Contractor and/or the Surety Insurer, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Surety Insurer under this Surety Bond.

4. It shall not be necessary, and the Surety Insurer hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Surety Insurer its demand under this Surety Bond.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Surety Insurer under this Surety Bond, to vary at any time, the terms and conditions of the Contract or to extend the time or period for the compliance with, fulfillment and/or performance of all or any of the obligations of the Contractor contained in the Contract or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Contract and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Surety Insurer from its liability and obligation under this Surety Bond and the Surety Insurer hereby waives all of its rights under any such law.

6. This Surety Bond is in addition to and not in substitution of any other Surety Bond or security now or which may hereafter be held by the Authority in respect of or relating to the Contract or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Contract.

7. Notwithstanding anything contained hereinbefore, the liability of the Surety Insurer under this Surety Bond is restricted to the Surety Bond Amount and this Surety Bond will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Surety Insurer under this Surety Bond all rights of the Authority under this Surety Bond shall be forfeited and the Surety Insurer shall be relieved from its liabilities hereunder.

8. The Surety Bond shall cease to be in force and effect on \*\*\*\*\$. Unless a demand or claim under this Surety Bond is made in writing before expiry of the Surety Bond, the Surety Insurer shall be discharged from its liabilities hereunder.

*\$ - Insert date atleast 2 (two) years from the date of issuance of this Surety Bond (in accordance with Clause 2.21 of the RFP). The Contractors can submit the Surety Bond for periods of two years at one time and keep on renewing the same till the DLP is over if they have problems in getting the Surety Bond in one go for the entire DLP.*

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9. The Surety Insurer undertakes not to revoke this Surety Bond during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Surety Bond and the undersigned has full powers to do so on behalf of the Surety Insurer.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Surety Insurer at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Surety Bond shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Contract.

12. This Surety bond is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

Signed and sealed this ..... day of ....., 20..... at .....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

Name)

(Designation)

(Code Number)

(Address)

**Appendix-B-13**  
**(To be on the letter head of the Bidder/ Each Member of the JV/Associates)**  
**Certificate regarding Compliance with Restrictions under Rule 144 (xi) of the General**  
**Financial Rules (GFRs)**

**The Dy. General Manager (T)**

National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)  
2<sup>nd</sup> Floor, Tower-A  
World Trade Center, Nauroji Nagar  
New Delhi-110029

**Sub:** BID for "Name of work....."

Dear Sir,

With reference to your RFP document dated \*\*\* \*\*\$, I, having examined the Bidding Documents and understood their contents, hereby undertake and confirm as follows:

*I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors/Consultant from such countries; I certify that this Bidder is not from such a country or, if from such a country, has been registered with the Competent Authority, specified in Annexure-I of Order (Public Procurement No. 1) issued by Ministry of Finance, Department of Expenditure Public Procurement Division vide F. No. 6/18/2019-PPD, dated 23<sup>rd</sup> July 2020 and will not sub-contract any work to a contractor/Consultant from such countries unless such contractor/Consultant is registered with the said Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered.*

Yours faithfully,

Date:

Place:

(Signature of the Authorised signatory)  
(Name and designation of the of the Authorised signatory)  
Name and seal of Bidder/Each Member of the Consortium

**Notes:**

{Where applicable, evidence of valid registration by the Competent Authority shall be attached}

In case the above certification is found to be false, this would be a ground for immediate rejection of Bid/termination and further legal action in accordance with law.

OM F. No. 6/18/2019-PPD, dated 23<sup>rd</sup> July 2020 is enclosed herewith for ready reference.

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.



**SECTION 5:       FORMAT FOR SUBMISSION OF FINANCIAL PROPOSAL.**

**Appendix C-1** Financial proposal submission form

**Appendix C-2** Summary of costs

**Appendix C-3** Breakdown of local currency costs

## APPENDIX C-1: FINANCIAL PROPOSAL SUBMISSION FORM

**FROM : (Name of Firm)**

**TO :**

**The Dy. General Manager (T)**  
National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)  
NHIDCL, 2nd Floor, Tower-A  
World Trade Center, Nauroji Nagar  
New Delhi-110029  
Email: [gm8@nhidcl.com](mailto:gm8@nhidcl.com)

**Subject : Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis**

We, the undersigned, offer to provide the consulting services for the above in accordance with your Request for Proposal dated [Date], and our proposal. Our attached financial proposal is for the sum of [Amount in words and figures]. This amount is exclusive of the local taxes which we have estimated at (Amount in Words and Figures).

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

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

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

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

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

We remain,

Yours sincerely,

**Managing Director/Head of the firm/Authorised Representative of the firm\***

Name of the firm

Address

\*Lead Member in case of JV

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

## APPENDIX C-2 : SUMMARY OF COSTS

Note: Payments will be made as per stipulations of the Conditions of Contract

| No.  | Description                                  | Amount<br>(Rs.) |
|------|----------------------------------------------|-----------------|
|      | <b>Local Consultants</b>                     |                 |
| I    | Remuneration for Local Professional Staff    |                 |
| II   | Supporting Staff                             |                 |
| III  | Transportation                               |                 |
| IV   | Duty Travel to Site                          |                 |
| V    | Office Rent                                  |                 |
| VI   | Office Supplies, Utilities and Communication |                 |
| VII  | Office Furniture and Equipment               |                 |
| VIII | Reports and Document Printing                |                 |
| IX   | Road Survey Equipment                        |                 |
| X    | Contingency                                  | 10,00,000       |
|      | <b>Subtotal Local Consultant</b>             |                 |
|      | Goods and Services Tax Payable in India      |                 |
|      | <b>Total Costs (Including Tax)</b>           |                 |

## APPENDIX C-3: BREAKDOWN OF LOCAL CURRENCY COSTS

### I. REMUNERATION FOR LOCAL PROFESSIONAL STAFF

| No. | Position                                 | Name | 36 months |                    |        |
|-----|------------------------------------------|------|-----------|--------------------|--------|
|     |                                          |      | Rate      | No. of man-months* | Amount |
|     | <b>Professional Staff</b>                |      |           |                    |        |
| 1.  | Team Leader Cum Senior Tunnel Expert     |      |           | 18                 |        |
| 2.  | Resident cum Highway Engineer            |      |           | 36                 |        |
| 3.  | Bridge/Structural Engineer               |      |           | 06                 |        |
| 4.  | Traffic cum Road Safety Expert           |      |           | 09                 |        |
| 5.  | Sr. Pavement Specialist                  |      |           | 06                 |        |
| 6.  | Sr Geologist                             |      |           | 06                 |        |
|     | <b>Sub – Total</b>                       |      |           | <b>81</b>          |        |
|     | <b>Sub-professional</b>                  |      |           |                    |        |
| 1.  | Tunnel Ventilation cum E&M expert        | TBN  |           | 12                 |        |
| 2.  | Assistant Bridge Engineer                | TBN  |           | 12                 |        |
| 3.  | Assistant Highway Engineer               | TBN  |           | 36                 |        |
| 4.  | Assistant Tunnel Engineer                | TBN  |           | 36                 |        |
| 5.  | Instrumentation & Control Expert (SCADA) | TBN  |           | 36                 |        |
| 6.  | Quantity Surveyor                        | TBN  |           | 12                 |        |
| 7.  | Assistant Quality cum Material Engineer  | TBN  |           | 12                 |        |
|     | <b>Sub Total</b>                         |      |           | <b>156</b>         |        |
|     | <b>Total</b>                             |      |           | <b>237</b>         |        |

TBN = To Be Named

**\*The man-month against each key personnel/sub – professional shall be same as specified in Enclosure A of TOR.**

### II. Support Staff

| No. | Position                    | Name | Staff Months | Billing Rate ( ) | Amount ( ) |
|-----|-----------------------------|------|--------------|------------------|------------|
| 1.  | Office Manager              | TBN  | 36           |                  |            |
| 2.  | Accountant cum Cashier      | TBN  | 36           |                  |            |
| 3.  | Steno cum Computer Operator | TBN  | 36           |                  |            |
| 4.  | Office Boy ( 1 no)          | TBN  | 36           |                  |            |
|     |                             |      |              | <b>Total :</b>   |            |

**Note:** Billing rates as indicated above shall be increased in accordance of clause 6.2(a) Special Conditions of Contract for the personnel of all categories namely (i) key Personnel; (ii) sub-Professional personnel and (iii) Support staff. The increase as above shall be payable only on the remuneration part of Key Personnel, Sub-Professional Personnel and support staff. However, for evaluation of Bid proposals, the quoted initial rate shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates.

### III. Transportation (Fixed rate on rental basis)

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

The vehicles provided by the Consultants shall include the cost for rental, drivers, operation, maintenance, repairs, insurance, etc. for all complete approx. 3000km/month run

| S. No | Description of Vehicles                                          | Qty.<br>(No. of vehicle-month)    | Total | Rate/<br>Vehicle-<br>Month | Amount |
|-------|------------------------------------------------------------------|-----------------------------------|-------|----------------------------|--------|
|       |                                                                  | During Development and O&M Period |       |                            |        |
| 1     | Innova/Scorpio or equivalent vehicle (not more than 3 years old) | 1x36                              | 36    |                            |        |
| 2     | Bolero or equivalent vehicle (not more than 3 years old)         | 1X36                              | 36    |                            |        |
|       | <b>Total</b>                                                     | <b>72</b>                         |       |                            |        |

**IV. Duty Travel to Site (Fixed Costs) (For all Lengths of projects) : Professional and Sub-Professional Staff**

| Trips                             | Number of Trips | Rate* | Amount |
|-----------------------------------|-----------------|-------|--------|
| <b>Employer's Head Office</b>     | 10              |       |        |
| <b>Employer's Regional Office</b> | 20              |       |        |

**Rate quoted includes Hotel charges, travel cost etc. complete.**

The employer may require the Key Personnel to visit the Employer's Site offices/Regional office. The quoted amount against remuneration should include travel fare for round trips including Hotel charges, travel costs etc. Complete.

**V. Office Rent (Fixed Costs)- Minimum 200 sqm area of office shall be rented.**

The rent cost includes electricity and water charges, maintenance, Cleaning, repairs, etc. complete.

| Nos of Months | Rate/month | Amount |
|---------------|------------|--------|
| 36            |            |        |

**VI. Office Supplies, Utilities and Communication (Fixed Costs)**

| No | Item                                     | Months | Monthly Rate | Amount in Rs. |
|----|------------------------------------------|--------|--------------|---------------|
| 1. | Office Supplies                          | 36     |              |               |
| 2. | Drafting Supplies                        | 36     |              |               |
| 3. | Computer Running Costs                   | 36     |              |               |
| 4. | Domestic and International Communication | 36     |              |               |

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## **VII. Office Furniture and Equipment (Rental)**

The cost shall include rental charges towards all such furniture and equipment as required for proper functioning of office. Office furniture shall include executive tables, chairs, visitor chairs, steel almirahs, computer furniture, conference table etc. Office equipment shall include as a minimum of telephone (2 external & 10 internal lines), photocopier (15ppm, 12000 copies per month with A3 & A4 input) fax machine, PCs(5 No., Intel Core 2 Duo E8300, 19" colour TFT, Cache-6MB, RAM-2 GB, HDD-250 GB, DVD Writer, Key board, optical scroll mouse, MS-Windows Vista Business, pre loaded anti virus etc.), laser printers (2 no., 14 ppm, 266 MHZ, 5000 pages per month, 600x600 dpi or better etc., Engineering Plan printer (1 no.), binding machine (1 no.), plotter A0 size, overhead projector, AC (4 no., 1.5 Ton), Water Coolers (as required)etc.

| Nos of Months | Rate/month | Amount |
|---------------|------------|--------|
| 36            |            |        |

## **VIII. Reports and Document Printing**

| No. | Description                                                                              | No. of Reports | No. of Copies per Report | Total Nos. of copies | Rate per Copy ( ) | Amount |
|-----|------------------------------------------------------------------------------------------|----------------|--------------------------|----------------------|-------------------|--------|
| 1   | Monthly reports (Design and Construction)                                                | 36             | 3                        | 108                  |                   |        |
| 2   | Half yearly Reports                                                                      | 6              | 3                        | 18                   |                   |        |
| 3   | Various others reports as provided in the Concession Agreement such as Completion Report | LS             | LS                       | LS                   |                   |        |
|     |                                                                                          |                |                          | <b>Total</b>         |                   |        |

## **IX. Road Survey Equipment**

The cost shall include carrying out survey using equipment, manpower, software and report processing over entire project length.

| Item                                                                             | Rate per No. of times* survey to be concluded (INR) | No of times survey to be conducted | Amount (INR) |
|----------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------|--------------|
| Surface defects detection and roughness measurement using Network Survey Vehicle |                                                     | 6                                  |              |
| Pavement strength measurement using FWD                                          |                                                     | 3                                  |              |
| Bridge inspection using Mobile Bridge Inspection Unit                            |                                                     | 6                                  |              |
| Road signs inspection using Retro Reflectometer                                  |                                                     | 6                                  |              |
|                                                                                  |                                                     | <b>Total</b>                       |              |

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**X. Contingencies**

A fixed amount of Indian Rupees 10 (ten) Lakh shall be included in the Financial Proposal. The provisions of Contingency shall be operated with the specific approval from the Competent Authority in NHIDCL.

## **SECTION 6: TERMS OF REFERENCE FOR INDEPENDENT ENGINEER**

### **1. Scope**

- 1.1. These Terms of Reference for the Independent Engineer (the “TOR”) are being specified pursuant to the Concession Agreement dated **17<sup>th</sup> January 2020** (the “Agreement”), which has been entered into between the Authority and M/s Apco Shri Amarnathji Tunnelway Limited (the “Concessionaire”) for Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.
- 1.2. This TOR shall apply to construction, operation and maintenance of the Project Highway, and shall apply, *mutatis mutandis*, thereof.

### **2. Definitions and interpretation**

- 2.1. The words and expressions beginning with or in capital letters used in this TOR and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.
- 2.2. References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.
- 2.3. The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

### **3. Role and functions of the Independent Engineer**

- 3.1. The role and functions of the Independent Engineer shall include the following:
  - i. review of the Drawings and Documents as set forth in Paragraph 4;
  - ii. review, inspection and monitoring of Construction Works as set forth in Paragraph 5;
  - iii. conducting Tests on completion of construction and issuing Completion/ Provisional Certificate as set forth in Paragraph 5;
  - iv. review, inspection and monitoring of O&M as set forth in Paragraph 6;
  - v. review, inspection and monitoring of Divestment Requirements as set forth in Paragraph 7;
  - vi. determining, as required under the Agreement, the costs of any works or services and/or their reasonableness;
  - vii. determining, as required under the Agreement, the period or any extension thereof, for performing any duty or obligation;

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- viii. assisting Authority in review and inspection of the books of accounts submitted by the Concessionaire to the Authority and the records maintained by Concessionaire as set forth in Paragraph 12
  - ix. providing all requisite data on monthly basis in Monthly Progress Report (MPR) within a period of 7 days from the close of month, as required by Authority, for updating the project specific website and PMIS substantially in the format prescribed at **Annexure – I** and **Annexure- II**
  - x. assisting the Parties in resolution of disputes as set forth in Paragraph 9;
  - xi. carrying out minor design works such as design of drainage, blackspot removal design, etc upon request of Authority; and
  - xii. undertaking all other duties and functions in accordance with the Agreement.
- 3.2. The Independent Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

#### **4. Review of Drawings and Documents**

- 4.1. The Independent Engineer shall undertake a detailed review of the Drawings to be furnished by the Concessionaire along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys and traffic surveys. The Independent Engineer shall complete such review and send its comments/observations to the Authority and the Concessionaire within 30 (thirty) days of receipt of such Drawings. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.
- 4.2. The Independent Engineer shall review any modified Drawings or supporting Documents sent to it by the Concessionaire and furnish its comments within 15 (fifteen) days of receiving such Drawings or Documents.
- 4.3. The Independent Engineer shall review the Drawings sent to it by the Safety Consultant in accordance with Schedule-L and furnish its comments thereon to the Authority and the Concessionaire within 15 (fifteen) days of receiving such Drawings. The Independent Engineer shall also review the Safety Report and furnish its comments thereon to the Authority within 30 (thirty) days of receiving such report.
- 4.4. The Independent Engineer shall review the detailed design, construction methodology and the procurement, engineering and construction time schedule sent to it by the Concessionaire and furnish its comments within 30 (thirty) days of receipt thereof.
- 4.5. Quality Assurance Manual and Plan forms the basis of quality of the work. It is therefore essential that the Quality Assurance Manual and Plan prepared by the Concessionaire be checked and approved. Thus, the Consultant shall check contents of Quality Assurance Plan and Manual of Concessionaire as per requirements of Quality Management System (as per ISO 9001), IRC: SP: 47-1998 and IRC: SP: 57-2000 for road bridges and roads respectively. The Consultant shall also offer their comments for

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modifying/ improving the document. After receiving the corrected document, the Consultant shall review and formally approve the QAM and Quality Plan and send one copy to the Authority.

5. **Deleted**

6. **Operation Period**

6.1. The Independent Engineer shall review the annual Maintenance Programme furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 15 (fifteen) days of receipt of the Maintenance Programme.

6.2. The Independent Engineer shall review the monthly status report furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receipt of such report

6.3. **Visual Inspection of project highway**

6.3.1. The Independent Engineer shall carry out visual inspection of entire highway stretch as per the frequency defined in the following table

| Nature of defect or deficiency |                                                                                                    | Frequency of inspection |
|--------------------------------|----------------------------------------------------------------------------------------------------|-------------------------|
| <b>ROADS</b>                   |                                                                                                    |                         |
| <b>(a)</b>                     | <b>Carriageway and paved shoulders</b>                                                             |                         |
| (i)                            | Breach or blockade                                                                                 | Daily                   |
| (ii)                           | Pot holes                                                                                          | Daily                   |
| (iii)                          | Cracking                                                                                           | Weekly                  |
| (iv)                           | Rutting                                                                                            | Weekly                  |
| (v)                            | Bleeding/skidding                                                                                  | Weekly                  |
| (vi)                           | Ravelling/Stripping of bitumen surface                                                             | Weekly                  |
| (vii)                          | Damage to pavement edges                                                                           | Weekly                  |
| (viii)                         | Removal of debris                                                                                  | Daily                   |
| <b>(b)</b>                     | <b>Hard/earth shoulders, side slopes, drains and culverts</b>                                      |                         |
| (i)                            | Variation by more than 2% in the prescribed slope of camber/cross fall                             | Weekly                  |
| (ii)                           | Edge drop at shoulders                                                                             | Weekly                  |
| (iii)                          | Variation by more than 15% in the prescribed side (embankment) slopes                              | Weekly                  |
| (iv)                           | Rain cuts/gullies in slope                                                                         | Weekly                  |
| (v)                            | Damage to or silting of culverts and side drains during and immediately preceding the rainy season | Weekly                  |
| (vi)                           | Desilting of drains in urban/semi-urban areas                                                      | Daily                   |
| <b>(c)</b>                     | <b>Road side furniture including road signs and pavement marking</b>                               |                         |
| (i)                            | Damage to shape or position; poor visibility or loss of retro-reflectivity                         | Daily                   |
| <b>(d)</b>                     | <b>Street lighting and telecom (ATMS)</b>                                                          |                         |
| (i)                            | Any major failure of the system                                                                    | Daily                   |
| (ii)                           | Faults and minor failures                                                                          | Daily                   |

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| Nature of defect or deficiency |                                                                                                                                                                                     | Frequency of inspection |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| (iii)                          | Streetlight with Lux Meter                                                                                                                                                          | Weekly                  |
| <b>(e)</b>                     | <b>Trees and plantation</b>                                                                                                                                                         |                         |
| (i)                            | Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs                                                                              | Daily                   |
| (ii)                           | Deterioration in health of trees and bushes                                                                                                                                         | Weekly                  |
| (iii)                          | Replacement of trees and bushes                                                                                                                                                     | Weekly                  |
| (iv)                           | Removal of vegetation affecting sight line and road structures                                                                                                                      | Weekly                  |
| <b>(f)</b>                     | <b>Rest areas/Wayside amenities</b>                                                                                                                                                 |                         |
| (i)                            | Cleaning of toilets                                                                                                                                                                 | Daily                   |
| (ii)                           | Defects in electrical, water and sanitary installations                                                                                                                             | Daily                   |
| <b>(g)</b>                     | <b>Toll plaza[s]</b>                                                                                                                                                                |                         |
| (i)                            | Failure of toll collection equipment including ETC or lighting                                                                                                                      | Daily                   |
| (ii)                           | Damage to toll plaza                                                                                                                                                                | Weekly                  |
| <b>(h)</b>                     | <b>Other Project Facilities and Approach roads</b>                                                                                                                                  |                         |
| (i)                            | Damage or deterioration in Approach Roads, -[pedestrian facilities, truck lay-bys, bus-bays, bus- shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works] | Daily                   |
| <b>(j)</b>                     | <b>Incident Management</b>                                                                                                                                                          |                         |
| (i)                            | Instances of Incident Management as reported including time of call, response time, services rendered and time of clearing of the Highway.                                          | Daily                   |
| (ii)                           | List of the Incident Management Services rendered.                                                                                                                                  | Weekly                  |
| <b>BRIDGES</b>                 |                                                                                                                                                                                     |                         |
| <b>(a)</b>                     | <b>Superstructure of bridges</b>                                                                                                                                                    |                         |
| (i)                            | Cracks                                                                                                                                                                              | Weekly                  |
| (ii)                           | Spalling/scaling                                                                                                                                                                    | Weekly                  |
| <b>(b)</b>                     | <b>Foundations of bridges</b>                                                                                                                                                       |                         |
| (i)                            | Scouring and/or cavitation                                                                                                                                                          | Weekly                  |
| <b>(c)</b>                     | <b>Piers, abutments, return walls and wing walls of bridges</b>                                                                                                                     |                         |
| (i)                            | Cracks and damages including settlement and tilting                                                                                                                                 | Weekly                  |
| <b>(d)</b>                     | <b>Bearings (metallic) of bridges</b>                                                                                                                                               |                         |
| (i)                            | Deformation                                                                                                                                                                         | Weekly                  |
| <b>(e)</b>                     | <b>Joints in bridges</b>                                                                                                                                                            |                         |
| (i)                            | Loosening and malfunctioning of joints                                                                                                                                              | Weekly                  |
| <b>(f)</b>                     | <b>Other items relating to bridges</b>                                                                                                                                              |                         |
| (i)                            | Deforming of pads in elastomeric bearings                                                                                                                                           | Weekly                  |
| (ii)                           | Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes                                                                                          | Weekly                  |
| (iii)                          | Damage or deterioration in parapets and handrails                                                                                                                                   | Weekly                  |
| (iv)                           | Rain-cuts or erosion of banks of the side slopes of approaches                                                                                                                      | Weekly                  |
| (v)                            | Damage to wearing coat                                                                                                                                                              | Weekly                  |
| (vi)                           | Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds                                                                                              | Weekly                  |

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| Nature of defect or deficiency |                                                                          | Frequency of inspection |
|--------------------------------|--------------------------------------------------------------------------|-------------------------|
| (vii)                          | Growth of vegetation affecting the structure or obstructing the waterway | Weekly                  |
| <b>TUNNELS</b>                 |                                                                          |                         |
| (a)                            | Structure parts                                                          | Weekly                  |
| (b)                            | Telecom and SCADA system                                                 | Weekly                  |
| (c)                            | Firefighting and Ventilation system                                      | Weekly                  |

6.3.2. All elements which have daily inspection frequency shall be inspected weekly as well. Similarly, all elements which have weekly inspection frequency shall be inspected monthly as well.

6.3.3. Daily inspection report format and weekly inspection report format has been provided in Annexure II and III of this document respectively. Manpower which needs to conduct visual inspection and mode of reporting is defined in the following table

| Frequency of inspection | Inspection to be carried out by | Mode of reporting       |
|-------------------------|---------------------------------|-------------------------|
| Daily                   | Sub-professional staff          | Soft copy by Email      |
| Weekly                  | Key personnel                   | Soft copy by Email      |
| Monthly                 | Key personnel                   | Hard copy and Soft copy |

6.3.4. High resolution photographs and video of the highway stretches having defects and/or deficiencies shall be submitted along with Weekly Inspection Report and Monthly Status Report. Summary of key observations around defects and deficiencies in highway stretch shall be reported in Monthly Progress Report and detailed inspection report shall be provided as Annexure to Monthly Progress Report.

6.3.5. The consultant shall also be responsible for inspection and monitoring of Wayside Amenities, ETC (Electronic Toll Collection) and ATMS (Advanced Traffic Management System), SCADA (Supervisory Control And Data Acquisition) and incident management.

#### 6.4. Road conditions surveys

6.4.1. The carrying out of condition surveys will be one of the most important and crucial field tasks under the project. The Independent Engineer shall carry out condition surveys using equipment and following a frequency as defined under.

| Sr. No. | Key metrics of Asset        | Equipment to be used                 | Frequency of condition survey                                                         |
|---------|-----------------------------|--------------------------------------|---------------------------------------------------------------------------------------|
| 1       | Surface defects of pavement | Network Survey Vehicle (NSV)         | At least twice a year (As per survey months defined for the state basis rainy season) |
| 2       | Roughness of pavement       | Laser Profilometer                   | At least twice a year (As per survey months defined for the state basis rainy season) |
| 3       | Strength of pavement        | Falling Weight Reflectometer (FWD)   | At least once a year                                                                  |
| 4       | Bridges                     | Mobile Bridge Inspection Unit (MBIU) | At least twice a year (As per survey months defined for the state basis rainy season) |

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| Sr. No. | Key metrics of Asset | Equipment to be used | Frequency of condition survey                                                         |
|---------|----------------------|----------------------|---------------------------------------------------------------------------------------|
| 5       | Road signs           | Retro-reflectometer  | At least twice a year (As per survey months defined for the state basis rainy season) |

The first equipment based inspection shall be conducted at the time of completion testing. The other inspections shall be conducted before and after the rainy seasons as per the schedule defined in Annexure IV, except for FWD testing which shall be conducted once a year.

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. Month of survey for each state has been defined in Annexure IV of this document.

#### 6.4.2. Measurement of pavement surface defects and roughness

- i. The Independent Engineer 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"> <li>Length</li> <li>Width</li> <li>Depth</li> </ul> |
| Potholes                 | <ul style="list-style-type: none"> <li>Area</li> <li>Depth</li> </ul>                  |
| Raveling                 | <ul style="list-style-type: none"> <li>Indicator</li> <li>%</li> <li>Area</li> </ul>   |
| Rutting                  | <ul style="list-style-type: none"> <li>Depth</li> <li>Width</li> </ul>                 |
| Concrete Joint/ Faulting | <ul style="list-style-type: none"> <li>Length</li> </ul>                               |
| Roughness                | <ul style="list-style-type: none"> <li>IRI in both wheel paths</li> </ul>              |

- ii. 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 up to 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.

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- 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 wheelpaths.
  - 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
- iii. The following are the set of deliverables which should be submitted after completion of survey as part of Monthly Progress Report
- Raw data generated from the equipment which are part of Network Survey covering the parameters mentioned in above table. It should also include
    - Survey ID, Description, Date, Lane
    - GPS referenced data for GIS mapping
  - Video logging
    - Pavement imagery (AVI/JPEG)
    - 360 degree imagery (JPEG)
  - Interpretation report covering summary of entire survey and analysis of defects and deficiencies

#### **6.4.3. Measurement of pavement strength**

- i. The Independent Engineer shall carry out structural strength surveys for existing pavements using Falling Weight Deflectometer technique in accordance with the procedure given in IRC:115-2014 (Guidelines for Structural Evaluation and Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique) and IRC: 117-2015 (Guidelines for the Structural Evaluation of Rigid Pavement by Falling Weight Deflectometer)

- ii. The interval at which deflection measurements are to be taken up are as per IRC:115-2014 / IRC:117-2015. The sample size and the interval of the data to be collected depends on the length of the uniform section calculated and condition of the pavement section i.e 'good', 'fair' and 'poor' for each lane, established on the pavement condition data based on the criterion given in IRC:115-2014. For rigid pavements, the deflection data may be collected at interiors, corners, transverse joints and longitudinal joints in the outer lanes at intervals as specified in IRC:117-2015.
  - iii. 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 E3
      - Subgrade CBR
    - Interpretation report covering summary of entire survey results and analysis of key parameters
- 6.4.4. The Independent Engineer shall carry out the condition and structural assessment survey of the bridges in accordance with IRC-SP; 35 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

**6.4.5. Measurement of retro reflection of road signs**

- i. The Independent Engineer shall measure Coefficient of retro reflected luminance  $R_A$  (night-time retro reflection) of road traffic signs using a portable retro reflectometer.
- ii. The following criteria shall be met by the process of road signs retroreflection measurement

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- Measurement of retroreflective 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/m<sup>2</sup>
- iii. 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 retroreflected luminance  $R_A$  (nighttime retroreflection) of all road signs
  - Interpretation report covering analysis of road signs falling in different range of  $R_A$  and actions to be taken
- 6.5. The Independent Engineer shall carry out following inspections of ETC lanes at toll plazas on a month basis:
- (a) *Infrastructure:*
- *Availability of civil infrastructure at toll plazas required for installation of ETC systems*
  - *Adequacy of hardware, software and other related items as per IHMCL/National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) technical specifications and requirements*
- (b) *Operations:*
- *Adherence of various stakeholders (acquirer bank, system integrator, toll operator, issuer bank etc) of the ETC system to the service level agreements*
  - *Efficacy of the ETC system (RFID tagging, AVC, WIM etc) in terms of accuracy and uptime*
  - *Tracking and reporting toll plaza experience metrics such as average waiting time, transaction times for different modes of payment (RFID, cash, smart cards, QR codes etc) and congestion levels (eg length of queue in different lanes) across 4 different times in a day*
  - *Robustness of dispute resolution mechanisms in place for the tag holder and toll operators by the issuer and acquirer banks*
- 6.6. The Independent Engineer shall prepare a Monthly Status Report in O&M phase of project in respect of its duties and functions under this Agreement and in accordance with the format prescribed in Annexure VI. 1st deliverable of the report which is an executive summary to the main report (Section 1) shall be submitted to the Authority and updated on the PMIS and project specific website by 4th of every month. Main report (Section 2 onwards) shall be submitted to the Authority and updated on the

PMIS and project specific website by 7th of every month. Key sections of the Monthly Status Report are as follows.

| S.No | Sections                                | Sub sections                                                  |
|------|-----------------------------------------|---------------------------------------------------------------|
| 1    | <b>Executive Summary</b>                | 1.1 Overall road condition                                    |
|      |                                         | 1.2 Key reporting metrics                                     |
|      |                                         | 1.3 Key maintenance activities undertaken                     |
|      |                                         | 1.4 Pending issues                                            |
|      |                                         | 1.5 Recommended actions by AE                                 |
|      |                                         | 1.6 Strip plan for maintenance                                |
| 2    | <b>Project Overview</b>                 | 2.1 Key project details                                       |
|      |                                         | 2.2 Location map                                              |
|      |                                         | 2.3 Key plan                                                  |
|      |                                         | 2.4 Summary of project features                               |
|      |                                         | 2.5 RoW availability                                          |
| 3    | <b>Critical issues and action taken</b> | 3.1 Issue and action log                                      |
|      |                                         | 3.2 Summary of deficiencies                                   |
|      |                                         | 3.3 Obligations as per contract                               |
|      |                                         | 3.4 Inspection schedule                                       |
| 4    | <b>Monthly Inspection Report</b>        | 4.1 Summary of NCR issued                                     |
|      |                                         | 4.2 Equipment based inspection report                         |
| 5    | <b>Monitoring of ETC Lanes</b>          | 5.1 Monthly ETC Report                                        |
|      |                                         | 5.2 On-ground infrastructure report                           |
|      |                                         | 5.3 On ground ETC operations & SLA adherence                  |
| 5    | <b>Status of damages</b>                | 6.1 Damages for non completion of project facilities          |
|      |                                         | 6.2 Damages for breach of maintenance activities              |
|      |                                         | 6.3 Damages for non completion of major maintenance works     |
| 7    | <b>Change of Scope proposals</b>        | 7.1 Change of Scope proposals                                 |
| 8    | <b>Status of pending disputes</b>       | 8.1 Status of pending disputes                                |
| 9    | <b>Reports</b>                          | 9.1 Toll collection statement                                 |
|      |                                         | 9.2 Accident Report                                           |
|      |                                         | 9.3 Details of user complaints                                |
|      |                                         | 9.4 Encroachment list                                         |
|      |                                         | 9.5 Lane closure report                                       |
| 10   | <b>Annexures</b>                        | Annex I- Detailed visual inspection report of project highway |
|      |                                         | Annex II onwards- Additional details provided by AE           |

- 6.7. The Independent Engineer shall in its O&M Inspection Report specify the tests, if any, that the Concessionaire shall carry out or cause to be carried out for the purpose of determining that the Project Highway is in conformity with the Maintenance

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Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Concessionaire in this behalf.

- 6.8. In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-K, the Independent Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.
- 6.9. The Independent Engineer shall determine if any delay has occurred in completion of repair or remedial works in accordance with the Agreement, and shall also determine the Damages, if any payable by the Concessionaire to the Authority for such delay.
- 6.10. The Independent Engineer shall examine the request of the Concessionaire for closure of any lane(s) of the carriageway for undertaking maintenance/repair thereof, keeping in view the need to minimise disruption in traffic and the time required for completing such maintenance/repair in accordance with Good Industry Practice. It shall grant permission with such modifications, as it may deem necessary, within 3 (three) days of receiving a request from the Concessionaire. Upon expiry of the permitted period of closure, the Independent Engineer shall monitor the re-opening of such lane(s), and in case of delay, determine the Damages payable by the Concessionaire to the Authority under Clause 17.7.
- 6.11. The Independent Engineer shall monitor and review the curing of defects and deficiencies by the Concessionaire as set forth in Clause 19.4.
- 6.12. In the event that the Concessionaire notifies the Independent Engineer of any modifications that it proposes to make to the Project Highway, the Independent Engineer shall review the same and send its comments to the Authority and the Concessionaire within 15 (fifteen) days of receiving the proposal.
- 6.13. Upon request of Authority, the Independent Engineer shall carry out minor design works such as design of drainage, blackspot removal design, etc
- 6.14. The Independent Engineer shall undertake traffic sampling, as and when required by the Authority, under and in accordance with Concession Agreement ..

## **7. Termination**

- 7.1. At any time, not earlier than 90 (ninety) days prior to Termination but not later than 15 (fifteen) days prior to such Termination, the Independent Engineer shall, in the presence of a representative of the Concessionaire, inspect the Project Highway for determining compliance by the Concessionaire with the Divestment Requirements set forth in Clause 38.1 and, if required, cause tests to be carried out at the Concessionaire's cost for determining such compliance. If the Independent Engineer determines that the status of the Project Highway is such that its repair and rectification would require a larger amount than the sum set forth in Clause 39.2, it shall recommend retention of the required amount in the Escrow Account and the period of retention thereof.

- 7.2. The Independent Engineer shall inspect the Project Highway once in every 15(fifteen) days during a period of 90 (ninety) days after Termination for determining the liability of the Concessionaire as per Concession Agreement , in respect of the defects or deficiencies specified therein. If any such defect or deficiency is found by the Independent Engineer, it shall make a report in reasonable detail and send it forthwith to the Authority and the Concessionaire.

**8. Determination of costs and time**

- 8.1. The Independent Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.
- 8.2. The Independent Engineer shall determine the period, or any extension thereof, that is required to be determined by it under the Agreement.

**9. Assistance in Dispute resolution**

- 9.1. When called upon by either Party in the event of any Dispute, the Independent Engineer shall mediate and assist the Parties in arriving at an amicable settlement.
- 9.2. In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Independent Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

**10. Other duties and functions**

The Independent Engineer shall perform all other duties and functions specified in the Agreement.

**11. Miscellaneous**

- 11.1. All key personnel and sub professional staff of the Independent Engineer shall use the fingerprint based **(biometric)** attendance system for marking their daily attendance. Attendance shall be marked at least once a day and anytime during the day. 1 Biometric Attendance System shall be installed by the Independent Engineer at its own cost at the site office in order to facilitate the attendance marking. More systems can be installed near the project highway upto a maximum of 1 system per 50 km in order to encourage frequent visits of project highway by key personnel and sub professional staff. A copy of monthly attendance records shall be attached with Monthly Status Report. Proper justification shall be provided for cases of absence of key personnel/ sub professional staff which do not have prior approval from Project Director of concerned stretch
- 11.2. The Independent Engineer shall notify its programme of inspection to the Authority and to the Concessionaire, who may, in their discretion, depute their respective representatives to be present during the inspection.
- 11.3. A copy of all communications, comments, instructions, Drawings or Documents sent by the Independent Engineer to the Concessionaire pursuant to this TOR, and a copy of all

the test results with comments of the Independent Engineer thereon shall be furnished by the Independent Engineer to the Authority forthwith.

- 11.4. The Independent Engineer shall obtain, and the Concessionaire shall furnish in two copies thereof, all communications and reports required to be submitted, under this Agreement, by the Concessionaire to the Independent Engineer, whereupon the Independent Engineer shall send one of the copies to the Authority along with its comments thereon.
- 11.5. The Independent Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.
- 11.6. Upon completion of its assignment hereunder, the Independent Engineer shall duly classify and list all Drawings, Documents, results of tests and other relevant records, and hand them over to the Authority or such other person as the Authority may specify, and obtain written receipt thereof. Two copies of the said documents shall also be furnished in micro film form or in such other medium as may be acceptable to the Authority.

**12. Assistance to Authority in review of book of accounts**

- 12.1. Upon receipt of copy of books of accounts from Authority, the Independent Engineer shall review the Escrow account statements with respect to the provisions of the Escrow agreement, books of accounts for information pertaining (a) the traffic count (b) Fee determination thereof, and (c) Project costs, and (d) such other information relating or resulting from other duties and functions of Independent Engineer in accordance with the Agreement, as the Authority may reasonably require and submit its report within 10 days.

**13. PERFORMANCE CLAUSE**

Independent Engineers shall be expected to fully comply with all the provisions of the 'Terms of Reference', and shall be fully responsible for supervising the Designs, Construction and maintenance and operation of the facility takes place in accordance with the provisions of the Concession Agreement and other schedules. Any failure of the Independent Consultant in notifying to National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) and the Concessionaire on non-compliance of the provisions of the Concession Agreement and other schedules by the Concessionaire, non-adherence to the provision of ToR and non-adherence to the time schedule prescribed under ToR shall amount to non-performance.

The Independent Engineer shall appoint its authorized representative, who shall issue on behalf of the IE, the Provisional Completion Certification and Completion Certificate along with the Team Leader and shall carry out any such task as may be decided by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) . The IE shall take prior approval of National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) before issuing Provisional Completion Certification and Completion Certificate. The proposal submitted shall also include the name of the authorized representative along with the authorization letter and power of attorney.

#### **14. CONSULTANT'S PROPOSAL**

14.1. List of key personnel to be fielded by the Consultants shall be as below:

- i. Team Leader Cum Senior Tunnel Expert
- ii. Resident cum Highway Engineer
- iii. Bridge/Structural Engineer
- iv. Traffic cum Road Safety Expert
- v. Sr. Pavement Specialist
- vi. Sr Geologist

14.2. Broad job-description and minimum qualification for key personnel mentioned above is enclosed as **Enclosure-B**. However, higher marks shall be accorded to the Candidate with higher relevant qualification and experience. The Consultant should feel free to submit their proposal on the basis of the man-months which they consider to be necessary to undertake the assignment. All the CVs of the personals mentioned in Para 5.3 (iii) of Data Sheet shall be evaluated at the time of evaluation of technical proposal. **The age of the Key Personnel should not be more than 65 years on the date of submission of proposal.** Consultants are advised in their own interest to frame the technical proposal in an objective manner as far as possible so that these could be properly assessed in respect of points to be given as part of evaluation criteria. The bio-data of the key personnel should be signed on every sheet by the personnel concerned and the last sheet of each bio-data should also be signed by the authorised signatory for the Consultant. The key personnel shall also certify at the end of their bio-data proforma that they have not left any of the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) works without completing of their assignment and have not accepted any other offer at the time of signing of the bio-data and as such shall be available to work with the Independent Consultant, if the Project is awarded. In case the key personnel leaves the assignment without approval of National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) , National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) would be at liberty to take any appropriate action against that key personnel including debarment.

14.3. In addition to above, consultants are required to propose other key personnel, sub-professional staff and other field engineers as detailed in Enclosure-A and the minimum qualification requirements for the same is enclosed in Enclosure-B.

#### **15. PERIOD OF SERVICES**

15.1. The services of an Independent Engineer will be in phases as per Contract / Concession Agreement.

15.1.1. The appointment of the Independent Engineer shall initially be as per details given below.

The proposed manpower deployment for this period shall be matching the activities to be performed during the said period. The time frame for services during the deployment of key personnel during this period shall be as shown in Enclosure A.

## Enclosure-A

### MAN MONTHS INPUT FOR KEY PROFESSIONAL STAFF

#### INDEPENDENT ENGINEER

| Sr. No.                          | Key Personnel                            | Man-month O&M period of 36 months |
|----------------------------------|------------------------------------------|-----------------------------------|
| <b>A: Key Personnel</b>          |                                          |                                   |
| 1.                               | Team Leader Cum Senior Tunnel Expert     | 1x18                              |
| 2.                               | Resident cum Highway Engineer            | 1x 36                             |
| 3.                               | Bridge/Structural Engineer               | 1x 06                             |
| 4.                               | Traffic cum Road Safety Expert           | 1x 09                             |
| 5.                               | Sr. Pavement Specialist                  | 1x 06                             |
| 6.                               | Sr Geologist                             | 1x 06                             |
|                                  | Sub Total                                | <b>81</b>                         |
| <b>B: Sub Professional Staff</b> |                                          |                                   |
| (a)                              | Tunnel Ventilation cum E&M expert        | 1x 12                             |
| (b)                              | Assistant Bridge Engineer                | 1x 12                             |
| (c)                              | Assistant Highway Engineer               | 1x 36                             |
| (d)                              | Assistant Tunnel Engineer                | 1x 36                             |
| (e)                              | Instrumentation & Control Expert (SCADA) | 1x 36                             |
| (f)                              | Quantity Surveyor                        | 1x 12                             |
| (g)                              | Assistant Quality cum Material Engineer  | 1x 12                             |
|                                  | Sub Total                                | <b>156</b>                        |
|                                  | <b>Total for O&amp;M</b>                 | <b>237</b>                        |

**Note:**

1. The other inputs like support staff shall be provided by the Consultant of an acceptable type commensurate with the roles and responsibilities of each position
2. In case of project having different construction period, Man Month Input shall be adjusted proportionately.
3. The Financial Expert/Legal expert/Contract Specialist may be required for the project for specific needs. Their deployment shall be arranged by the Consultant on specific requisition from the Authority and the payment shall be made as per the actual deployment. The Financial Expert/Legal expert/Contract Specialist shall be paid at the rates quoted for Senior Pavement Specialist.

## **Enclosure B**

### **QUALIFICATION OF KEY PERSONNEL**

#### **1. TEAM LEADER CUM SENIOR TUNNEL EXPERT**

**Duties:** The Team Leader will reside at project site throughout the period of construction supervision services. He will be overall in-charge of the project supervision of the construction package. He shall act as representative of the consulting firm appointed by the Authority. His duties will involve overall superintendence over the Resident Engineers and other experts of the construction package. He will guide, monitor, supervise and control all the activities related to supervision for the construction package. He will interact with the Project Director/ General Manager and the other officials of the Authority. He should have the following qualification / experience.

##### **(1) Essential Qualifications.**

- a) Graduate in Civil/Mining Engineering or equivalent from a recognized university.
- b) Total professional experience of at least 20 years
- c) Professional Experience of at least 15 years in handling major tunnelling projects
- d) He should be involved in at least 10 years in construction/construction supervision of major Road/ Rail/ Metro tunnel projects
- e) At least 5 years' experience as Team Leader/Resident Engineer/Project Manager or similar capacity in supervision of transportation tunnel projects of length equal to or more than 4 km
- f) He should have handled as Team Leader or similar capacity of at least two projects in Construction Supervision of transportation tunnels equal to more than 4 Km length
- g) Not more than 65 years of age.

##### **(2) Preferential Qualifications.**

- a) Post Graduate or chartered engineer in Mining Engineering/ Geotechnical Engineering/ Structural Engineering/ Rock Mechanics or equivalent.
- b) Project preparation/ design experience of transportation Tunnel projects

**Note:** (1) Similar Capacity includes the following positions

- i) On behalf of Consultant: Team Leader / Resident Engineer/Professional Engineer/Chartered Engineer (Construction Supervision/IE/AE).
- ii) On behalf of Contractor : Project Manager/ Professional Engineer/Chartered Engineer (Construction/ Construction Supervision)
- iii) In Government Organizations : Superintending Engineer (or equivalent) and above

(2) Only those projects will be considered for evaluation at Sr. no 1(d), 1(e) and 1(f)

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where the input of the personnel is at least of one year.

(3) Unless otherwise mentioned specifically, tunnel projects of length  $\geq 1.5\text{km}$  shall be considered as major tunnel projects.

## **2. RESIDENT CUM HIGHWAY ENGINEER**

The Resident cum Highway Engineer shall be responsible for supervising the works of highway to be constructed by the Concessionaire for this project. He shall also inspect the pavement rehabilitation and repair works to be undertaken by the Concessionaire.

He should have the following qualification / experience.

### **I. Essential Qualifications.**

- a) Graduate in Civil Engineering from a recognized University.
- b) Professional Experience of 10 years in supervision of Highway Projects.
- c) 5 years experience in similar capacity in Highway Development Project.
- d) Should have handled at least 2 major projects (of length 40% of project length or more of similar configuration (2/4/6 laning\*\*) and above).

### **II. Preferential Qualifications.**

- a) Post Graduate Degree in Transportation/Highway Engineering/Structural Engineering/Geotechnical Engineering/any specialised stream of Civil Engineering.
- b) Experience of Highway Project (of length 40% of project length or more of similar configuration (2/4/6 laning\*\*) and above) of Construction / Construction Supervision / IC on PPP Mode.

## **3. BRIDGE & STRUCTURAL ENGINEER**

The Bridge & Structural Engineer shall be responsible for checking the designs of bridges, ROB, interchanges and any other structure to be constructed in the Project highway and supervising the works of bridges, interchanges and any other structure to be constructed by the Concessionaire for this project. He shall also inspect the bridge rehabilitation and repair works to be undertaken by the Concessionaire. He should have thorough understanding and experience with international 'best practices' of modern bridge construction technology.

He should have the following qualification / experience.

### **I. Essential Qualifications.**

- a) Graduate in Civil Engineering from a recognized University.
- b) Professional Experience of 10 years in handling Highway/Bridge projects.
- c) 5 years experience in Construction / Construction Supervision of bridge / interchange / any other structures.

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- d) Experience in similar capacity in supervision of 2 Major Highway Bridges.
- e) Experience in supervision of Rehabilitation and repair of 2 nos Major Bridges.

## **II. Preferential Qualifications.**

- a) Post Graduate Degree in Structural Engineering.

He should have thorough understanding and experience of modern bridge construction technology. viz., Precast Segmental, Balanced Cantilever Construction, Extradosed Bridge, Full Span Launching, Incremental Launching.

### **4. TRAFFIC CUM ROAD SAFETY EXPERT:**

He shall conduct Traffic safety audit study and give comments on traffic management, traffic analysis, accident analysis etc. He shall also review efficiency and workability of toll collection system and traffic build up if any in the arrangement. He shall review usefulness of traffic signal and advise necessary modification. He shall provide periodic traffic reports. He shall review traffic diversion plan to be implemented during maintenance if necessary. He shall review all the safety measures taken by the Concessionaire during the concession period at site. Conformity to the safety requirement as per detailed contract requirement shall also be checked and approved. He shall also look into the causes of various accidents and review other insurance coverage taken by the Concessionaire. He shall undertake, supervise safety audit/ inspection once in every quarter and furnish a detailed report. He shall review emergency response arrangement, accident data, formats, safety supervision in O&M activities etc., as proposed by the Concessionaire.

He should have the following qualification / experience.

#### **(I) Essential Qualifications.**

- (a) Graduate in Civil Engineering from a recognized University.
- (b) Professional Experience of 10 years.
- (c) Minimum 3 years' experience in Traffic Expert works of Major Highway Projects (4/6laning projects)
- (d) Experience in Road Safety Audit of at least one 4/6 lane highway / expressway project.

#### **(II) Preferential Qualifications.**

- (a) Post Graduate Degree in Traffic/Transportation/Safety Engineering.
- (b) Preparation of Road Safety/Traffic Management Plan for inter urban Highways in PPP mode.

### **5. SENIOR PAVEMENT SPECIALIST**

The expert shall be continuously interacting with the Concessionaire, for the review of highway designs and drawings using sophisticated computer software and also construction and O&M works and to ensure life cycle cost effectiveness and viable design of pavement including appropriate rehabilitation / strengthening of the existing two lane pavement which is significantly distressed. He shall also be responsible for ensuring complete adherence to maintenance standards during Construction and Operation period. Thus, the position requires

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a pavement specialist with thorough knowledge and understanding of international 'best practices' in the field of Design, Construction and maintenance of flexible/rigid type of pavements including latest Codal stipulations and specifications.

He should have the following qualification / experience.

**1. Essential Qualifications.**

- a) Graduate in Civil Engineering from a recognized University.
- b) Professional Experience of 10 years in Pavement Design / Pavement Construction / Pavement Maintenance of Highways / Roads / Airfield Runways
- c) Experience of 5 years in similar capacity in Construction / Construction Supervision of 2/4/6 laning\*\* of major highway projects.
- d) Experience as Pavement / Geotechnical Engineer in Construction/Construction Supervision of at least 2 major highway projects (of length 40% of project length or more of similar configuration (2/4/6 laning\*\*) and above).

**2. Preferential Qualifications.**

- a) Post Graduate Degree in Highway Engineering/Pavement Engineering/Transportation
- b) Experience in similar capacity in Highway Development Project in innovative/non-traditional technology and design

Experience as a Pavement Specialist/Pavement Engineer in PPP project (of length 40% of project length or more of similar configuration (2/4/6 laning\*\*) and above).

**SUB PROFESSIONAL**

**1. TUNNEL VENTILATION CUM E&M EXPERT**

The Tunnel Ventilation Cum E&M Expert shall be responsible for checking and verifying the adequacy of design of Ventilation system during construction and O&M Period. He shall be responsible for checking and verifying the Specifications for Ventilation equipments. He will also monitor the installation, testing and operation and maintenance of the Ventilation equipments and system as a whole

**(1) Essential Qualifications.**

- (a) Graduate in Electrical/Mechanical Engineer or equivalent from a recognized university.
- (b) Total Professional Experience of 15 years
- (c) At least 7 years experience in similar capacity in construction/construction supervision of transportation tunnel projects
- (d) He should have handled in similar capacity in construction/ construction supervision of at least 3 transportation tunnel projects each of minimum 3.20 Km in length

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

- (e) He should have handled in similar capacity in design/DPR at least 3 transportation tunnelling projects each of minimum 3.20 Km in length
- (f) Not more than 65 years of age.

**(II) Preferential Qualifications.**

- (a) Post graduate Engineering in ventilation /Heating ventilation & air conditioning or equivalent.

**2. ASSISTANT BRIDGE ENGINEER**

The Candidate should be Graduate in Civil Engineering with 3 years experience. He should have handled at least 1 major bridge project.

**3. ASSISTANT HIGHWAY ENGINEER**

The Candidate should be Graduate in Civil Engineering.

**4. ASSISTANT TUNNEL ENGINEER**

The Tunnel Engineer shall be responsible for checking and verifying construction methodology. He shall be monitoring the construction activities. The candidate should be a graduate Civil/Mining Engineer from a recognized university. He should have 10 years of total professional experience and should have worked for at least 5 years as Tunnel Engineer for tunnel construction projects. He should have handled at least 2 major tunnelling projects in similar capacity. He should not be more than 65 years of age.

**5. INSTRUMENTATION AND CONTROL (SCADA) EXPERT**

He will be reporting to the Team Leader and give input as and when required during the work. He should have comprehensive knowledge of application of current technologies, standards and best practices relating to SCADA system in infrastructure projects. He should have experience in CCTV, AID dynamic, LAN and WAN. The Instrumentation and Control (SCADA) Expert shall be responsible for checking and verifying the adequacy of design, installation and maintenance of SCADA related applications and databases of the tunnel during construction as well as during operation and maintenance. He shall ensure the application of modern standard technologies and best practices relating to Tunnel SCADA system.

He should have the following qualification / experience.

**(1) Essential Qualifications.**

- (a) Graduate in IT/ Comp Sc./ Electrical/ Electronics/Civil/ Instrumentation/ Mechanical/Automobile from a recognized university.
- (b) Total Professional Experience of 15 years
- (c) He should have minimum of 10 years experience in system requirement, installation and commissioning of all the subsystems and equipment required for remote operation and control devices similar to SCADA in any infrastructure project
- (c) He should have handled at least 2 surveillance and security systems projects

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

- (d) Atleast 7 years experience in hardware configuration, system tuning, application development, documentation including operation and maintenance
- (e) Not more than 65years of age.

**(II) Preferential Qualifications.**

- (a) Post Graduate degree in Instrumentation & control /Industrial Automation system design /process control & instrumentation engineering/SCADA or equivalent.

**6. QUANTITY SURVEYOR**

He should be Graduate or equivalent in Civil Engineering having Min. 5 years of professional experience in preparation of highway project estimates. He should have Min. 3 years experience in Preparation of Bill of Quantities/estimates for major highway projects costing Rs.100 Crore or above.

**5. ASSISTANT QUALITY CUM MATERIAL ENGINEER**

The Candidate should be Graduate in Civil Engineering or diploma in Civil Engineering with 3 years experience.

## **Annexure I- Daily Inspection Report during Construction Period**

Deleted

## Annexure II- Daily Inspection Report during O&M Period

| Nature of defect/ deficiency                                                                                                                                                        | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | IE Remarks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------|-------------------------------------------|------------|
| <b>ROADS</b>                                                                                                                                                                        |                       |                                  |                                           |            |
| <b>Carriageway and paved shoulders</b>                                                                                                                                              |                       |                                  |                                           |            |
| Breach or blockade                                                                                                                                                                  |                       |                                  |                                           |            |
| Pot holes                                                                                                                                                                           |                       |                                  |                                           |            |
| Removal of debris                                                                                                                                                                   |                       |                                  |                                           |            |
| <b>Hard/earth shoulders, side slopes, drains and culverts</b>                                                                                                                       |                       |                                  |                                           |            |
| Desilting of drains in urban/semi-urban areas                                                                                                                                       |                       |                                  |                                           |            |
| <b>Road side furniture including road signs and pavement marking</b>                                                                                                                |                       |                                  |                                           |            |
| Damage to shape or position; poor visibility or loss of retro-reflectivity                                                                                                          |                       |                                  |                                           |            |
| <b>Street lighting and telecom (ATMS)</b>                                                                                                                                           |                       |                                  |                                           |            |
| Any major failure of the system                                                                                                                                                     |                       |                                  |                                           |            |
| Faults and minor failures                                                                                                                                                           |                       |                                  |                                           |            |
| <b>Trees and Plantation</b>                                                                                                                                                         |                       |                                  |                                           |            |
| Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs                                                                              |                       |                                  |                                           |            |
| <b>Rest areas</b>                                                                                                                                                                   |                       |                                  |                                           |            |
| Cleaning of toilets                                                                                                                                                                 |                       |                                  |                                           |            |
| Defects in electrical, water and sanitary installations                                                                                                                             |                       |                                  |                                           |            |
| <b>Toll plaza[s]</b>                                                                                                                                                                |                       |                                  |                                           |            |
| Failure of toll collection equipment including ETC or lighting                                                                                                                      |                       |                                  |                                           |            |
| <b>Other Project Facilities and Approach roads</b>                                                                                                                                  |                       |                                  |                                           |            |
| Damage or deterioration in Approach Roads, -[pedestrian facilities, truck lay-bys, bus-bays, bus- shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works] |                       |                                  |                                           |            |

### Annexure III- Weekly Inspection Report during O&M Period

| Nature of defect or deficiency |                                                                                                                     | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | IE Remarks |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------|-------------------------------------------|------------|
| <b>ROADS</b>                   |                                                                                                                     |                       |                                  |                                           |            |
| <b>(a)</b>                     | <b>Carriageway and paved shoulders</b>                                                                              |                       |                                  |                                           |            |
| (i)                            | Breach or blockade                                                                                                  |                       |                                  |                                           |            |
| (ii)                           | Roughness value exceeding 2,500 mm in a stretch of 1 km (as measured by a standardised roughometer/bump integrator) |                       |                                  |                                           |            |
| (iii)                          | Pot holes                                                                                                           |                       |                                  |                                           |            |
| (iv)                           | Cracking in more than 5% of road surface in a stretch of 1 km                                                       |                       |                                  |                                           |            |
| (v)                            | Rutting exceeding 10 mm in more than 2% of road surface in a stretch of 1 km (measured with 3 m straight edge)      |                       |                                  |                                           |            |
| (vi)                           | Bleeding/skidding                                                                                                   |                       |                                  |                                           |            |
| (vii)                          | Ravelling/Stripping of bitumen surface exceeding 10 sq m                                                            |                       |                                  |                                           |            |
| (viii)                         | Damage to pavement edges exceeding 10 cm                                                                            |                       |                                  |                                           |            |
| (ix)                           | Removal of debris                                                                                                   |                       |                                  |                                           |            |
| <b>(b)</b>                     | <b>Hard/earth shoulders, side slopes, drains and culverts</b>                                                       |                       |                                  |                                           |            |
| (i)                            | Variation by more than 2% in the prescribed slope of camber/cross fall                                              |                       |                                  |                                           |            |
| (ii)                           | Edge drop at shoulders exceeding 40 mm                                                                              |                       |                                  |                                           |            |
| (iii)                          | Variation by more than 15% in the prescribed side (embankment) slopes                                               |                       |                                  |                                           |            |
| (iv)                           | Rain cuts/gullies in slope                                                                                          |                       |                                  |                                           |            |
| (v)                            | Damage to or silting of culverts and side drains during and immediately preceding the rainy season                  |                       |                                  |                                           |            |
| (vi)                           | Desilting of drains in urban/semi-urban areas                                                                       |                       |                                  |                                           |            |

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

| Nature of defect or deficiency |                                                                                                                                                                                     | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | IE Remarks |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------|-------------------------------------------|------------|
| <b>(c)</b>                     | <b>Road side furniture including road signs and pavement marking</b>                                                                                                                |                       |                                  |                                           |            |
| (i)                            | Damage to shape or position; poor visibility or loss of retro-reflectivity                                                                                                          |                       |                                  |                                           |            |
| <b>(d)</b>                     | <b>Street lighting and telecom (ATMS)</b>                                                                                                                                           |                       |                                  |                                           |            |
| (i)                            | Any major failure of the system                                                                                                                                                     |                       |                                  |                                           |            |
| (ii)                           | Faults and minor failures                                                                                                                                                           |                       |                                  |                                           |            |
| <b>(e)</b>                     | <b>Trees and plantation</b>                                                                                                                                                         |                       |                                  |                                           |            |
| (i)                            | Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs                                                                              |                       |                                  |                                           |            |
| (ii)                           | Deterioration in health of trees and bushes                                                                                                                                         |                       |                                  |                                           |            |
| (iii)                          | Replacement of trees and bushes                                                                                                                                                     |                       |                                  |                                           |            |
| (iv)                           | Removal of vegetation affecting sight line and road structures                                                                                                                      |                       |                                  |                                           |            |
| <b>(f)</b>                     | <b>Rest areas</b>                                                                                                                                                                   |                       |                                  |                                           |            |
| (i)                            | Cleaning of toilets                                                                                                                                                                 |                       |                                  |                                           |            |
| (ii)                           | Defects in electrical, water and sanitary installations                                                                                                                             |                       |                                  |                                           |            |
| <b>(g)</b>                     | <b>Toll plaza[s]</b>                                                                                                                                                                |                       |                                  |                                           |            |
| (i)                            | Failure of toll collection equipment including ETC or lighting                                                                                                                      |                       |                                  |                                           |            |
| (ii)                           | Damage to toll plaza                                                                                                                                                                |                       |                                  |                                           |            |
| <b>(h)</b>                     | <b>Other Project Facilities and Approach roads</b>                                                                                                                                  |                       |                                  |                                           |            |
| (i)                            | Damage or deterioration in Approach Roads, -[pedestrian facilities, truck lay-bys, bus-bays, bus- shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works] |                       |                                  |                                           |            |
| <b>BRIDGES</b>                 |                                                                                                                                                                                     |                       |                                  |                                           |            |
| <b>(a)</b>                     | <b>Superstructure of bridges</b>                                                                                                                                                    |                       |                                  |                                           |            |
| (i)                            | Cracks                                                                                                                                                                              |                       |                                  |                                           |            |

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

| Nature of defect or deficiency |                                                                                            | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | IE Remarks |
|--------------------------------|--------------------------------------------------------------------------------------------|-----------------------|----------------------------------|-------------------------------------------|------------|
| (ii)                           | Spalling/scaling                                                                           |                       |                                  |                                           |            |
| <b>(b)</b>                     | <b>Foundations of bridges</b>                                                              |                       |                                  |                                           |            |
| (i)                            | Scouring and/or cavitation                                                                 |                       |                                  |                                           |            |
| <b>(c)</b>                     | <b>Piers, abutments, return walls and wing walls of bridges</b>                            |                       |                                  |                                           |            |
| (i)                            | Cracks and damages including settlement and tilting                                        |                       |                                  |                                           |            |
| <b>(d)</b>                     | <b>Bearings (metallic) of bridges</b>                                                      |                       |                                  |                                           |            |
| (i)                            | Deformation                                                                                |                       |                                  |                                           |            |
| <b>(e)</b>                     | <b>Joints in bridges</b>                                                                   |                       |                                  |                                           |            |
| (i)                            | Loosening and malfunctioning of joints                                                     |                       |                                  |                                           |            |
| <b>(f)</b>                     | <b>Other items relating to bridges</b>                                                     |                       |                                  |                                           |            |
| (i)                            | Deforming of pads in elastomeric bearings                                                  |                       |                                  |                                           |            |
| (ii)                           | Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes |                       |                                  |                                           |            |
| (iii)                          | Damage or deterioration in parapets and handrails                                          |                       |                                  |                                           |            |
| (iv)                           | Rain-cuts or erosion of banks of the side slopes of approaches                             |                       |                                  |                                           |            |
| (v)                            | Damage to wearing coat                                                                     |                       |                                  |                                           |            |
| (vi)                           | Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds     |                       |                                  |                                           |            |
| (vii)                          | Growth of vegetation affecting the structure or obstructing the waterway                   |                       |                                  |                                           |            |
| <b>TUNNEL</b>                  |                                                                                            |                       |                                  |                                           |            |
| (a)                            | Structure parts                                                                            |                       |                                  |                                           |            |
| (b)                            | Telecom and SCADA system                                                                   |                       |                                  |                                           |            |
| (c)                            | Firefighting and Ventilation system                                                        |                       |                                  |                                           |            |

#### **Annexure IV- Months of Survey for Equipment based Road Condition Assessment**

Equipment based road inspection shall be done by the Consultant twice a year as per the month of the year defined in the following table.

However, since the first survey shall be conducted at the time of completion testing, the following modification to the schedule shall be adopted. For 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 equipment based survey shall be conducted in the month of April. This shall be considered as the equipment based survey to be conducted in the month of May. The 2<sup>nd</sup> equipment based survey shall be conducted in the month of November, the 3<sup>rd</sup> 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 2<sup>nd</sup> test/survey shall be conducted in April of next year and so on.

| Region  | State             | Survey before rains | Survey after rains |
|---------|-------------------|---------------------|--------------------|
| East    | Bihar             | May                 | Nov                |
| East    | Chhattisgarh      | May                 | Nov                |
| East    | Jharkhand         | May                 | Nov                |
| East    | Orissa            | May                 | Nov                |
| East    | West Bengal       | May                 | Nov                |
| Central | Madhya Pradesh    | May                 | Nov                |
| NE      | Arunachal Pradesh | Mar                 | Oct                |
| NE      | Assam             | Mar                 | Oct                |
| NE      | Manipur           | Mar                 | Oct                |
| NE      | Meghalaya         | Mar                 | Oct                |
| NE      | Mizoram           | Mar                 | Oct                |
| NE      | Nagaland          | Mar                 | Oct                |
| NE      | Sikkim            | Mar                 | Oct                |
| NE      | Tripura           | Mar                 | Oct                |
| North   | Chandigarh        | May                 | Nov                |
| North   | Delhi             | May                 | Nov                |
| North   | Haryana           | May                 | Nov                |
| North   | Himachal          | May                 | Nov                |
| North   | Jammu And Kashmir | May                 | Nov                |

Consultancy Services as Independent Engineer during Operation and Maintenance of Z-Morh tunnel including approaches on Srinagar Sonamarg section connecting National Highway no. 1 in the UT of J&K on DBFOT annuity basis.

| Region | State                       | Survey before rains | Survey after rains |
|--------|-----------------------------|---------------------|--------------------|
| North  | Punjab                      | May                 | Nov                |
| North  | Uttar Pradesh               | May                 | Nov                |
| North  | Uttaranchal                 | May                 | Nov                |
| South  | Andaman And Nicobar Islands | Apr                 | Nov                |
| South  | Andhra Pradesh              | Apr                 | Nov                |
| South  | Karnataka                   | Apr                 | Nov                |
| South  | Kerala                      | Apr                 | Nov                |
| South  | Pondicherry                 | Jun                 | Jan                |
| South  | Tamil Nadu                  | Jun                 | Jan                |
| West   | Dadar Nagar Haveli          | Apr                 | Oct                |
| West   | Daman And Diu               | Apr                 | Oct                |
| West   | Goa                         | May                 | Nov                |
| West   | Gujarat                     | Apr                 | Oct                |
| West   | Maharashtra                 | May                 | Nov                |
| West   | Rajasthan                   | Apr                 | Oct                |

## **Annexure V- Monthly Progress Report in Construction Phase**

*Deleted*

Annexure VI- Monthly Status Report in O&M phase



[NAME & LOGO OF IMPLEMENTING AGENCY]

*[PROJECT NAME (O&M)]*

**Independent Engineer**

*[NAME OF CONSULTING FIRM]*

**MONTHLY STATUS REPORT NO. [XX]**

**FOR THE MONTH OF: [MONTH], [YEAR]**

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*All figures and graphs in templates are illustrative. Please add actual details.*

## 1 Executive Summary

### 1.1 Overall road condition

| Road condition              | LHS   | RHS   |
|-----------------------------|-------|-------|
| Satisfactory road condition | 40 km | 20 km |
| Poor road condition         | 50 km | 70 km |
| Total length of project     | 90 km | 90 km |

### 1.2 Key reporting metrics

| Key metrics                                          | Value/Amount |
|------------------------------------------------------|--------------|
| No of pending NCRs                                   | 35           |
| Damages amount recommended on Concessionaire (Rs Cr) | Rs 5.9 Cr    |
| No of pending Change of Scope proposals              | 2            |
| No of pending disputes                               | 2            |
| Monthly toll collection (Rs Cr) (If applicable)      | Rs 3.8 Cr    |
| No of accidents                                      | 12           |
| No of encroachments                                  | 47           |

### 1.3 Key maintenance activities undertaken

| Asset          | Maintenance activities undertaken                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pavement       | <ul style="list-style-type: none"> <li>Concessionaire has commenced the work for renewal and repair of pavement on the project highway w.e.f 14th September 2016</li> </ul>                                                                                                                                                                                                                                                                                                  |
| Shoulder       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Drainage       | <ul style="list-style-type: none"> <li>Cleaning of drainage in builtup areas n progress</li> </ul>                                                                                                                                                                                                                                                                                                                                                                           |
| Median         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Road furniture | <ul style="list-style-type: none"> <li>Concessionaire has taken up repairs and maintenance of MCB and electric poles, etc on issuance of NCPs from Independent Engineer</li> </ul>                                                                                                                                                                                                                                                                                           |
| Bridges        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Buildings      | <ul style="list-style-type: none"> <li>As per provisions of CA and policy decided by MoRTH/National Highways &amp; Infrastructure Development Corporation Ltd. (NHIDCL) , 2 ETC lanes at each toll plaza have been operationalised w.e.f. 25th September 2016. The connectivity of ETC lanes with Central Clearing House (CCH) has been achieved and presently ETC lanes are operationalized in Hybrid Mode due to less number of tags purchased by highway users</li> </ul> |
| Horticulture   | <ul style="list-style-type: none"> <li>Planting of new trees from Chainage 200+300 to 226+650</li> <li>Trimming of plants which were causing obstruction to highway users</li> </ul>                                                                                                                                                                                                                                                                                         |

#### 1.4 Pending issues

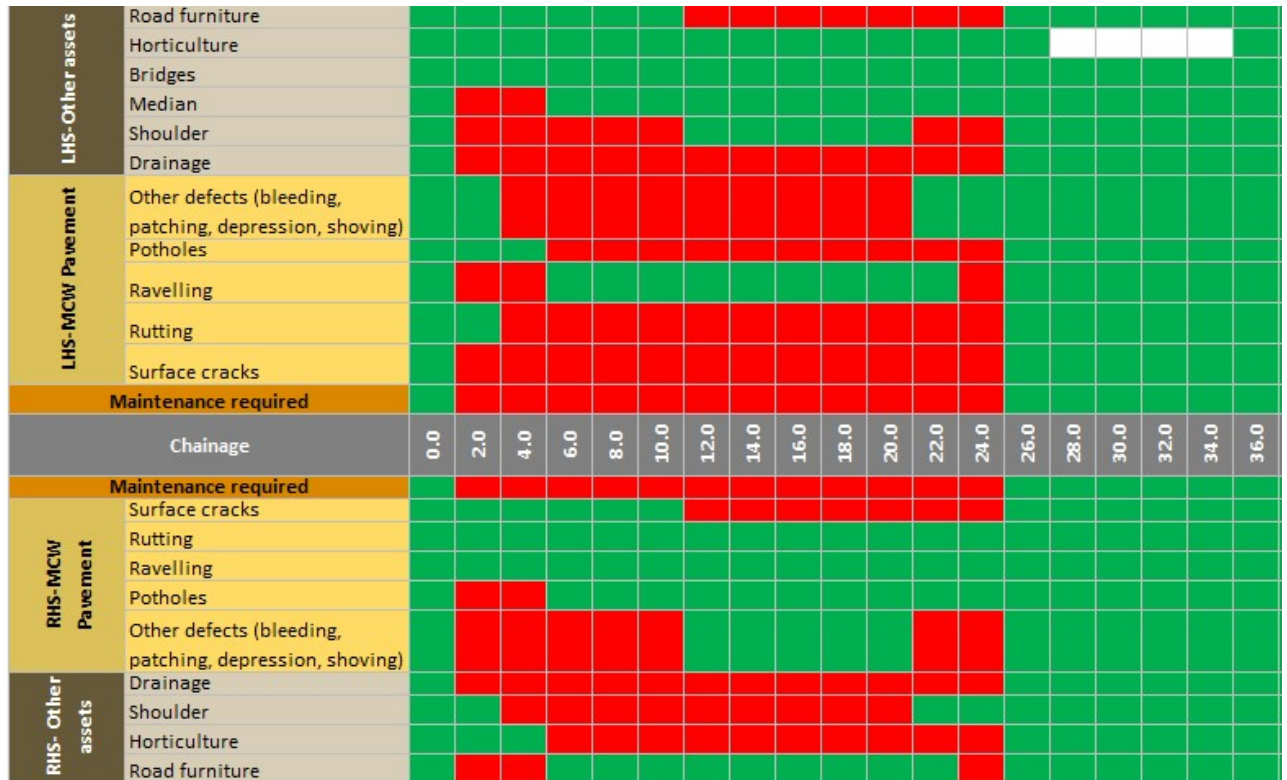
- Overlay on the entire stretch of project length of 252 km and service roads has not been taken up by Concessionaire yet since the date of completion of overlay is due in next 25 days
- Over all progress is very slow regarding repair of potholes and rutting on Main Carriageway which is causing inconvenience to highway users and is also a concern from road safety point of view.
- Street lighting in
  - **Anantapur bypass** completed on main carriageway and is energized but for service roads street lighting is pending on both sides
  - **Kurnool bypass** erection of poles only completed in main carriageway not yet energized till to date, but for service roads not started

#### 1.5 Recommended actions by Independent Engineer

- In spite of the repeated requests, there is no material change in status of works pertaining to repairs/ rectifications of defects on the project highway. IE has recommended the damages of Rs 5.9 Cr on the Concessionaire on account of delay in repairs of defects in road and bridge works in terms of the provision of Clause 15.8.1 of the Concession Agreement. Concessionaire shall be liable for imposition of further damages on similar lines till the date of completion
- Concessionaire is requested to take at most care for completing the overlay before 31.03.2017 since the existing road condition is getting deteriorated day by day causing much inconvenience to the traffic

*All figures and graphs in templates are illustrative. Please add actual details.*

## 1.6 Strip Plan for maintenance



|                                                           |       |
|-----------------------------------------------------------|-------|
| Satisfactory road condition<br>(Maintenance not required) | Green |
| Poor road condition (Maintenance<br>required)             | Red   |

*All figures and graphs in templates are illustrative. Please add actual details.*

## Main report

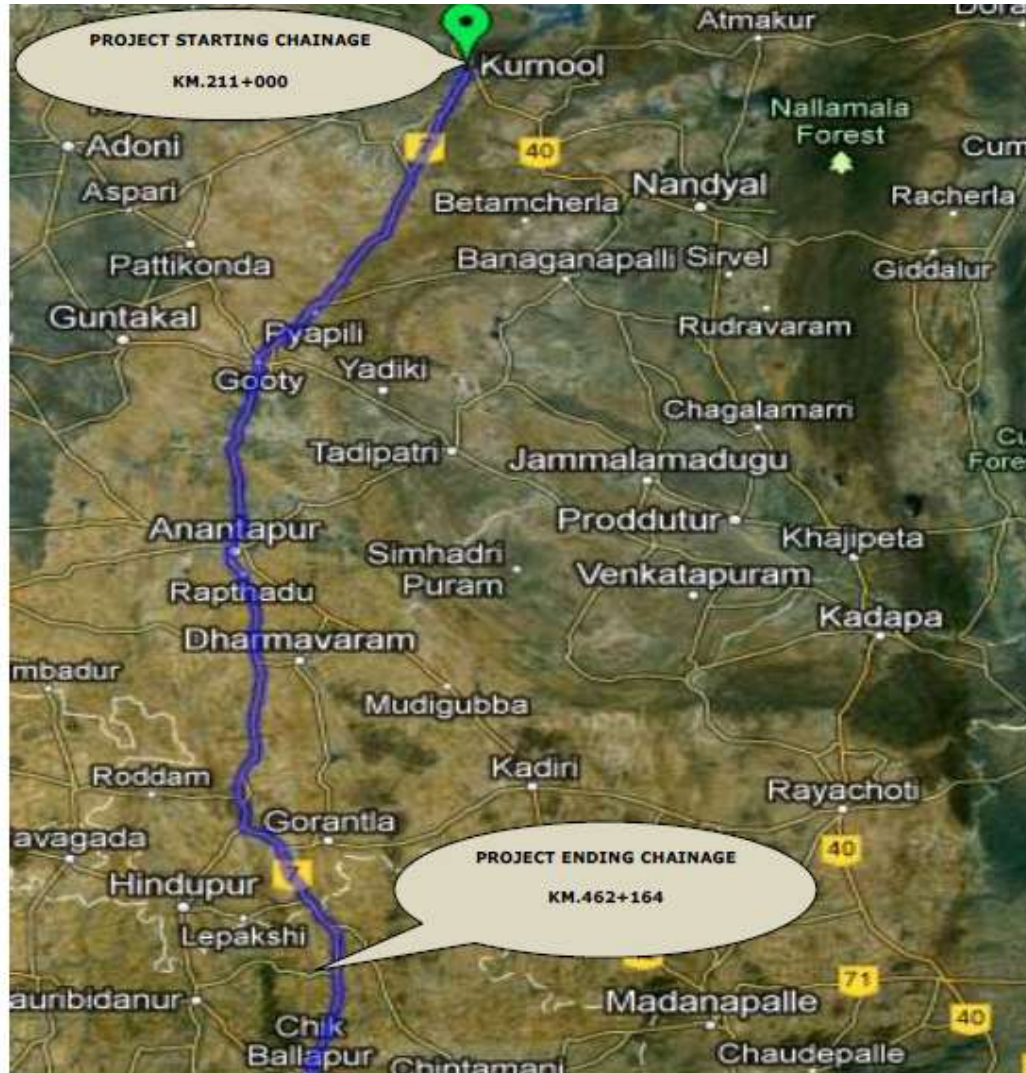
### 2 Project Overview

#### 2.1 Key project details

|                                 |  |
|---------------------------------|--|
| Project Name                    |  |
| NH no (New/Old)                 |  |
| Mode of the Project             |  |
| No. of Lanes                    |  |
| Length of the Project           |  |
| Total Project Cost              |  |
| Concessionaire/ Contractor      |  |
| Date of Award (LOA date)        |  |
| Appointed Date                  |  |
| Commercial Operation Date (COD) |  |
| Concession Period               |  |
| O&M Period                      |  |
| Independent Engineer            |  |
| IE Agreement Date               |  |
| IE Mobilization Date            |  |
| IE Scheduled Completion Date    |  |
| IE EOT (Extension Of Time)      |  |

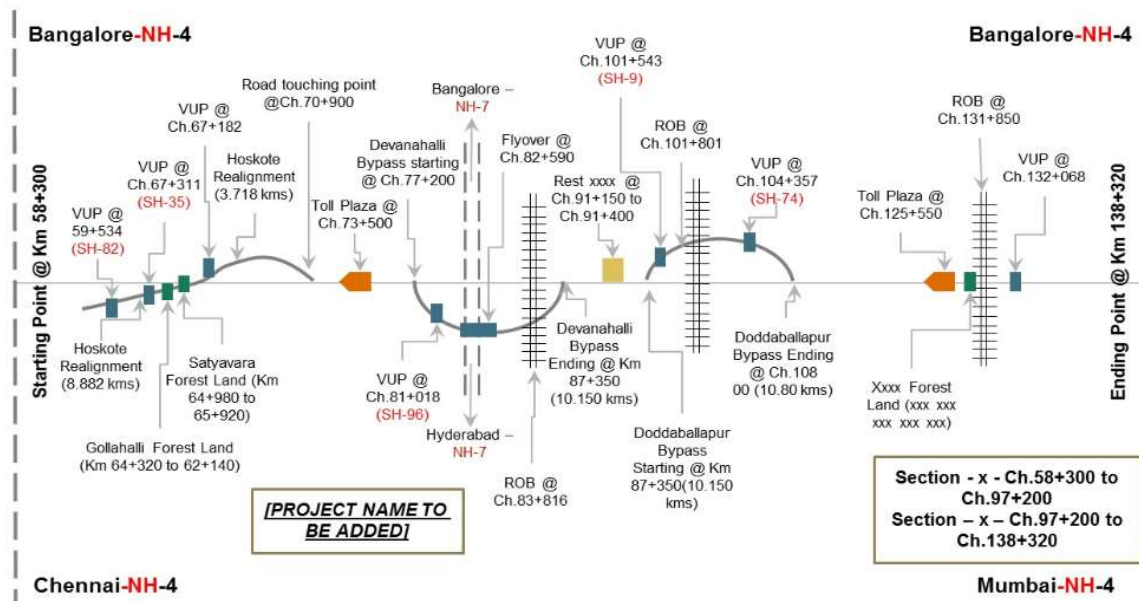
*All figures and graphs in templates are illustrative. Please add actual details.*

## 2.2 Location Map



*All figures and graphs in templates are illustrative. Please add actual details.*

## 2.3 Key plan



### RoW availability

**Width of RoW available on both sides of the highway**[illegible]

*All figures and graphs in templates are illustrative. Please add actual details.*

## 2.4 Summary of project features

| SNo | Particulars                              | Value                                        |
|-----|------------------------------------------|----------------------------------------------|
| 1   | No of flyovers                           | 2                                            |
| 2   | Service Road                             | 45                                           |
| 3   | ROBs                                     | 5                                            |
| 4   | ROB location (chainage)                  | 261.975, 299.606, 350.547, 396.135 & 420.302 |
| 5   | RUBs                                     | 0                                            |
| 6   | RUB location (chainage)                  | NA                                           |
| 7   | No of Bypass                             | 7                                            |
| 8   | Length of Bypass                         | 43                                           |
| 9   | No of Major Bridges                      | 7                                            |
| 10  | No of Minor Bridges                      | 67                                           |
| 11  | No of Culvert                            | 640                                          |
| 12  | No of VUP                                | 16                                           |
| 13  | No of PUP/ Cattle Underpass              | 12                                           |
| 14  | No of Major Intersection/ Junction       | 22                                           |
| 15  | No of Toll Plaza                         | 3                                            |
| 16  | Location of Toll Plaza (chainage)        |                                              |
| 17  | No of Truck Laybye                       | 30                                           |
| 18  | No of Bus Bays                           | 122                                          |
| 19  | No of Wayside Amenities                  | 0                                            |
| 20  | Location of Wayside Amenities (chainage) | NA                                           |

### 3 Critical Issues and Action taken

#### 3.1 Issue and action log

| SNo | Issue Description             | Ongoing/New Issue | Concerned Authority | Chainage(s) affected due to the issue | Length affected (km) | Action(s) taken till now | Action(s) suggested by SC                | Expected Date for resolving issue |
|-----|-------------------------------|-------------------|---------------------|---------------------------------------|----------------------|--------------------------|------------------------------------------|-----------------------------------|
| 1   | Drying up of plants on median | Ongoing           | Concessionaire      | 325+200 to 327+800                    | 2.6                  | Irregular watering       | Replacement of plants and daily watering | NA                                |
| 2   | Large potholes                | New               | Concessionaire      | 387+300 LHS                           | 0.1                  | None                     | Filling of potholes                      | <DD/MM>                           |

*All figures and graphs in templates are illustrative. Please add actual details.*

#### 3.2 Summary of items (Cumulative Observations/ Deficiencies)

| SNo      | Description                                            | Unit | Total | Work done upto previous month | Work done during reporting month | Balance | Remarks |
|----------|--------------------------------------------------------|------|-------|-------------------------------|----------------------------------|---------|---------|
| <b>1</b> | <b>Carriageway and paved shoulders</b>                 |      |       |                               |                                  |         |         |
| (a)      | Pot Holes                                              | Sqm  | 42    | -                             | -                                | 42      |         |
| (b)      | Roughness value exceeding 2,500mm                      | mm   |       |                               |                                  |         |         |
| (c)      | Cracking in more than 5% of road surface               | Sqm  | 7179  | -                             | -                                | 7179    |         |
| (d)      | Rutting exceeding 10mm in more than 2% of road surface | Sqm  | 5     | -                             | -                                | 5       |         |
| (e)      | Bleeding/Skidding                                      | Sqm  |       |                               |                                  |         |         |
| (f)      | Ravelling                                              | Sqm  |       |                               |                                  |         |         |
| (g)      | Damage to pavement edges exceeding 10cm                | m    |       |                               |                                  |         |         |
| <b>2</b> | <b>Hard/Earth Shoulders</b>                            |      |       |                               |                                  |         |         |
| (a)      | Rain cuts/ gullies in slope                            | Cum  | 650   | 25                            | -                                | 625     |         |
| (b)      | Edge drop at shoulders exceeding 40 mm                 | m    |       |                               |                                  |         |         |

| SNo      | Description                                                    | Unit | Total | Work done upto previous month | Work done during reporting month | Balance | Remarks |
|----------|----------------------------------------------------------------|------|-------|-------------------------------|----------------------------------|---------|---------|
| <b>3</b> | <b>Drains and culverts</b>                                     |      |       |                               |                                  |         |         |
| (a)      | Cleaning of Culvert                                            | Nos  | 1     | -                             | -                                | 1       |         |
| (b)      | Damage to or silting of culverts                               |      |       |                               |                                  |         |         |
| (c)      | Silting of drains in urban/ semi urban areas                   |      |       |                               |                                  |         |         |
| <b>4</b> | <b>Road furniture</b>                                          |      |       |                               |                                  |         |         |
| (a)      | Sign Boards                                                    | Nos  | 456   | -                             | -                                | 456     |         |
| (b)      | Kilometer Stones                                               |      |       |                               |                                  |         |         |
| (c)      | Metal Beam Crash Barrier                                       |      |       |                               |                                  |         |         |
| (d)      | Bus Shelters                                                   | Nos  | 72    | 4                             | -                                | 68      |         |
| (e)      | Junction signs                                                 | Nos  | 26    | 8                             | -                                | 18      |         |
| (f)      | Median Grills                                                  | Rmt  | 894   | -                             | -                                | 894     |         |
| (g)      | Studs                                                          | Nos  | 5328  | -                             | -                                | 5328    |         |
| (h)      | Delinators                                                     | Nos  | 8236  | -                             | -                                | 8236    |         |
| (i)      | Road Marking                                                   | Sqm  | 1899  | -                             | -                                | 1899    |         |
| (j)      | Kerb Painting                                                  | Sqm  | 4575  | -                             | -                                | 4575    |         |
| (k)      | Guard Posts                                                    | Nos  | 3657  | -                             | -                                | 3657    |         |
| <b>5</b> | <b>Street lighting and telecom (ATMS)</b>                      |      |       |                               |                                  |         |         |
| (a)      | Street lights                                                  | Nos  |       |                               |                                  |         |         |
| (b)      | Telecom                                                        | Nos  |       |                               |                                  |         |         |
| <b>6</b> | <b>Trees and plantation</b>                                    |      |       |                               |                                  |         |         |
| (a)      | Removal of vegetation affecting sight line and road structures | Ha   | 77.42 | -                             | 3.57                             | 73.85   |         |
| (b)      | Replacement of trees and bushes                                | Nos  | 15072 | -                             | -                                | 15072   |         |
| <b>7</b> | <b>Buildings and bridges</b>                                   |      |       |                               |                                  |         |         |
| (a)      | Rest areas                                                     |      |       |                               |                                  |         |         |
| (b)      | Toll plazas                                                    |      |       |                               |                                  |         |         |
| (c)      | Bridges                                                        |      |       |                               |                                  |         |         |

### 3.3 Obligations as per contract

Please write a summary of contractual obligations of Concessionaire and non-compliances of critical obligations highlighting reasons for delay and stating pending actions

- **Critical obligations of Concessionaire as per contract**
- **Non compliances of critical contractual obligations**

### 3.4 Major maintenance and Inspection schedule

| Item                                     | Responsibility       | Last completed on | Due date   |
|------------------------------------------|----------------------|-------------------|------------|
| Major maintenance                        | Concessionaire       | [DD/MM/YY]        | [DD/MM/YY] |
| Periodic overlay                         | Concessionaire       | [DD/MM/YY]        | [DD/MM/YY] |
| Pavement inspection using NSV            | Independent Engineer | [DD/MM/YY]        | [DD/MM/YY] |
| Roughness using Laser Profilometer       | Independent Engineer | [DD/MM/YY]        | [DD/MM/YY] |
| Pavement strength using FWD              | Independent Engineer | [DD/MM/YY]        | [DD/MM/YY] |
| Bridge inspection using MBIU             | Independent Engineer | [DD/MM/YY]        | [DD/MM/YY] |
| Road sign inspection using Reflectometer | Independent Engineer | [DD/MM/YY]        | [DD/MM/YY] |
| Other                                    |                      |                   |            |

*All figures and graphs in templates are illustrative. Please add actual details.*

## 4 Inspection Report

### 4.1 Summary of NCR issued

| SNo | Highway asset | Total NCR issued till previous month (A) | NCR issued in reporting month (B) | NCR closed in reporting month (C) | Balance NCR (A+B-C) |
|-----|---------------|------------------------------------------|-----------------------------------|-----------------------------------|---------------------|
| 1   | Pavement      | 48                                       | 12                                | 25                                | 35                  |
| 2   | Shoulder      | 7                                        | 0                                 | 3                                 | 4                   |

| SNo | Highway asset  | Total NCR issued till previous month (A) | NCR issued in reporting month (B) | NCR closed in reporting month (C) | Balance NCR (A+B-C) |
|-----|----------------|------------------------------------------|-----------------------------------|-----------------------------------|---------------------|
| 3   | Drainage       |                                          |                                   |                                   |                     |
| 4   | Median         |                                          |                                   |                                   |                     |
| 5   | Road furniture |                                          |                                   |                                   |                     |
| 6   | Bridges        |                                          |                                   |                                   |                     |
| 7   | Buildings      |                                          |                                   |                                   |                     |
| 8   | Horticulture   |                                          |                                   |                                   |                     |
| 9   | [Other assets] |                                          |                                   |                                   |                     |
|     | <b>Total</b>   |                                          |                                   |                                   |                     |

#### 4.2 Equipment based inspection report

|                   |                 | Pavement Surface Defects |             |               |               |               |                    |                    |                      | Roughness                           | Pavement Strength             |                             |                             |
|-------------------|-----------------|--------------------------|-------------|---------------|---------------|---------------|--------------------|--------------------|----------------------|-------------------------------------|-------------------------------|-----------------------------|-----------------------------|
| Starting Chainage | Ending Chainage | Lane number              | Cracks (cm) | Potholes (cm) | Raveling (cm) | Bleeding (cm) | Rutting depth (mm) | Texture depth (mm) | Skid Resistance (mm) | IRI (International Roughness Index) | Elastic Modulus Bituminous E1 | Elastic Modulus Granular E2 | Elastic Modulus SubGrade E3 |
| 0.000             | 0.500           | L1                       | 2X10        | 20X35         | 2.5X1.2       | 4X12          | 25                 | 1.4                |                      | 4.23                                | 7110                          | 34                          | 14                          |
| 0.500             | 1.000           | L1                       | 3X5         | 10X15         | 1.5X0.8       | 3X10          | 24                 | 1.8                |                      | 2.68                                | 7430                          | 36                          | 15                          |
| 1.000             | 1.500           | L1                       |             |               |               |               |                    |                    |                      |                                     |                               |                             |                             |

Report of equipment based inspection needs be provided as an Annexure to monthly report as per the defined frequency. Following documents/media to be submitted for equipment based inspection.

- Video footage of all cameras installed on Network Survey Vehicle- ROW cameras and pavement camera
- Network Survey Vehicle report capturing dimensions of following key metrics of pavement
  - Cracks
  - Potholes
  - Raveling

- Bleeding
  - Rutting
  - Texture depth
  - Skid resistance
  - Roughness (IRI)
- Falling Weight Deflectometer (FWD) report capturing following key metrics of pavement strength
  - Deflection Bowl (Transient Deflections at seven different points)
  - Corrected Elastic Modulus Bituminous E1
  - Corrected Elastic Modulus Granular E2
  - Corrected Elastic Modulus Subgrade E3
  - Subgrade CBR
  - Bituminous layer coefficient A1
  - Base layer coefficient A2
  - Granular base layer coefficient A3
  - Modified structural number
- Mobile Bridge Inspection Report (MBIU) capturing following key metrics of bridges
  - Condition Approach
  - Condition Signs
  - Condition Debris
  - Condition Joint
  - Condition Deck
  - Condition Rails
  - Condition Protect
  - Condition Stream
  - Condition Superstructure
  - Condition Piers
  - Condition Abutment
- Retro reflectometer report capturing following key metrics of road furniture
  - Coefficient of retro reflected luminance  $R_A$  (night-time retro reflection) of road traffic signs

*All figures and graphs in templates are illustrative. Please add actual details.*

## 5 Monitoring of ETC lanes

### 5.1 Monthly ETC Report

| TYPE OF VEHICLE     |           |       | For Corresponding month of previous year |               | For Previous Month |               | For Current Month |                |               |
|---------------------|-----------|-------|------------------------------------------|---------------|--------------------|---------------|-------------------|----------------|---------------|
|                     |           |       | No of vehicles                           | Fee Collected | No of vehicles     | Fee Collected | Fee per vehicle   | No of vehicles | Fee Collected |
| A                   | Car       | Total | 3845                                     | 384500        | 4659               | 465,900.00    | 100               | 4289           | 428,900.00    |
| B                   | LCV       | Total | 1521                                     | 243360        | 1312               | 209,920.00    | 160               | 1399           | 223,840.00    |
| C                   | Bus       | Total | 2404                                     | 793386        | 2284               | 765,207.00    | 201               | 2349           | 786,915.00    |
| D                   | Truck     | Total | 1603                                     | 528924        | 1523               | 510,138.00    | 134               | 1566           | 524,610.00    |
| E                   | 3 Axle    | Total | 18990                                    | 6836400       | 16310              | 5,953,150.00  | 365               | 15127          | 5,521,355.00  |
| F                   | MAV       | Total | 16119                                    | 8381880       | 21111              | 11,188,830.00 | 530               | 18790          | 9,958,700.00  |
| G                   | Over Size | Total | 1                                        | 630           | 27                 | 17,280.00     | 640               | 36             | 23,040.00     |
| Total for the Month |           |       | 49844                                    | 18,050,618    | 52963              | 19,898,834    |                   | 49016          | 18,265,661    |

### 5.2 On-ground infrastructure report

Total number of plaza lanes =

Total number of dedicated ETC lanes =

Total number of hybrid lanes =

| SNo | Description           | Total units | Units working | Units damaged/ missing | Equipment owner/ provider | Equipment as per specifications (Y/N) | Remarks |
|-----|-----------------------|-------------|---------------|------------------------|---------------------------|---------------------------------------|---------|
| 1   | Hardware              |             |               |                        |                           |                                       |         |
| (a) | Over-head transceiver | 4           | 3             | 1                      | ABC Co.                   | Y                                     |         |
| (b) | Hand-held reader      |             |               |                        |                           |                                       |         |
| (c) | Lane controller       |             |               |                        |                           |                                       |         |
| (d) | AVC                   |             |               |                        |                           |                                       |         |
| (e) | Camera                |             |               |                        |                           |                                       |         |
| (f) | Weigh-in-motion       |             |               |                        |                           |                                       |         |

| SNo                | Description                  | Total units | Units working | Units damaged/missing | Equipment owner/provider | Equipment as per specifications (Y/N) | Remarks |
|--------------------|------------------------------|-------------|---------------|-----------------------|--------------------------|---------------------------------------|---------|
| (g)                | Static weigh bridge          |             |               |                       |                          |                                       |         |
| (h)                | Any other items              |             |               |                       |                          |                                       |         |
| <b>2 Softwares</b> |                              |             |               |                       |                          |                                       |         |
| (a)                | Software – Lane/ Plaza level |             |               |                       |                          |                                       |         |
| (b)                | TMS                          |             |               |                       |                          |                                       |         |
| (c)                | Any other items              |             |               |                       |                          |                                       |         |

### 5.3 On-ground ETC operations and SLA adherence

| Lane   | Average queue length during peak time | Average queue length during non peak time | Average Transaction time (cash) | Average transaction time (RFID) | Average transaction time (cards) | Average transaction time (wallet) | Average transaction time (others) |
|--------|---------------------------------------|-------------------------------------------|---------------------------------|---------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| Lane 1 | 10 vehicles                           | 5 vehicles                                | 15 seconds                      | 10 seconds                      | 20 seconds                       | 25 seconds                        | UPI – 20 seconds                  |
| Lane 2 |                                       |                                           |                                 |                                 |                                  |                                   |                                   |
| Lane 3 |                                       |                                           |                                 |                                 |                                  |                                   |                                   |

- Average system uptime = 80%
- Transactions uploaded (as per SLA) = 80%
- Blacklists uploaded (as per SLA) = 50%
- Blacklists downloaded (as per SLA) = 85%

## 6 Status of Damages for breach of maintenance activities

### 6.1 Damages for non-completion of project facilities

| SNo | Period         | Amount of damages (Rs) |
|-----|----------------|------------------------|
| 1   | Upto June 2016 | 15,00,35,000           |
| 2   | Jul 2016       | 2,00,88,000            |
| 3   | Aug 2016       | 2,00,88,000            |
| 4   | Sep 2016       | 1,94,40,000            |
|     | <b>Total</b>   | <b>20,96,51,000</b>    |

#### Supporting Calculations for damages for Sep 2016

- No of days in Sep = 30
- Performance security is Rs 64,80,00,000
- As per CA Clause 12.3.2 damages payable is 0.1% of performance security per day = Rs 6,48,000

- Total damages payable = 30 X 6,48,000 = Rs 1,94,40,000

## 6.2 Damages for breach of maintenance activities

| SNo | Period         | Amount of damages (Rs) |
|-----|----------------|------------------------|
| 1   | Upto June 2016 | 1,00,35,000            |
| 2   | Jul 2016       | 6,63,196               |
| 3   | Aug 2016       | 6,63,196               |
| 4   | Sep 2016       | 52,22,444              |
|     | <b>Total</b>   | <b>1,65,83,836</b>     |

### Supporting Calculations for damages for reporting month

| S No | Nature of defect | Unit | Total Quantity | Rate | Cost o repair as estimated | Damages as per CA | Damages at higher side | Date of inspection | No of days as per CA | Damages from | No of days damages | Damages amount |
|------|------------------|------|----------------|------|----------------------------|-------------------|------------------------|--------------------|----------------------|--------------|--------------------|----------------|
|      |                  |      |                |      |                            |                   |                        |                    |                      |              |                    |                |
|      |                  |      |                |      |                            |                   |                        |                    |                      |              |                    |                |
|      |                  |      |                |      |                            |                   |                        |                    |                      |              |                    |                |

## 6.3 Damages for non-completion of major maintenance/ periodic overlay

| SNo | Period       | Amount of damages (Rs) |
|-----|--------------|------------------------|
| 1   | June 2016    | 6,48,000               |
| 2   | Jul 2016     | 2,00,88,000            |
| 3   | Aug 2016     | 2,00,88,000            |
| 4   | Sep 2016     | 1,94,40,000            |
|     | <b>Total</b> | <b>6,02,64,000</b>     |

### Supporting Calculations for damages for Sep 2016

- No of days in Sep = 30
- Performance security is Rs 64,80,00,000
- As per CA Clause 12.3.2 damages payable is 0.1% of performance security per day = Rs 6,48,000
- Total damages payable = 30 X 6,48,000 = Rs 1,94,40,000

*All figures and graphs in templates are illustrative. Please add actual details.*

## 7 Change of Scope proposals

| SN<br>o | Proposal Details                                   | Date of first submission to IE | Current status                                                                              | COS Amount   | Expected/ Actual date of approval |
|---------|----------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------|--------------|-----------------------------------|
| 1       | Construction of [Flyover Name] at [Chainage]       | [DD/MM/YYYY]                   | Approved in principle by Authority. Detailed quantitSCs in proper order yet to be submitted | [+/- Amount] | [DD/MM/YYYY]                      |
| 2       | Nallah diversion through box culvert at [Chainage] | [DD/MM/YYYY]                   | Clarifications to be submitted by Concessionaire, expected date [DD/MM/YYYY]                | [+/- Amount] | [DD/MM/YYYY]                      |

## 8 Status of pending disputes

| SN<br>o | Dispute Details                                                     | Date of first submission to IE | Suggested resolution by IE                                                                                                                        | Dispute Amount (if applicable) | Current stage                                                                                   |
|---------|---------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------|
| 1       | Increased tollable length to be applicable in toll fee calculations | [DD/MM/YYYY]                   | No merit in increasing tollable length hence no action required by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)       | NA                             | SAROD                                                                                           |
| 2       | Filling stations energized without obtaining NOC from ministry      | [DD/MM/YYYY]                   | National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) to consider the Concessionaire's request for intervention and assistance | [+/- Amount]                   | B/w Concessionaire and National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) |

*All figures and graphs in templates are illustrative. Please add actual details.*

## 9 Reports

### 9.1 Monthly Toll Collection Report (Applicable only if project highway is tolled)

| TYPE OF VEHICLE |        |        | For Corresponding month of previous year |               | For Previous Month |               | For Current Month |                |               |
|-----------------|--------|--------|------------------------------------------|---------------|--------------------|---------------|-------------------|----------------|---------------|
|                 |        |        | No of vehicles                           | Fee Collected | No of vehicles     | Fee Collected | Fee per vehicle   | No of vehicles | Fee Collected |
| A               | Car    | Single | 3845                                     | 384500        | 4659               | 465,900.00    | 100               | 4289           | 428,900.00    |
|                 |        | Return | 1506                                     | 218370        | 1972               | 295,800.00    | 150               | 1758           | 263,700.00    |
|                 |        | Local  | 769                                      | 38450         | 979                | 48,950.00     | 50                | 1029           | 51,450.00     |
| B               | LCV    | Single | 1521                                     | 243360        | 1312               | 209,920.00    | 160               | 1399           | 223,840.00    |
|                 |        | Return | 134                                      | 31490         | 162                | 38,880.00     | 240               | 132            | 31,680.00     |
|                 |        | Local  | 1683                                     | 134640        | 1838               | 147,040.00    | 80                | 1461           | 116,880.00    |
| C               | Bus    | Single | 2404                                     | 793386        | 2284               | 765,207.00    | 201               | 2349           | 786,915.00    |
|                 |        | Return | 359                                      | 177903        | 173                | 87,567.00     | 303               | 203            | 102,717.00    |
|                 |        | Local  | 277                                      | 45738         | 205                | 34,782.00     | 102               | 318            | 54,060.00     |
| D               | Truck  | Single | 1603                                     | 528924        | 1523               | 510,138.00    | 134               | 1566           | 524,610.00    |
|                 |        | Return | 240                                      | 118602        | 116                | 58,378.00     | 202               | 136            | 68,478.00     |
|                 |        | Local  | 185                                      | 30492         | 136                | 23,188.00     | 68                | 212            | 36,040.00     |
| E               | 3 Axle | Single | 18990                                    | 6836400       | 16310              | 5,953,150.00  | 365               | 15127          | 5,521,355.00  |
|                 |        | Return | 131                                      | 70740         | 34                 | 18,700.00     | 550               | 37             | 20,350.00     |
|                 |        | Local  | 69                                       | 12420         | 84                 | 15,540.00     | 185               | 131            | 24,235.00     |
| F               | MAV    | Single | 16119                                    | 8381880       | 21111              | 11,188,830.00 | 530               | 18790          | 9,958,700.00  |

| TYPE OF VEHICLE |           |                     | For Corresponding month of previous year |               | For Previous Month |               | For Current Month |                |               |
|-----------------|-----------|---------------------|------------------------------------------|---------------|--------------------|---------------|-------------------|----------------|---------------|
|                 |           |                     | No of vehicles                           | Fee Collected | No of vehicles     | Fee Collected | Fee per vehicle   | No of vehicles | Fee Collected |
|                 |           | Return              | 2                                        | 1550          | 20                 | 15,800.00     | 790               | 35             | 27,650.00     |
|                 |           | Local               | 6                                        | 1560          | 18                 | 4,770.00      | 265               | 8              | 2,120.00      |
| G               | Over Size | Single              | 1                                        | 630           | 27                 | 17,280.00     | 640               | 36             | 23,040.00     |
|                 |           | Return              |                                          | 0             | 0                  | -             | 965               |                | -             |
|                 |           | Local               |                                          | 0             | 0                  | -             | 320               |                | -             |
|                 |           | Total for the Month |                                          | 49844         | 18,050,618         | 52963         | 19,898,834        |                | 49016         |

*All figures and graphs in templates are illustrative. Please add actual details.*

## 9.2 Accident Report

| S No | Date   | Chainage no | Time of accident | Sex (M/F) | A                 | B                  | C                          | D      | E                          | F              | G                            | H                 | I             | J              | K               | No of affected persons |       |       | Help provided by |
|------|--------|-------------|------------------|-----------|-------------------|--------------------|----------------------------|--------|----------------------------|----------------|------------------------------|-------------------|---------------|----------------|-----------------|------------------------|-------|-------|------------------|
|      |        |             |                  |           | Accident location | Nature of accident | Classification of accident | Causes | Load conditions of vehicle | Road condition | Intersection type of control | Weather condition | Age of victim | Type of victim | Type of vehicle |                        |       |       |                  |
|      |        |             |                  |           |                   |                    |                            |        |                            |                |                              |                   |               |                |                 | Fatal                  | Major | Minor |                  |
| 1    | 1/1/17 | 382/050 RHS | 05:25 pm         | M         | 2                 | 2                  | 3                          | 4      | 1                          | 1              | -                            | 1                 | 3             | 1              | 3               | -                      | 1     | 1     | Ambu             |
|      |        |             |                  |           |                   |                    |                            |        |                            |                |                              |                   |               |                |                 |                        |       |       |                  |
|      |        |             |                  |           |                   |                    |                            |        |                            |                |                              |                   |               |                |                 |                        |       |       |                  |

## Mapping of report fields to responses

|   |                                                                                                                                                                                                |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A | 1. Urban 2. Rural                                                                                                                                                                              |
| B | 1. Overturned 2. Head On Collision 3. Hit from Back 4. Hit to Fix Object 5. Right turn Collision 6. Left turn Collision 7. Veered Out off The Road 8. Hit Pedestrian 9. Unknown/Hit & Ran Away |
| C | 1. Fatal 2. Major injury 3. Minor injury                                                                                                                                                       |
| D | 1. Drunken 2. Over Speeding 3. Vehicle out of Control 4. Driven on wrong side 5. Mechanical Problem 6. Drowsiness/Not Applicable 7. Fault of Driver                                            |
| E | 1. Normally Loaded 2. Overloaded/Handing 3. Empty 4. Unknown                                                                                                                                   |
| F | 1. Straight road 2. Slight Curve 3. Sharp Curve 4. Hump 5. Dip                                                                                                                                 |
| G | 1. T-Junction 2. Y-Junction 3. Four arm Junction 4. Staggered Junction 5. Junction with more than 6. Round about Junction                                                                      |
| H | 1. Fine/Clear 2.Mist/Fog 3. Cloudy 4. Light Rain 5. Heavy Rain 6. Strong Wind 7. Dust Storm 8. Cold 9. Hot                                                                                     |
| I | 1. 0-18 Years 2. 18-25 Years 3. 25-40 Years 4.40-60 Years 5. 60-80 Years                                                                                                                       |
| J | 1. Driver 2. Passenger 3. Pedestrian 4. Cyclist 5. Others                                                                                                                                      |
| K | 1. Two Wheeler 2. Auto Rickshaw 3. Car/Jeep 4. Bus 5. Light Truck 6. Heavy Truck 7. Tractor 8. Bicycle 9. Cycle Rickshaw 10. Hand Drawn Cart 11. Animal Drawn Cart                             |

*All figures and graphs in templates are illustrative. Please add actual details.*

### 9.3 Details of complaints

| SNo | Toll plaza | Complaint No | Date      | Name of the person                                                       | Contact details of person | Details of complaint                                                                                                              | Compliance by the concessionaire                                                                                                                                                                                                  |
|-----|------------|--------------|-----------|--------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   |            | 81           | 8/9/2016  | Mr. Shailendra Gurjar, LIG-44, RSS mohalla, Shivaji Nagar, Bhopal (M.P.) |                           | Mr. Shailendra Complaints regarding Pot holes on the Highway may cause accidents.                                                 | Pot holes are repaired                                                                                                                                                                                                            |
| 2   |            | 82           | 10/9/2016 | Dr. Anil Diwakar, HIG Swarganga Complex Bus Stand Seoni (M.P.)           |                           | Dr. Diwakar complaints that presence of Animals and also Pot holes on road are obstructing the driving which may cause accidents. | Animals are continuously driven out from the Road by the Highway Patrolling team and Pot holes are repaired.                                                                                                                      |
| 3   |            | 83           | 11/9/2016 | Maj. Sidharth, 238 Fd wksp C/o- 56 APO                                   |                           | Maj. Sidharth while travelling in personal car wants Exemption from Toll Fee on production of I.D. Card                           | The Exemption under Indian Toll (Army and Air force) Act 1901, to army personnel travelling in private vehicle may be given if on Govt. duty with requisite pass as specified in the Indian Toll (Army and Air Force Rules, 1942) |

*All figures and graphs in templates are illustrative. Please add actual details.*

#### 9.4 Encroachment list

| S.No | Stretch Chainage (km) | Side (LHS/RHS) | District/ Tehsil | Village          | Encroachment type (Temporary/ Permanent) | Category (Tea stall, Temple, etc) | Establishment (New/ existing) | Distance from road edge (m) | Encroachment width and length | Name of Encroacher |
|------|-----------------------|----------------|------------------|------------------|------------------------------------------|-----------------------------------|-------------------------------|-----------------------------|-------------------------------|--------------------|
| 1    | 212+500               | LHS            | Kurnool          | Kurnool          | Temporary                                | Tea stall                         | New                           | 7                           | 5mX3.5m                       | Vijay Kumar Reddy  |
| 2    | 213+200               | RHS            | Kurnool          | Dinnedevara Padu | Permanent                                | Godown                            | Existing                      | 5                           | 10.5m X 4m                    | Buddana            |

#### 9.5 Lane Closure Report

| S.No | Date     | Chainage (Km) |         | Side | Time of Closure | Reasons for Lane Closure & Approval Details | Remarks |
|------|----------|---------------|---------|------|-----------------|---------------------------------------------|---------|
|      |          | From          | To      |      |                 |                                             |         |
| 1    | 9/9/2016 | 215+300       | 215+350 | RHS  | 1pm-4pm         | Patch work                                  |         |
|      |          |               |         |      |                 |                                             |         |

## 10 Annexures

### Annexure 1: Detailed visual inspection report of project highway

**Assets to be covered-** Pavement, Shoulder, Drainage, Median, Bridges, Road furniture, Buildings, Horticulture, Service Road

| SNo | NCP/ SNo | Date of issue | Description of defect | Chainage | Side | IE Remarks               |
|-----|----------|---------------|-----------------------|----------|------|--------------------------|
| 1   | 311      | 15.08.2016    | Potholes              | 311+200  | LHS  | To be repaired           |
| 2   | 312      | 15.08.2016    | Cracking              | 311+500  | RHS  | To be filled immediately |
| 3   |          |               |                       |          |      |                          |
| 4   |          |               |                       |          |      |                          |

### Annexure 2 onwards:

IE should include comments, status update, data points and reports in following annexures which have not been included elsewhere in the main report. Such reports may include but not limited to:

- Minutes of review meeting
- Correspondence details
- Weather report
- Organizational chart of Concessionaire and IE
- Project photographs

**Annexure VII- OUTPUT FORMAT FROM NETWORK SURVEY VEHICLE AND FWD TESTING**



[NAME & LOGO OF IMPLEMENTING AGENCY]

*[PROJECT NAME]*

**Independent Engineer**

*[NAME OF CONSULTING FIRM]*

**OUTPUT FROM NETWORK SURVEY VEHICLE AND FWD TESTING**

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**Annexure VII: OUTPUT FORMAT FROM NETWORK SURVEY VEHICLE AND FWD TESTING  
(SECTION 1: TESTING AT TIME OF COMPLETION, SECTION 2: FWD ATTRIBUTES -  
ANNUALLY, BALANCE PARAMETERS –BIANNUALLY AFTER CONSTRUCTION PHASE)**

In addition to the reports being submitted on equipment based inspection as specified in Section 4.2 of the Monthly Progress Report in the O&M phase, the Independent Engineer (AE) shall submit electronically in excel (.xls) format certain key parameters to the Project Director in the following format.

Worksheets under Section 1 ('Road inventory data') shall be updated from surveys conducted only once at the time of completion testing. Worksheets under Section 2 ('Road condition data') shall be updated from surveys carried out annually for FWD attributes and biannually for the remaining attributes.

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

**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.

**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                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber    | New National Highway number                                                                                                | NH0065                         |
| LRPName     | Name of location reference post (LRP)                                                                                      | Km stone 17                    |
| Chainage    | Chainage of the survey point (in km)                                                                                       | 17                             |
| Direction   | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul> | Increasing                     |
| Latitude    | Latitude of survey point                                                                                                   | 9.98897                        |
| Longitude   | Longitude of survey point                                                                                                  | 78.02671                       |
| SurveyDate  | Date of survey in the format <DD-MM-YY>                                                                                    | 06-05-17                       |
| OldNHNumber | Old National Highway number                                                                                                | NH0065                         |
| SectionCode | 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 |
|-----------|------------|----------|------------|----------|-----------|----------|-------------|---------------|--------------|
| NH0xxx    | Road Start | 1.230    | Increasing | 9.98897  | 78.02671  | 63.07767 | 23-12-15    | NH0yyy        | ABC-DEF      |
| NH0xxx    | Km Stone 8 | 8.000    | Increasing | 9.98444  | 78.02934  | 68.60126 | 23-12-15    | NH0yyy        | ABC-DEF      |
| NH0xxx    | Km Stone 8 | 8.030    | Increasing | 9.98341  | 78.03004  | 68.15520 | 23-12-15    | NH0yyy        | ABC-DEF      |

|        |             |        |            |         |          |          |          |        |         |
|--------|-------------|--------|------------|---------|----------|----------|----------|--------|---------|
| NH0xxx | Km Stone    | 9.008  | Increasing | 9.98107 | 78.03078 | 65.17153 | 23-12-15 | NH0yyy | ABC-DEF |
| NH0xxx | Km Stone    | 12.012 | Increasing | 9.96328 | 78.04160 | 56.03436 | 23-12-15 | NH0yyy | ABC-DEF |
| NH0xxx | Km Stone 17 | 17.085 | Increasing | 9.95385 | 78.05255 | 56.24748 | 23-12-15 | NH0yyy | 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                        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber        | New National Highway number                                                                                                                        | NH0065                         |
| SectionCode     | Code indicating starting and ending locations of section                                                                                           | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage   | Chainage of the start point (in km)                                                                                                                | 0.500                          |
| EndChainage     | Chainage of the end point (in km)                                                                                                                  | 1.500                          |
| CarriagewayType | Type of carriageway, classified into one of the below categories: <ul style="list-style-type: none"> <li>• Divided</li> <li>• Undivided</li> </ul> | Divided                        |
| SurveyDate      | 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 | 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                        |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                                                         | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                            | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                                 | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                                                   | 1.500                          |
| RoadType      | Classification of road on basis of number of lanes <ul style="list-style-type: none"> <li>• Single Lane</li> <li>• Two Lane</li> <li>• Intermediate Lane</li> </ul> | Four Lane                      |

| Field      | Description                                                                   | Example  |
|------------|-------------------------------------------------------------------------------|----------|
|            | <ul style="list-style-type: none"> <li>Four Lane</li> <li>Six Lane</li> </ul> |          |
| SurveyDate | 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                        |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                             | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                     | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                       | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>              | Increasing                     |
| PavementType  | Classification of pavement based on type of surface: <ul style="list-style-type: none"> <li>Asphalt</li> <li>Cement concrete</li> </ul> | Asphalt                        |
| SurveyDate    | 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 | 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                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber           | New National Highway number                                                                                                                                                                                                                                                    | NH0065                         |
| SectionCode        | Code indicating starting and ending locations of section                                                                                                                                                                                                                       | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage      | Chainage of the start point (in km)                                                                                                                                                                                                                                            | 0.500                          |
| EndChainage        | Chainage of the end point (in km)                                                                                                                                                                                                                                              | 1.500                          |
| Direction          | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                                                                                                                     | Increasing                     |
| PavementWidth      | Width of the pavement in metres, classified into one of the below categories <ul style="list-style-type: none"> <li>&gt;= 3.75m and &lt; 5.5m</li> <li>&gt;5.5m and &lt; 7m</li> <li>&gt;= 7m and &lt; 10.5m</li> <li>&gt;=10.5m and &lt;=12.5m</li> <li>&gt; 12.5m</li> </ul> | >7m and <10.5m                 |
| PavementWidthValue | Width of the pavement in metres, rounded to two places after decimal                                                                                                                                                                                                           | 7.0                            |
| SurveyDate         | 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                        |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                                                         | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                            | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                                 | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                                                   | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                          | Increasing                     |
| ShoulderType  | Type of shoulder, classified into one of the below categories: <ul style="list-style-type: none"> <li>None</li> <li>Paved</li> <li>Gravel</li> <li>Earth</li> </ul> | Gravel                         |
| SurveyDate    | 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                        |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber           | New National Highway number                                                                                                                                                                                 | NH0065                         |
| SectionCode        | Code indicating starting and ending locations of section                                                                                                                                                    | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage      | Chainage of the start point (in km)                                                                                                                                                                         | 0.500                          |
| EndChainage        | Chainage of the end point (in km)                                                                                                                                                                           | 1.500                          |
| Direction          | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                                                  | Increasing                     |
| ShoulderWidth      | Width of the shoulder in metres, classified into one of the below categories <ul style="list-style-type: none"> <li>No shoulder</li> <li>&lt; 1m</li> <li>&gt;= 1m and &lt;= 2m</li> <li>&gt; 2m</li> </ul> | < 1m                           |
| ShoulderWidthValue | Width of the shoulder in metres, rounded to one place after decimal                                                                                                                                         | 0.5                            |
| SurveyDate         | 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                        |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                                                | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                   | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                        | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                                          | 1.500                          |
| Topography    | Topography of the road, classified into one of the below categories <ul style="list-style-type: none"> <li>Flat</li> <li>Rolling</li> <li>Hilly</li> </ul> | Flat                           |
| SurveyDate    | Date of survey in the format <DD-MM-YY>                                                                                                                    | 06-05-17                       |
| Latitude      | Latitude of survey point                                                                                                                                   | 9.98897                        |
| Longitude     | Longitude of survey point                                                                                                                                  | 78.02671                       |

A sample output is shown below for reference:

| NH Number | Section Code | Start Chainage | End Chainage | Topography | Survey Date | Latitude | Longitude |
|-----------|--------------|----------------|--------------|------------|-------------|----------|-----------|
| NH0xxx    | ABC-DEF      | 0.000          | 0.808        | Flat       | 05-01-16    | 9.98897  | 78.02671  |
| NH0xxx    | ABC-DEF      | 0.808          | 1.254        | 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                        |
|---------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                   | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                        | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                          | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul> | Increasing                     |
| CrossSection  | Cross section type, classified into one of the below categories <ul style="list-style-type: none"> <li>Cut</li> </ul>      | Fill                           |

| Field      | Description                                                                                 | Example  |
|------------|---------------------------------------------------------------------------------------------|----------|
|            | <ul style="list-style-type: none"> <li>Fill</li> <li>Cut and Fill</li> <li>Level</li> </ul> |          |
| SurveyDate | 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                        |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                                                                                             | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                                                                | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                                                                     | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                                                                                       | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                                              | Increasing                     |
| DrainType     | Type of drain, classified into one of the below categories <ul style="list-style-type: none"> <li>Open unlined drain</li> <li>Open lined drain</li> <li>Covered line drain</li> <li>No drain</li> </ul> | Open lined drain               |
| SurveyDate    | 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                        |
|---------------|----------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                              | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                      | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                        | 1.500                          |
| Direction     | Direction of survey<br>• Increasing (chainage)           | Increasing                     |

| Field       | Description                                                                                                                                                                | Example  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|             | <ul style="list-style-type: none"> <li>Decreasing (chainage)</li> </ul>                                                                                                    |          |
| MedianType  | Type of median, classified into one of the below categories <ul style="list-style-type: none"> <li>Raised;</li> <li>Depressed;</li> <li>Barrier;</li> <li>None.</li> </ul> | Raised   |
| MedianWidth | Width of the median in metres, rounded to one place after decimal                                                                                                          | 0.5      |
| SurveyDate  | 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                        |
|---------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                   | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                        | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                          | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul> | Increasing                     |
| RowWidth      | Width of Right of Way (in metres)                                                                                          | 24                             |
| Remarks       |                                                                                                                            |                                |
| SurveyDate    | 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 | 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                        |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber                           | New National Highway number                                                                                                | NH0065                         |
| SectionCode                        | Code indicating starting and ending locations of section                                                                   | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage                      | Chainage of the start point (in km)                                                                                        | 0.500                          |
| EndChainage                        | Chainage of the end point (in km)                                                                                          | 1.500                          |
| Direction                          | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul> | Increasing                     |
| PavementType                       | Type of pavement <ul style="list-style-type: none"> <li>Asphalt</li> <li>Cement concrete</li> </ul>                        | Asphalt                        |
| BituminousSurfaceCourseType        | Type of bituminous surface course                                                                                          | BC                             |
| BituminousSurfaceCourseThicknessMM | Thickness of BSC layer in mm                                                                                               | 40                             |
| BSCConstructionYear                | Year of construction of BSC layer in flexible pavements                                                                    | 2015                           |
| BituminousBaseCourseType           | Type of bituminous base course                                                                                             | DBM                            |
| BituminousBaseCourseThickness      | Thickness of BBC layer in mm                                                                                               | 100                            |

| Field                             | Description                                             | Example  |
|-----------------------------------|---------------------------------------------------------|----------|
| BBCConstruction Year              | Year of construction of BBC layer in flexible pavements | 2015     |
| GranularBaseType                  | Type of granular base                                   | WMM      |
| GranularBaseThick-ness            | Thickness of GB layer in mm                             | 250      |
| GBConstruction Year               | Year of construction of GB layer in flexible pavements  | 2015     |
| PavementQuality ConcreteType      | Type of pavement quality concrete                       | PQC      |
| PavementQuality ConcreteThickness | Thickness of PQC layer in mm                            | 300      |
| PQCConstruction Year              | Year of construction of PQC layer in rigid pavements    | 2015     |
| DryLeanConcrete ThicknessMM       | Thickness of DLC layer in mm                            | 100      |
| DryLeanConcrete Type              | Type of dry lean concrete                               | DLC      |
| DLCCConstruction Year             | Year of construction of DLC layer in rigid pavements    | 2015     |
| GranularSubBase Type              | Type of granular sub base                               | GSB      |
| GranularSubBase Thickness         | Thickness of GSB layer in mm                            | 200      |
| GSBConstruction Year              | Year of construction of GSB layer                       | 2014     |
| DesignCBR                         | Design CBR of the subgrade, expressed in %              | 5%       |
| SurveyDate                        | Date of survey in the format <DD-MM-YY>                 | 06-05-17 |
| Latitude                          | Latitude of survey point                                | 9.98897  |
| Longitude                         | Longitude of survey point                               | 78.02671 |

A sample output is shown below for reference:

| NH No. | Sec-<br>tion<br>Code | Start<br>Chain<br>age | End<br>Chain<br>age | Direc-<br>tion | Pavement<br>Type | Bituminous<br>Surface<br>Course Type | Bituminous<br>Surface<br>Course<br>Thickness | BSC<br>Construc-<br>tion<br>Year | Bituminous<br>Base<br>Course<br>Type | Bituminous<br>Base<br>Course<br>Thickness | BBC<br>Construc-<br>tion Year | Granula<br>r Base<br>Type | Granular<br>Base<br>Thickness |
|--------|----------------------|-----------------------|---------------------|----------------|------------------|--------------------------------------|----------------------------------------------|----------------------------------|--------------------------------------|-------------------------------------------|-------------------------------|---------------------------|-------------------------------|
| NH00xx | ABC-<br>DEF          | 0.0                   | 5.0                 | Both<br>side   | Asphalt          | BC                                   | 40.0                                         | 2015                             | DBM                                  | 100                                       | 2015                          | WMM                       | 250                           |

|        |         |      |      |           |         |      |      |      |     |     |      |     |     |
|--------|---------|------|------|-----------|---------|------|------|------|-----|-----|------|-----|-----|
| NH00xx | ABC-DEF | 5.0  | 11.0 | Both side | Asphalt | BC   | 40.0 | 2015 | DBM | 80  | 2015 | WMM | 250 |
| NH00xx | ABC-DEF | 11.0 | 20.0 | Both side | Asphalt | SDBC | 25.0 | 2015 | BM  | 115 | 2015 | WMM | 250 |
| NH00xx | ABC-DEF | 20.0 | 22.0 | Both side | Asphalt | BC   | 40.0 | 2015 | DBM | 100 | 2015 | WMM | 250 |
| NH00xx | ABC-DEF | 22.0 | 30.0 | Both side | Asphalt | SDBC | 25.0 | 2015 | BM  | 115 | 2015 | WMM | 250 |
| NH00xx | ABC-DEF | 30.0 | 31.0 | Both side | Asphalt | BC   | 40.0 | 2015 | DBM | 100 | 2015 | WMM | 250 |

(table continued...)

| GB Construction Year | Pavement Quality Concrete Type | Pavement Quality Concrete Thickness | PQC Construction Year | Dry Lean Concrete Thickness | Dry Lean Concrete Type | DLC Construction Year | Granular SubBase Type | Granular SubBase Thickness | GSB Construction Year | Design CBR | 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                        |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber             | New National Highway number                                                                                                                                                             | NH0065                         |
| SectionCode          | 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"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                              | Increasing                     |
| Wayside Amenity Type | Wayside amenities classified into one of the below categories: <ul style="list-style-type: none"> <li>Crash barriers</li> <li>Signs</li> <li>Street Lights</li> <li>Km stone</li> </ul> | Road sign                      |
| SurveyDate           | 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  |

### 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                        |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber        | New National Highway number                                                                                                                                                                                                                                                                                                                                                                                                                                  | NH0065                         |
| SectionCode     | 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"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                                                                                                                                                                                                                                                                                                   | Increasing                     |
| Wayside Amenity | Wayside amenities classified into one of the below categories: <ul style="list-style-type: none"> <li>Bus shelter;</li> <li>Culverts;</li> <li>Restaurant/Motel;</li> <li>Toilet/Public convenience;</li> <li>Rest Rooms for short stay;</li> <li>Toll Plaza;</li> <li>First aid/Medical centre;</li> <li>Telephone booth;</li> <li>Petrol pump/minor repair shop (optional);</li> <li>Police Station;</li> <li>Temple /Mosque;</li> <li>Bridges.</li> </ul> | Restaurant/Motel               |
| 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    | ABC-DEF      | 1.998    | Increasing | Restaurant/Motel | 05-01-16    |             |         | 9.98444  | 78.02934  |
| NH00xx    | ABC-DEF      | 5.524    | Increasing | Petrol Pump      | 05-01-16    |             |         | 9.98341  | 78.03004  |
| NH00xx    | ABC-DEF      | 11.413   | Increasing | Restaurant/Motel | 05-01-16    |             |         | 9.98107  | 78.03078  |

### 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                        |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                                                                                                                  | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                                                                                     | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                                                                                          | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                                                                                                            | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                                                                   | Increasing                     |
| LandUse       | Land use classified into one of the below categories: <ul style="list-style-type: none"> <li>Residential;</li> <li>Commercial;</li> <li>Industrial;</li> <li>Agricultural;</li> <li>Water bodies;</li> <li>Mixed.</li> </ul> | Commercial                     |
| SurveyDate    | 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  | 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  |

## SECTION 2 - 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 2<sup>nd</sup> survey shall be conducted in the month of November, the 3<sup>rd</sup> 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 2<sup>nd</sup> 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.

### 2.1 Visual condition

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

| Field         | Description                                                                                                                                                                                                                                                                      | Example                           |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| NHNumber      | New National Highway number                                                                                                                                                                                                                                                      | NH0065                            |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                                                                                                                                         | HYD-VIJ<br>(Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                                                                                                                                              | 0.500                             |
| EndChainage   | Chainage of the end point (in km)                                                                                                                                                                                                                                                | 1.500                             |
| Direction     | Direction of survey <ul style="list-style-type: none"><li>Increasing (chainage)</li><li>Decreasing (chainage)</li></ul>                                                                                                                                                          | Increasing                        |
| LaneNumber    | Number of the lane: L1, L2, R1, R2, etc., L1 being 1 <sup>st</sup> lane on the left from centreline of carriageway, L2 being 2 <sup>nd</sup> 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: <ul style="list-style-type: none"><li>1 - Very Poor (&gt; 30%)</li><li>2 - Poor (11-30%)</li><li>3 - Fair (6-10%)</li><li>4 - Good (1-5%)</li><li>5 - Very Good (0%)</li></ul> | 2                                 |
| PotHoles      | No. of potholes, which is converted to the following rating scale: <ul style="list-style-type: none"><li>1 - Very Poor (&gt; 5)</li><li>2 - Poor (3-5)</li><li>3 - Fair (2)</li><li>4 - Good (1)</li><li>5 - Very Good (0)</li></ul>                                             | 1                                 |
| EdgeBreak     | Pavement area containing edge breaks, which is converted to the following rating scale:                                                                                                                                                                                          | 3                                 |

| Field             | Description                                                                                                                                                                                                                                                                                       | Example |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                   | <ul style="list-style-type: none"> <li>1 - Very Poor (&gt; 5m<sup>2</sup>)</li> <li>2 - Poor (1-5m<sup>2</sup>)</li> <li>3 - Fair (0.5-1m<sup>2</sup>)</li> <li>4 - Good (0-0.5m<sup>2</sup>)</li> <li>5 - Very Good (0m<sup>2</sup>)</li> </ul>                                                  |         |
| Cracking          | Percent of pavement area affected by cracking, which is converted to the following rating scale: <ul style="list-style-type: none"> <li>1 - Very Poor (&gt; 30%)</li> <li>2 - Poor (21-30%)</li> <li>3 - Fair (11-20%)</li> <li>4 - Good (5-10%)</li> <li>5 - Very Good (&lt;5%)</li> </ul>       | 3       |
| Disintegration    | Percent of pavement area affected by disintegration, which is converted to the following rating scale: <ul style="list-style-type: none"> <li>1 - Very Poor (&gt; 50%)</li> <li>2 - Poor (20-50%)</li> <li>3 - Fair (10-20%)</li> <li>4 - Good (1-10%)</li> <li>5 - Very Good (&lt;1%)</li> </ul> | 2       |
| Depression        | Percent of pavement area affected by depression, which is converted to the following rating scale: <ul style="list-style-type: none"> <li>1 - Very Poor (&gt; 5%)</li> <li>2 - Poor (3-5%)</li> <li>3 - Fair (1-2%)</li> <li>4 - Good (0-1%)</li> <li>5 - Very Good (0)</li> </ul>                | 5       |
| Bleeding          | Percent of pavement area affected by bleeding, which is converted to the following rating scale: <ul style="list-style-type: none"> <li>1 - Very Poor (&gt; 50%)</li> <li>2 - Poor (20-50%)</li> <li>3 - Fair (10-20%)</li> <li>4 - Good (1-10%)</li> <li>5 - Very Good (&lt;1%)</li> </ul>       | 3       |
| Patching          | Percent of pavement area affected by patching, which is converted to the following rating scale: <ul style="list-style-type: none"> <li>1 - Very Poor (&gt; 30%)</li> <li>2 - Poor (16-30%)</li> <li>3 - Fair (6-15%)</li> <li>4 - Good (2-5%)</li> <li>5 - Very Good (&lt;2%)</li> </ul>         | 4       |
| DrainCondition    | Condition of the drain, which is converted to the following rating scale: <ul style="list-style-type: none"> <li>1 - Poor</li> <li>2 - Fair</li> <li>3 - Good</li> </ul>                                                                                                                          | 2       |
| ShoulderCondition | Condition of the shoulder, which is converted to the following rating scale:                                                                                                                                                                                                                      | Fair    |

| Field      | Description                                                                                    | Example  |
|------------|------------------------------------------------------------------------------------------------|----------|
|            | <ul style="list-style-type: none"> <li>1 - Poor</li> <li>2 - Fair</li> <li>3 - Good</li> </ul> |          |
| SurveyDate | 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 | ShoulderCondition | Date of Survey | Latitude | Longitude |
|----------------|------------|----------|----------|-----------------|-------------------|----------------|----------|-----------|
| 4              | 4          | 4        | 4        | 2               | 2                 | 06-05-17       | 9.98897  | 78.02671  |
| 4              | 4          | 4        | 4        | 2               | 2                 | 06-05-17       | 9.98444  | 78.02934  |
| 5              | 5          | 5        | 4        | 2               | 2                 | 06-05-17       | 9.98341  | 78.03004  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.98107  | 78.03078  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.96328  | 78.04160  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.95385  | 78.05255  |
| 5              | 5          | 5        | 5        | 2               | 3                 | 06-05-17       | 9.93102  | 78.05648  |
| 4              | 4          | 4        | 4        | 2               | 3                 | 06-05-17       | 9.91229  | 78.04961  |
| 4              | 4          | 4        | 4        | 2               | 2                 | 06-05-17       | 9.89041  | 78.03458  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.88489  | 78.02995  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.87474  | 78.02828  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.87363  | 78.02744  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.84857  | 78.01535  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.83764  | 78.00392  |
| 5              | 5          | 5        | 5        | 2               | 2                 | 06-05-17       | 9.83711  | 77.98576  |

| Disintegration | Depression | Bleeding | Patching | Drain Condition | ShoulderCondition | Date of Survey | Latitude | Longitude |
|----------------|------------|----------|----------|-----------------|-------------------|----------------|----------|-----------|
| 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                        |
|---------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                   | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                        | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                          | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul> | Increasing                     |
| Lwplri        | International roughness index (IRI) of left wheel path measured from laser profilometer                                    | 2.33                           |
| Rwplri        | International roughness index (IRI) of right wheel path measured from laser profilometer                                   | 1.97                           |
| Lanelri       | Average of the International roughness index (IRI) of left and right wheel paths                                           | 2.15                           |
| Speed         | Speed of vehicle in km/h                                                                                                   | 42                             |
| SurveyDate    | Date of survey in the format <DD-MM-YYYY>                                                                                  | 06-05-17                       |
| Latitude      | Latitude of survey point                                                                                                   | 9.98897                        |
| Longitude     | Longitude of survey point                                                                                                  | 78.02671                       |

A sample output is shown below for reference:

| NH Number | Section Code | Start Chainage | End Chainage | Direction  | Lane Number | Lwplri | Rwplri | Lanelri | Speed | Survey Date | Latitude | Longitude |
|-----------|--------------|----------------|--------------|------------|-------------|--------|--------|---------|-------|-------------|----------|-----------|
| NH00xx    | ABC-DEF      | 0.0            | 0.1          | Increasing | 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                        |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                                                                             | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                                                | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                                                     | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                                                                       | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                              | Increasing                     |
| LaneNumber    | Number of the lane: L1, L2, R1, R2, etc., L1 being 1 <sup>st</sup> lane on the left from centreline of carriageway, L2 being 2 <sup>nd</sup> lane on the left from centerline and so on | L1                             |
| RuttingLeft   | Rut depth in mm, measured from left wheel path                                                                                                                                          | 20                             |
| RuttingRight  | Rut depth in mm, measured from left wheel path                                                                                                                                          | 18                             |
| RuttingAvg    | Average rut depth measured from left and right wheel paths                                                                                                                              | 19                             |
| Speed         | Speed of vehicle in km/h                                                                                                                                                                | 42                             |
| SurveyDate    | Date of survey in the format <DD-MM-YYYY>                                                                                                                                               | 06-05-17                       |
| Latitude      | Latitude of survey point                                                                                                                                                                | 9.98897                        |
| Longitude     | Longitude of survey point                                                                                                                                                               | 78.02671                       |

A sample output is shown below for reference:

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

| NH Number | Section Code | Start Chainage | End Chainage | Direction  | Lane Number | Rutting Left | Rutting Right | Rutting Avg | Speed | Survey Date | Latitude | Longitude |
|-----------|--------------|----------------|--------------|------------|-------------|--------------|---------------|-------------|-------|-------------|----------|-----------|
| NH00xx    | ABC-DEF      | 4.5            | 5.0          | Increasing | L1          | 5            | 5             | 5           | 32    | 06-05-17    | 9.89041  | 78.03458  |

## 2.4 Texture Depth

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

| Field          | Description                                                                                                                                                                             | Example                        |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber       | New National Highway number                                                                                                                                                             | NH0065                         |
| SectionCode    | Code indicating starting and ending locations of section                                                                                                                                | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage  | Chainage of the start point (in km)                                                                                                                                                     | 0.500                          |
| EndChainage    | Chainage of the end point (in km)                                                                                                                                                       | 1.500                          |
| Direction      | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                              | Increasing                     |
| LaneNumber     | Number of the lane: L1, L2, R1, R2, etc., L1 being 1 <sup>st</sup> lane on the left from centreline of carriageway, L2 being 2 <sup>nd</sup> lane on the left from centerline and so on | L1                             |
| TextureLeft    | Texture depth of pavement in mm, measured from left wheel path                                                                                                                          | 0.40                           |
| TextureRight   | Texture depth of pavement in mm, measured from left wheel path                                                                                                                          | 0.30                           |
| TextureAverage | Average texture depth measured from left and right wheel paths                                                                                                                          | 0.35                           |
| Speed          | Speed of vehicle in km/h                                                                                                                                                                | 42                             |
| SurveyDate     | 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                        |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| NHNumber      | New National Highway number                                                                                                                                                             | NH0065                         |
| SectionCode   | Code indicating starting and ending locations of section                                                                                                                                | HYD-VIJ (Hyderabad-Vijayawada) |
| StartChainage | Chainage of the start point (in km)                                                                                                                                                     | 0.500                          |
| EndChainage   | Chainage of the end point (in km)                                                                                                                                                       | 1.500                          |
| Direction     | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                              | Increasing                     |
| LaneNumber    | Number of the lane: L1, L2, R1, R2, etc., L1 being 1 <sup>st</sup> lane on the left from centreline of carriageway, L2 being 2 <sup>nd</sup> lane on the left from centerline and so on | L1                             |
| SkidLeft      | Skid resistance of pavement measured as skid number, measured from left wheel path                                                                                                      | 25                             |
| SkidRight     | Skid resistance of pavement measured as skid number, measured from left wheel path                                                                                                      | 24                             |
| SkidAverage   | Average skid resistance measured from left and right wheel paths                                                                                                                        | 24.5                           |
| Speed         | Speed of vehicle in km/h                                                                                                                                                                | 42                             |
| SurveyDate    | 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                            |
| SectionCode        | Code indicating starting and ending locations of section                                                                                                                                | HYD-VIJ<br>(Hyderabad-Vijayawada) |
| Chainage           | Chainage of survey point (in km)                                                                                                                                                        | 0.500                             |
| Direction          | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul>                                                              | Increasing                        |
| LaneNumber         | Number of the lane: L1, L2, R1, R2, etc., L1 being 1 <sup>st</sup> lane on the left from centreline of carriageway, L2 being 2 <sup>nd</sup> lane on the left from centerline and so on | L1                                |
| AirTemperature     | Air temperature recorded in °C                                                                                                                                                          | 33                                |
| SurfaceTemperature | Temperature of the pavement surface, recorded in °C                                                                                                                                     | 39.3                              |
| PeakLoad           | 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                               |

| Field                                   | Description                                                                    | Example |
|-----------------------------------------|--------------------------------------------------------------------------------|---------|
| 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    |
| ElasticModulus BituminousE1             | Elastic modulus of bituminous layer, backcalculated in MPa                     | 3359    |
| Elastic Modulus Granular E2             | Elastic modulus of granular layer, back calculated in MPa                      | 396     |
| Elastic Modulus Sub Grade E3            | Elastic modulus of subgrade, back calculated in MPa                            | 90      |
| Corrected Elastic Modulus Bituminous E1 | Corrected elastic modulus of bituminous layer in MPa                           | 3424    |
| Corrected Elastic Modulus Granular E2   | Corrected elastic modulus of granular layer in MPa                             | 300     |
| Corrected Elastic Modulus Sub Grade E3  | 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     |

| Field                          | Description                                                     | Example  |
|--------------------------------|-----------------------------------------------------------------|----------|
| GSB Layer                      | Thickness of GSB layer in mm                                    | 200      |
| Subgrade CBR                   | CBR of subgrade                                                 | 0.08     |
| BituminousLayerCoefficientA1   | Layer coefficient of the bituminous layer                       | 0.36     |
| BaseLayerCoefficientA2         | Layer coefficient of the base layer                             | 0.17     |
| GranularBaseLayerCoefficientA3 | Layer coefficient of the GSB layer                              | 0.17     |
| Structural Number              | Structural number of the pavement                               | 3.86     |
| Modified Structural Number     | Modified structural number including contribution from subgrade | 4.85     |
| Survey Date                    | Date of survey in the format <DD-MM-YY>                         | 06-05-17 |
| Latitude                       | Latitude of survey point                                        | 9.98897  |
| Longitude                      | Longitude of survey point                                       | 78.02671 |

A sample output is shown below for reference:

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

(table continued...)

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

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

(table continued...)

| Location 8 | Elastic Modulus BituminousE 1 | Elastic Modulus GranularE 2 | Elastic Modulus SubGradeE 3 | Corrected Elastic Modulus BituminousE 1 | Corrected Elastic Modulus GranularE 2 | Corrected ElasticModulus SubGradeE3 | Bituminous Layer | Base Layer | GSB Layer | Subgrade CBR |
|------------|-------------------------------|-----------------------------|-----------------------------|-----------------------------------------|---------------------------------------|-------------------------------------|------------------|------------|-----------|--------------|
| 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 CoefficientA2 | 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<br>(Hyderabad-Vijayawada) |
| Chainage                          | Chainage of the point (in km)                                                                                              | 0.500                             |
| Direction                         | Direction of survey <ul style="list-style-type: none"> <li>Increasing (chainage)</li> <li>Decreasing (chainage)</li> </ul> | 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 Thickness h         | Thickness of concrete slab, measured in mm                                                                                 | 300                               |
| Area of Deflection Basin          | Area of deflection basin, calculated from measured deflections, in cm <sup>2</sup>                                         | 761                               |
| Radius of Relative Stiffness      | Radius of relative stiffness, calculated in mm                                                                             | 823                               |
| NormalizedDeflection1             | Normalized deflection at location 1, in mm                                                                                 | 3.1                               |
| NormalizedDeflection2             | Normalized deflection at location 2, in mm                                                                                 | 2.9                               |
| NormalizedDeflection3             | Normalized deflection at location 3, in mm                                                                                 | 2.4                               |
| NormalizedDeflection4             | 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 in MPa                                                                               | 27                                |
| Flexural strength of concrete fmr | Flexural strength of concrete, calculated in MPa                                                                           | 3.7                               |
| Date Of Testing                   | Date of testing in the format <DD-MM-YY>                                                                                   | 06-05-17                          |
| Latitude                          | Latitude of survey point                                                                                                   | 9.98897                           |
| Longitude                         | Longitude of survey point                                                                                                  | 78.02671                          |

A sample output is shown below for reference:

| NH No  | Section Code | Chain-age | Direction | Lane No. | Air Temperature | Surface Temperature | Peak Load | Deflection 1 | Deflection 2 | Deflection 3 | Deflection 4 | Concrete Slab Thickness |
|--------|--------------|-----------|-----------|----------|-----------------|---------------------|-----------|--------------|--------------|--------------|--------------|-------------------------|
| 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                                 | 28-06-16        | 9.98444  | 78.02934  |
| 684                      | 580                          | 3                        | 3                        | 2                        | 1                        | 246                            | 12051                          | 6                             | 2                                 | 25-06-16        | 9.98341  | 78.03004  |
| 796                      | 1014                         | 3                        | 3                        | 3                        | 2                        | 87                             | 39783                          | 63                            | 6                                 | 28-06-16        | 9.98107  | 78.03078  |
| 761                      | 823                          | 3                        | 3                        | 2                        | 2                        | 131                            | 26118                          | 27                            | 4                                 | 25-06-16        | 9.96328  | 78.04160  |
| 800                      | 1040                         | 3                        | 3                        | 3                        | 2                        | 79                             | 39908                          | 64                            | 6                                 | 28-06-16        | 9.95385  | 78.05255  |
| 789                      | 971                          | 3                        | 3                        | 3                        | 2                        | 107                            | 41290                          | 68                            | 6                                 | 25-06-16        | 9.93102  | 78.05648  |
| 814                      | 1150                         | 3                        | 3                        | 3                        | 2                        | 66                             | 50086                          | 100                           | 7                                 | 28-06-16        | 9.91229  | 78.04961  |
| 826                      | 1257                         | 3                        | 3                        | 3                        | 2                        | 59                             | 64082                          | 164                           | 9                                 | 28-06-16        | 9.89041  | 78.03458  |

## **SECTION 7: DRAFT FORM OF CONTRACT**

**Note:** This draft Agreement is a generic document and shall be modified based on particulars of the DBFOT Project.

## **CONTRACT FOR CONSULTANT'S SERVICES**

Between

---

(Name of Client)

And

---

(Name of Consultant)

Dated:

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## **I. FORM OF CONTRACT**

### **COMPLEX TIME BASED ASSIGNMENTS**

This CONTRACT (hereinafter called the "Contract") is made the \_\_\_\_ day of the \_\_\_\_\_ Month of \_\_\_\_, 20 \_\_\_\_, between, on the one hand \_\_\_\_\_ (hereinafter called the "Client") and, on the other hand, \_\_\_\_\_ (hereinafter called the "Consultants").

*[Note\* : If the Consultants consist of more than one entity, the above should be partially amended to read as follows:*

*"...(hereinafter called the "Client") and, on the other hand, a joint venture consisting of the following entities, each of which will be jointly severally liable to the Client for all the Consultants' obligations under this Contract, namely, \_\_\_\_\_ and \_\_\_\_\_ [hereinafter called "Consultants"]"*

#### **WHEREAS**

- (a) the Client has requested the Consultants to provide certain consulting services as defined in the General Conditions of Contract attached to this Contract (hereinafter called the "Services");
- (b) the Consultants, having represented to the Client that they have the required professional skills, and 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 General Conditions of Contract (hereinafter called "GC")'
- (b) The Special Conditions of Contract (hereinafter called "SC");
- (c) The following Appendices:

[Note: If any of these Appendices are not used, the words "Not Used" should be inserted below next to the title of the Appendix on the sheet attached hereto carrying the title of that Appendix].

|                    |                                               |
|--------------------|-----------------------------------------------|
| <b>Appendix A:</b> | <b>Description of the Services.....</b>       |
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| <b>Appendix M:</b> | <b>Memorandum of Understanding.....</b>                 |

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

- (a) The Consultants shall carry out the Services in accordance with the provisions of the Contract; and
- (b) The Client shall make payments to the Consultants in local currency only 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  
[NAME OF THE CLIENT]

By

(Authorized Representative)

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FOR AND ON BEHALF OF  
[NAME OF THE CONSULTANTS]

By

(Authorized Representative)

[Note: If the Consultants consist of more than one entity, all of these entities should appear as signatures, e.g. in the following manner]

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FOR AND ON BEHALF OF EACH OF THE  
MEMBERS OF THE CONSULTANTS

[Name of the Member]

By

(Authorized Representative)

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*[Name of the Member]*

By

(Authorized Representative)

etc.

## **II. GENERAL CONDITIONS OF CONTRACT**

### **1. General Provisions**

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

#### **1.1 Definitions**

- (a) “Applicable Law” means the laws and any other instruments having the force of law in the Government’s country [or in such other country as may be specified in the Special Conditions of Contract (SC)], as they may be issued and in force from time to time.
- (b) “Contract” means the Contract signed by the Parties, to which these General Conditions of Contract are attached, together with all the documents listed in Clause 1 of such signed Contract;
- (c) “Effective Date” means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1;
- (d) ‘foreign currency’ means any currency other than the currency of the Government;
- (e) ‘GC’ means these General Conditions of Contract;
- (f) “Government” means the Government of Client’s Country;
- (g) ‘Local currency’ means the Indian Rupees;
- (h) “Consultant” wherever mentioned in this Contract Agreement means the “Independent Consultant (IE)” and includes and sub-consultants or Associates engaged by the primary consultant.
- (i) “Member”, in case the Consultants consist of a joint venture of more than one entity, means any of these entities, and “Members” means all of these entities;
- (j) “Party” means the Client or the Consultants, as the case may be, and Parties means both of them;
- (k) “Personnel” means persons hired by the Consultants or by any Sub-Consultants and or Associates as Employees and assigned to the performance of the Services or any part thereof; “Foreign Personnel” means such persons who at the time of being so hired had their domicile outside the Government’s Country, “Local Personnel” means such persons who at the time of being so hired had their domicile inside the Government’s Country; and ‘key personnel’ means the personnel referred to in Clause GC 4.2 (a).
- (l) “SC” means the Special Conditions of Contract by which these General Conditions of Contract may be amended or supplemented;

- (m) "Services" means the work to be performed by the Consultants pursuant to his contract, as described in Appendix A hereto. The scope of work will be strictly as given in various Clauses in TOR. The approach and methodology to be adopted by the Consultant for carrying out the assignment as Independent Engineer may be modified depending on the site requirements and work programme of the Concessionaire after mutual discussions with National Highways & Infrastructure Development Corporation Ltd. (NHIDCL), the Concessionaire and the Independent Engineer. The work plan as indicated by the Consultant may be modified accordingly to the site requirements.
- (n) "Sub-consultant and or Associates " means any entity to which the Consultants subcontract any part of the Services in accordance with the provisions of Clause GC 3.7; and
- (o) "Third Party" means any person or entity other than the Government, the Client, the Consultants or a Sub-consultant.

## **1.2 Relation between the Parties**

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

## **1.3 Law Governing Contract**

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

## **1.4 Language**

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

## **1.5 Headings**

The headings shall not limit, alter or affect the meaning of this Contract.

## **1.6 Notices**

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

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

- 1.6.3 A Party may change its address for notice hereunder by giving the other Party notice of such change pursuant to the provisions listed in the SC with respect to Clause GC 1.6.2.

**1.7 Location**

The Services shall be performed at such locations as are specified in Appendix A hereto and, where the location of a particular task is not so specified, at such locations, whether in Government's Country or elsewhere, as the Client may approve.

**1.8 Authority of Member in Charge**

In case the Consultants consist of a joint venture of more than one entity, the Members hereby authorize the entity specified in the SC to act on their behalf in exercising all the Consultants' rights and obligations towards the Client under this Contract, including without limitation the receiving of instructions and payments from the Client.

**1.9 Authorized Representatives**

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

**1.10 Taxes and Duties**

Unless otherwise specified in the SC, the Consultants, Sub-consultants and Personnel shall pay such taxes, duties, fees and other impositions as may be levied under the Applicable Law. National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) shall reimburse only Goods and service tax on production of project specific proof of payment of Goods and service tax.

**2. Commencement, Completion, Modification and Termination of Contract**

**2.1 Effectiveness of Contract**

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

**2.2 Termination of Contract for Failure to Become Effective**

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

**2.3 Commencement of Services**

The Consultants shall begin carrying out the Services at the end of such time period

after the Effective Date as shall be specified in the SC.

#### **2.4 Expiration of Contract**

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

#### **2.5 Entire Agreement**

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

#### **2.6 Modification**

Modification of the terms and conditions of this Contract, including any modification of the scope of the Services, may only be made by written agreement between the Parties as the case may be, has been obtained. Pursuant to Clause GC 7.2 hereof, however, each Party shall give due consideration to any proposals for modification made by the other Party.

#### **2.7 Force Majeure**

##### **2.7.1 Definition**

- (a) For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party, and which makes a Party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial action ( except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.
- (b) Force Majeure shall not include (i) any event which is caused by the negligence or intentional action of a party or such Party's 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.

##### **2.7.2 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.

#### **2.7.3 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.

#### **2.7.4 Extension of Time**

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

#### **2.7.5 Payments**

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

#### **2.7.6 Consultation**

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

### **2.8 Suspension**

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.

### **2.9 Termination**

### 2.9.1 By the Client

The Client may, by not less than thirty (30) days' written notice of termination to the Consultants (except in the event listed in paragraph (f) below, for which there shall be a written notice of not less than sixty (60) days), such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (h) of this Clause GC 2.9.1, 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 2.8 hereinabove, within thirty (30) days of receipt of such notice of suspension or within such further period as the Client may have subsequently approved in writing;
- (b) if the Consultants become (or, if the Consultants consist of more than one entity, if any of their Members becomes) insolvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary;
- (c) if the Consultants fail to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause GC 8 hereof;
- (d) if the Consultants submit to the Client a statement which has a material effect on the rights, obligations or interests of the Client and which the Consultants know to be false;
- (e) if, as the result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or
- (f) if the Client, in its sole discretion and for any reason whatsoever, decides to terminate this Contract.
- (g) if the consultant, in the judgment of the Client has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. For the purpose of this clause:

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

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

- (h) if Concessionaire represents to National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) that the Consultant is not discharging his duties in a fair, efficient and diligent manner and if the

dispute remains unresolved, National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) may terminate this contract.

#### **2.9.2 By the Consultants**

The Consultants 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 GC 2.9.2, terminate this Contract:

- (a) if the Client fails to pay any money due to the Consultants pursuant to this Contract and not subject to dispute pursuant to Clause 8 hereof within forty-five (45) days after receiving written notice from the Consultants that such payment is overdue;
- (b) if the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Consultants may have subsequently approved in writing) following the receipt by the Client of the Consultants' notice specifying such breach;
- (c) if, as the result of Force Majeure, the 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 GC 8 hereof.

#### **2.9.3 Cessation of Rights and Obligations**

Upon termination of this Contract pursuant to Clauses GC 2.2 or GC 2.9 hereof, or upon expiration of this Contract pursuant to Clause GC 2.4 hereof, all rights and obligations of the Parties hereunder shall cease, except:

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

#### **2.9.4 Cessation of Services**

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

### **2.9.5 Payment upon Termination**

Upon termination of this Contract pursuant to Clauses GC 2.9.1 or GC 2.9.2 hereof, the Client shall make the following payments to the Consultants (after offsetting against these payments any amount that may be due from the Consultant to the Client):

- (a) remuneration pursuant to Clause GC 6 hereof for Services satisfactorily performed prior to the effective date of termination;
- (b) reimbursable expenditures pursuant to Clause GC 6 hereof for 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 Clause GC 2.9.1 hereof, reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract including the cost of the return travel of the Consultants' personnel and their eligible dependents.

### **2.9.6 Disputes about Events of Termination**

If either Party disputes whether an event specified in paragraphs (a) through (e) of Clause GC 2.9.1 or in Clause GC 2.9.2 hereof has occurred, such Party may, within forty-five (45) days after receipt of notice of termination from the other Party, refer the matter to arbitration pursuant to Clause GC 8 hereof, and this Contract shall not be terminated on account of such event except in accordance with the terms of any resulting arbitral award.

## **3. Obligation of the Consultants**

### **3.1 General**

#### **3.1.1 Standard of Performance**

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

#### **3.1.2 Law Governing Services**

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

- 3.1.3 In case of lapses on their part/deficiencies in services provided under this contract, the penal actions against Independent Engineer and concerned key personnel, shall be taken in accordance with the provisions as stipulated under **Appendix-N**.

## **3.2 Conflict of Interests**

### **3.2.1 Consultants Not to Benefit from Commissions, Discounts, etc.**

The Remuneration of the Consultants pursuant to Clause GC 6 hereof shall constitute the Consultants' sole remuneration in connection with this Contract or the Services and, subject to Clause GC 3.2.2 hereof, the Consultants shall not accept for their own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations hereunder, and the Consultants shall use their best efforts to ensure that any Sub- consultants and or Associates, as well as the Personnel and agents of either of them, similarly shall not receive any such additional remuneration.

- 3.2.2 If the Consultants, as part of the Services, have the responsibility of advising the Client on the procurement of goods, works or services, the Consultants shall comply with any applicable procurement guidelines of the Client (National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) )and or Associates Bank or of the Association, as the case may be, and other funding agencies and shall at all times exercise such responsibility in the best interest of the Client. Any discounts or commissions obtained by the Consultants in the exercise of such procurement responsibility shall be for the account of the Client.

### **3.2.3 Consultants and Affiliates Not to engage in Certain Activities**

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

### **3.2.4 Prohibition of Conflicting Activities**

The Consultants shall not engage, and shall cause their Personnel as well as their Sub-consultants and or Associates and their Personnel not to engage, either directly or indirectly, in any of the following activities:

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

### **3.3 Confidentiality**

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

### **3.4 Liability of the Consultants**

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

### **3.5 Insurance to be Taken Out by the Consultants**

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

### **3.6 Accounting, Inspection and Auditing**

The Consultants (i) shall keep accurate and systematic accounts and records in respect of the Services, hereunder, in accordance with internationally accepted accounting principles and in such form and detail as will clearly identify all relevant time charges and cost, and the bases thereof (including such bases as may be specifically referred to in the SC); (ii) shall permit the Client or its designated representative periodically, and up to one year from the expiration or termination of this Contract, to inspect the same and make copies thereof as well as to have them audited by auditors appointed by the Client; and (iii) shall permit the client to inspect the Consultant's accounts and records relating to the performance of the Consultant and to have them audited by auditors appointed by the client.

### **3.7 Consultants' Actions Requiring Client's Prior Approval**

The Consultants shall obtain the Client's prior approval in writing before taking any of the following actions:

- (a) appointing such members of the Personnel as are listed in Appendix C ("Consultants' Sub-consultants' Key Personnel") merely by title but not by name;
- (b) entering into a subcontract for the performance of any part of the Services, it being understood (i) that the selection of the Sub-consultant and the terms and conditions of the subcontract shall have been approved in writing by the Client prior to the execution of the subcontract, and (ii) that the Consultants shall remain fully liable for the performance of the Services by the Sub- consultant and its Personnel pursuant to this Contract; and

- (c) any other action that may be specified in the SC

### **3.8 Reporting Obligations**

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

### **3.9 Documents Prepared by the Consultants to Be the Property of the Client**

All plans, drawings, specifications, designs, reports, other documents and software prepared by the Consultants for the Client under this Contract shall become and remain the property of the Client, and the Consultants shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Client, together with a detailed inventory thereof. The Consultants may retain a copy of such documents and software. Restrictions about the future use of these documents and software, if any, shall be specified in the SC.

### **3.10 Equipment and Materials Furnished by the Client**

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

## **4. Consultants' Personnel and Sub-consultants and or Associates**

### **4.1 General**

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

### **4.2 Description of Personnel**

- (a) The titles, agreed job descriptions, minimum qualification and estimated periods of engagement in the carrying out of the Services of each of the Consultants' Key Personnel are described in Appendix C. If any of the Key Personnel has already been approved by the clients his/her name is listed as well.
- (b) If required to comply with the provisions of Clause GCC 3.1.1 hereof, adjustments with respect to the estimated periods "of engagement of Key Personnel set forth in Appendix C may be made by the Consultants by written notice to the Client, provided (i) that such adjustments shall not alter the originally estimated period of engagement of any individual by more than 10% or one week, whichever is larger, and (ii) that the aggregate of such adjustments shall not cause payments under this Contract to exceed the

ceilings set forth in Clause GC 6.1(b) of this Contract. Any other such adjustments shall only be made with the Client's written approval.

- (c) If additional work is required beyond the scope of the Services specified in Appendix A, the estimated periods of engagement of Key Personnel set forth in Appendix C may be increased by agreement in writing between the Client and the Consultants, provided that any such increase shall not, except as otherwise agreed, cause payments under this Contract to exceed the ceilings set forth in Clause GC 6.1 (b) of this Contract.

#### 4.3 **Approval of Personnel**

The Key Personnel i.e., Professional Staff and Sub-consultants listed by title as well as by name in Appendix C are hereby approved by the Client. In respect of other Key Personnel which the Consultants propose to use in the carrying out of the Services, the Consultants shall submit to the client for review and approval a copy of their biographical data and (in the case of Key personnel to be used within the country of the Government) a copy of a satisfactory medical certificate in the form attached hereto as Appendix D. If the Client does not object in writing (stating the reasons for the objection) within thirty (30) calendar days from the date of receipt of such biographical data and (if applicable) such certificate, such Key Personnel shall be deemed to have been approved by the Client.

#### 4.4 **Working Hours, Overtime, Leave, etc.**

- (a) Working hours and holidays for Key Personnel are set forth in Appendix E hereto. To account for travel time, foreign Personnel carrying out Services inside the Government's country shall be deemed to have commenced (or finished) work in respect of the Services such number of days before their arrival in (or after their departure from) the Government's country as is specified in Appendix E hereto.
- (b) The Personnel of all types engaged by Consultant to provide Services on this Contract shall not be entitled to be paid for overtime nor to take paid sick leave or vacation leave **except as specified in Appendix E** hereto, and except as specified
- (c) In such Appendix, the Consultants' remuneration shall be deemed to cover these items. All leave to be allowed to the Personnel is included in the staff-months of service set for in **Appendix C**. Any taking of leave by Personnel shall be subject to the prior approval by the Client and the Consultants shall ensure that absence for leave purposes will not delay the progress and adequate supervision of the Services.
- (d) All Key personnel and sub professional staff of the Independent Engineer shall use the Aadhaar based biometric attendance/ Geo-tagged selfie-based attendance system for marking their daily attendance. Aadhaar based Biometric attendance/ Geo-tagged selfie-based attendance shall be marked at least once a day and anytime during the day. One Aadhaar based biometric attendance/ Geo-tagged selfie based attendance system shall be installed by the

Independent Engineer at its own cost at the site office and design office in order to facilitate the attendance marking. More systems can be installed near the project highway upto a maximum of one system per 50 km in order to encourage frequent visit of Project Highway by Key Personnel and Sub-Professional Staff. A copy of monthly Aadhaar based Biometric attendance/ Geo-tagged selfie-based attendance records shall be attached with Monthly Status Report. Proper justification shall be provided for cases of absence of key personnel/ sub-professional staff which do not have prior approval from Project Director of Concerned stretch. Independent Engineer have to provide a certificate that all key personnel as envisaged in the Contract Agreement has been actually deployed in the project.

- (e) Independent Engineer will intimate concerned Project Director/ Project incharge immediately after establishing its site office regarding installation of Aadhaar based Biometric attendance/ Geo-tagged selfie based attendance system and complete address of its site office.

#### **4.5 Removal and/or Replacement of Personnel**

Removal and/or replacement of Key Personnel shall be regulated as under:

- 4.5.1** In case notice to commence services pursuant to Clause 2.1 of this Contract is not ordered by Client within 120 days of signing of contract the key personnel can excuse themselves on valid grounds, e.g., selection on some other assignment, health problem developed after signing of contract, etc. In such a case no penalty shall be levied on the Firm or on the person concerned. The firm shall however be asked to give a replacement by an equal or better scoring person, whenever mobilization is ordered.
- 4.5.2** In case notice to commence services is given within 120 days of signing of contract the, the Authority expects all the Key Personnel specified in the Proposal to be available during implementation of the Agreement. The Authority will not consider any substitution of Key Personnel except under compelling circumstances beyond the control of the Consultant and the concerned Key Personnel. Such substitution shall be limited to not more than three Key Personnel subject to equally or better qualified and experienced personnel being provided to the satisfaction of the Authority. Replacement of the Team Leader will not normally be considered and may lead to disqualification of the Applicant or termination of the Agreement. Replacement of one Key Personnel shall be permitted subject to reduction of remuneration equal to 5 % (five per cent) of the total remuneration specified for the Key Personnel who is proposed to be replaced. In case of second replacement the reduction in remuneration shall be equal to 10% (ten per cent) and for third and subsequent replacement, such reduction shall be equal to 15% (fifteen per cent) If the consultant finds that any of the personnel had made false representation regarding his qualification and experience, he may request the Employer for replacement of the personnel. There shall be no reduction in remuneration for such replacement. The replacement shall however be of equal or better score. The personnel so replaced shall be debarred from future projects for 2 years. The maximum age limit of replaced key personnel shall be 65 years as on the date of submission of proposal for such replacement.

#### **4.5.4 Replacement after original contract period is over:**

There shall be no limit on the replacements and no reduction in remunerations shall be made. The replacement shall however be of equal or better score.

**4.5.5** If the Employer (i) finds that any of the Personnel has committed serious misconduct or has been charged with having committed a criminal action or (ii) has reasonable ground to be dissatisfied with the performance of any of the Personnel, then the consultant shall, at the Employer's written request specifying the grounds therefore, forthwith provide a replacement with qualifications and experience acceptable to him. For such replacement there will be no reduction in remuneration.

**4.5.6** If any member of the approved team of a consultant engaged by National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) leaves that consultant before completion of the job, he shall be barred for a period of 6 months to 24 months from being engaged as a team member of any other consultant working (or to be appointed) for any other National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) / MoRTH projects. The maximum age limit of replaced key personnel shall be 65 years as on the date of submission of proposal for such replacement.

#### **4.6 Resident Team Leader and Coordinator**

The person designated as the Team Leader of the Consultant's Personnel shall be responsible for the coordinated, timely and efficient functioning of the Personnel. In addition, the Consultant shall designate a suitable person from its Head Office as Project Coordinator who shall be responsible for day-to-day performance of the Services.

### **5. Obligations of the Client**

#### **5.1 Assistance and Exemptions**

Unless otherwise specified in the SC, the Client shall use its best efforts to ensure that the Government shall:

- (a) provide the Consultants, Sub-consultants and Personnel with work permits and such other documents as shall be necessary to enable the Consultants, Sub-consultants or Personnel to perform the Services;
- (b) assist for the Personnel and, if appropriate, their eligible dependents to be provided promptly with all necessary entry and exit visas, residence permits, exchange permits and any other documents required for their stay in Government's country;
- (c) facilitate prompt clearance through customs of any property required for the Services and of the personal effects of the Personnel and their -eligible dependents;
- (d) issue to officials, agents and representatives of the Government all such instructions as may be necessary or appropriate for the prompt and effective implementation of the Services;
- (e) assist the Consultants and the Personnel and any Sub-consultants and or Associates employed by the Consultants for the Services from any requirement to register or obtain any permit to practice their profession or to establish

themselves either individually or as a corporate entity according to the Applicable Law;

- (f) grant to the Consultants, any Sub-consultants and or Associates and the Personnel of either of them the privilege, pursuant to the Applicable Law, of bringing into Government's country reasonable amounts of foreign currency for the purposes of the Services or for the personal use of the Personnel and their dependents and of withdrawing any such amounts as may be earned therein by the Personnel in the execution of the Services: and
- (g) Provide to the Consultants, Sub-consultants and or Associates and Personnel any such other assistance as may be specified in the SC.

## **5.2 Access to Land**

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

## **5.3 Change in the Applicable Law**

If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost or reimbursable expenses incurred by the Consultants in performing the Services, then the remuneration and reimbursable expenses otherwise payable to the Consultants under this Contract shall be increased or decreased accordingly by agreement between the Parties hereto, and corresponding adjustments shall be made to the ceiling amounts specified in Clause GC 6.1(b).

## **5.4 Services, Facilities and Property of the Client**

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

## **5.5 Payment**

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

## **5.6 Counterpart Personnel**

- (a) If so provided in Appendix F hereto, the Client shall make available to the Consultants, as and when provided in such Appendix F, and free of charge, such counterpart personnel to be selected by the Client, with the Consultants' advice, as shall be specified in such **Appendix F**. Counterpart personnel shall work under the exclusive direction of the Consultants. If any member of the counterpart personnel fails to perform adequately any work assigned to him by the Consultants which are consistent with the position occupied by such - member, the Consultants may request the replacement of such member, and the Client shall not unreasonably refuse to act upon such request.
- (b) If counterpart personnel are not provided by the Client to the Consultants as and when specified in Appendix F, the Client and the Consultants shall agree on (i) how the affected part of the Services shall be carried out, and (ii) the additional payments, if any, to be made by the Client to the Consultants as a result thereof pursuant to Clause GC 6.1(c) hereof.

## **6. Payments to the Consultants**

### **6.1 Cost Estimates; Ceiling Amount**

- (a) An estimate of the cost of the Services payable in local currency is set forth in Appendix G .
- (b) Except as may be otherwise agreed under Clause GC 2.6 and subject to Clause GC 6.1(c), payments under this Contract shall not exceed the ceilings in local currency specified in the SC. The Consultants shall notify the Client as soon as cumulative charges incurred for the Services have reached 80% of either of these ceilings.
- (c) Notwithstanding Clause GC 6.1(b) hereof, if pursuant to clauses GC 5.3,5.4 or 5.6 hereof, the Parties shall agree that additional payments in local currency, shall be made to the Consultants in order to cover any necessary additional expenditures not envisaged in the cost estimates referred to in Clause GC 6.1(a) above, the ceiling or ceilings, as the case may be, set forth in Clause GC 6.1 (b) above shall be increased by the amount or amounts, as the case may be, of any such additional payments.

### **6.2 Remuneration and Reimbursable Expenditures**

- (a) Subject to the ceilings specified in Clause GC 6.1 (b) hereof, the Client shall pay to the Consultants (i) remuneration as set forth in Clause GC 6.2(b), and (ii) reimbursable expenditures as set forth in Clause GC 6.2(c). If specified in the SC, said remuneration shall be subject to price adjustment as specified in the SC.
- (b) Remuneration for the Personnel shall be determined on the basis of time actually spent by such Personnel in the performance of the Services after the date determined in accordance with Clause GC 2.3 and Clause SC 2.3 (or such

other date as the Parties shall agree in writing) (including time for necessary travel via the most direct route) at the rates referred to, and subject to such additional provisions as are set forth, in the SC.

- (c) Reimbursable expenditures actually and reasonably incurred by the Consultants in the performance of the Services, as specified in the SC .

Notwithstanding anything to the contrary stated in the GCC and SCC, it shall be mandatory to deploy the key personnel and sub-professional as per the Man-Months Input specified in the Terms of Reference.

Inadequate deployment of key personnel and sub-professional shall lead to deduction in the monthly payment as per following table. The key personnel and sub- professional shall be considered to be inadequately deployed if he/she is not present for at least 90% **(Expect the leaves as specified in III. Special Conditions of the Contract, IV. Appendices-Appendix E: Hours of Work for Key Personnel)** Conditions. of the time stipulated in the month, as per the Man Months Input in the Terms of Reference and the Deployment Schedule proposed by the firm.

| Sr. No. | Personnel                            | % reduction in monthly payment |
|---------|--------------------------------------|--------------------------------|
| 1       | Team Leader cum Senior Tunnel Expert | 20%                            |
| 2       | Resident cum Highway Engineer        | 25%                            |
| 3       | Other Key Personnel                  | 20%                            |
| 4       | Sub- Professional Staff              | 15%                            |

For avoidance of doubt, in case the Team Leader cum Senior Tunnel Expert has not been made available for 90% of the stipulated time in the month, then only 80% of the monthly payment shall be released. In the case of “Other Key Personnel (Sr. No. 3)” and “Sub – Professional Staff (Sr. No. 4)”, the average availability across the group shall be considered for calculation.

**Note** - Consultants have to provide a certificate that all key personnel as envisaged in the Contract Agreement has been actually deployed in the project. They have to submit the proof of Aadhaar based Biometric attendance/ Geo-tagged selfie-based attendance at the time of submission of bills to the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) .

### 6.3 Currency of Payment

- (a) Local currency payments shall be made in the currency of the Government.
- (b) The SC shall specify which items of remuneration and reimbursable expenditures shall be paid, respectively, in local currency,

### 6.4 Mode of Billing and Payment

Billing and payments in respect of the Services shall be made as follows:

- (a) The Client shall cause to be paid to the Consultants an interest bearing advance payment as specified in the SC, and as otherwise set forth below. The advance

payment will be due after provision by the Consultants to the Client of a bank guarantee by a bank acceptable to the Client in an amount (or amounts) and in a currency (or currencies) specified in the SC, such bank guarantee (I) to remain effective until the advance payment has been fully set off as provided in the SC, and (ii) to be in the form set forth in Appendix I hereto or in such other form as the Client shall have approved in writing.

- (b) As soon as practicable and not later than fifteen (15 days) after the end of each calendar month during the period of the Services, the Consultants shall submit to the Client, in duplicate, itemized statements, accompanied by copies of receipted invoices, vouchers and other appropriate supporting materials, of the amounts payable pursuant to Clauses GC 6.3 and 6.4 for such month. Monthly statements shall be submitted in respect of amounts payable in local currency. Each such separate monthly statement shall distinguish that portion of the total eligible costs which pertains to remuneration from that portion which pertains to reimbursable expenditures.
- (c) 75% of bill raised by the consultant shall be paid within 72 Hrs and remaining bill may be paid after due scrutiny. The Client shall cause the payment of the Consultants periodically as given in schedule of payment above within thirty (30) days after the receipt by the Client of bills with supporting documents.
- (d) Only such portion of a monthly statement that is not satisfactorily supported may be withheld from payment. Should any discrepancy be found to exist between actual payment and costs authorized to be incurred by the Consultants, the Client may add or subtract the difference from any subsequent payments. Interest at the rate specified in the SC shall become payable as from the above due date on any amount due by, but not paid on, such due date.
- (e) The final payment under this Clause shall be made only after the final report and a final statement, identified as such, shall have been submitted by the Consultants and approved as satisfactory by the Client. The Services shall be deemed completed and finally accepted by the Client and the final report and final statement shall be deemed approved by the Client as satisfactory ninety (90) calendar days after receipt of the final report and final statement by the Client unless the Client, within such ninety (90)-day period, gives written notice to the Consultants specifying in detail deficiencies in the Services, the final report or final statement. The Consultants shall thereupon promptly make any necessary corrections, and upon completion of such corrections, the foregoing process shall be repeated. Any amount which the Client has paid or caused to be paid in accordance with this Clause in excess of the amounts actually payable in accordance with the provisions of this Contract shall be reimbursed by the Consultants to the Client within thirty, (30) days after receipt by the Consultants of notice thereof. Any such claim by the Client for reimbursement must be made within twelve (12) calendar months after receipt by the Client of a final report and a final statement approved by the Client in accordance with the above.

- (f) All payments under this Contract shall be made to the account of the Consultants specified in the SC.
- (g) Independent Engineer will make payment of salary to all key personnel in their respective bank accounts through electronic mode only. No cash transaction wrt salary will be made. Proof of salary transfer through electronic mode shall be submitted by the Independent Engineer with each Bill.

## **7. Fairness and Good Faith**

### **7.1 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.

### **7.2 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 GC 8 hereof.

## **8. Settlement of Disputes**

### **8.1 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.

### **8.2 Dispute Resolution**

8.2.1 Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the “**Dispute**”) shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure set forth in Clause 8.3.

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

### **8.3 Conciliation**

In the event of any Dispute between the Parties, either Party may call upon [Chairman of National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) ] and the Chairman of the Board of Directors of the Consultant or a substitute thereof for amicable settlement, and upon such reference, the said persons shall meet no later than 10(ten) days from the date of reference to discuss and attempt to amicably resolve the

Dispute. If such meeting does not take place within the 10(ten) day period or the Dispute is not amicably settled within 15(fifteen) days of the meeting or the Dispute is not resolved as evidenced by the signing of written terms of settlement within 30 (thirty) days of the notice in writing referred to in Clause 8.2.1 or such longer period as may be mutually agreed by the Parties, either Party may refer the Dispute to arbitration in accordance with the Provisions of Clause 8.4.

#### **8.4 Arbitration**

8.4.1. Any Dispute which is not resolved amicably by conciliation, as provided in Clause 8.3, shall be finally decided by reference to arbitration by an Arbitral Tribunal appointed in accordance with Clause 8.4.2. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the "Rules"), or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996 as amended. The venue of such arbitration shall be [New Delhi] and the language of arbitration proceedings shall be English.

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

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

#### **8.4.3 Substitute Arbitrator**

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

#### **8.4.4 Qualifications of Arbitrator**

The sole arbitrator selected pursuant to Clause 8.4.1 hereof shall be expert with extensive experience in relation to the matter in dispute.

8.4.5 The Arbitrators shall make a reasoned award (the "Award"). Any Award made in any arbitration held pursuant to this Clause 8 shall be final and binding on the Parties as from the date it is made, and the Consultant and the Authority agree and undertake to carry out such Award without delay.

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

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

#### **8.4.8 Miscellaneous**

In any arbitration proceeding hereunder:

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

| S.No. | Particulars of Fees and Expenses                                                                                                               | Maximum amount payable per case                                                                                                                                                                                                                                                                                                                                                        |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Fee                                                                                                                                            | (i) Rs. 25,000/- per day<br>(ii) 25% extra on fee at (i) above in case of fast-track procedure as per Section -29 (B) of A&C Act;<br><br>Or<br><br>10% extra on fee at (i) above if award is published within 6 months from date of entering the reference by AT;<br><br>Alternatively, the Arbitrator may opt for a lump –sum fee of Rs. 5.00 Lakh per case including counter claims. |
| 2     | Reading charges- One Time                                                                                                                      | Rs 25,000/- per case including counter claims.                                                                                                                                                                                                                                                                                                                                         |
| 3     | One –time charges for Secretarial Assistance and Incidental charges (telephone, fax, postage ets.)                                             | Rs. 25,000/- per case                                                                                                                                                                                                                                                                                                                                                                  |
| 4     | One time Charges for publishing/declaration of the award                                                                                       | Rs. 40,000/-                                                                                                                                                                                                                                                                                                                                                                           |
| 5     | Other expenses (As per actual against bills subject to ceiling given below)                                                                    |                                                                                                                                                                                                                                                                                                                                                                                        |
|       | Travelling expenses                                                                                                                            | Economy class (by air), First class AC (by train) and AC Car (by road)                                                                                                                                                                                                                                                                                                                 |
|       | Lodging and Boarding                                                                                                                           | a)Rs. 15,000/-per day (in metro cities); or<br>1. Rs. 8000 per day (in other cities); or<br>2. Rs. 5,000/- per day if any Arbitrator makes their own arrangements.                                                                                                                                                                                                                     |
| 6.    | Local travel                                                                                                                                   | Rs. 2000 /- per day                                                                                                                                                                                                                                                                                                                                                                    |
| 7     | Extra charges for days other than meeting days (maximum for 2 X ½ days)                                                                        | Rs. 5000 /- per day for outstation Arbitrator                                                                                                                                                                                                                                                                                                                                          |
| Note  | 1 Lodging boarding and travelling expenses shall be allowed only for those arbitrator who is residing 100 kms. Away from the venue of meeting, |                                                                                                                                                                                                                                                                                                                                                                                        |
|       | 2 Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad shall be considered as Metro cities.                                                |                                                                                                                                                                                                                                                                                                                                                                                        |

In exceptional cases, such as cases involving major legal implications/wider ramifications/higher financial stakes etc. a special fee structure could be fixed in consultation with the Contractor/Supervision Consultants and with the specific approval of the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) before appointment of the Arbitrator,

## **9. Fake CV**

If any case of fake/incorrect/inflated CV is found, it shall be dealt with very severely and would result in all possible penal action including blacklisting from future projects of National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) . This would also apply even when the consulting firm is not successful in getting the assignment. In case, the information contained in the CV for the duration in which the key personnel was employed by the firm proposing his candidature is found incorrect/fake/inflated at any stage, the consultancy firms shall have to refund the salary and perks drawn including interest @12% per annum in respect of the person apart from other consequences. In addition to above, 10% of salary and perks to be refunded shall be recovered from the Firm as penalty.

### III. SPECIAL CONDITIONS OF CONTRACT

#### GC Clause

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

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

1.4 The language is: English

1.6.1 The addresses are:

Client: NHIDCL, 2nd Floor, Tower-A  
World Trade Center, Nauroji Nagar  
New Delhi-110029

Attention: Dy. General Manager (Tech),  
Srinagar Geographical Division

Cable address: \_\_\_\_\_

Telephone: +91-11-26768908

Email: gmt8@nhidcl.com

Consultants:

Attention:

Cable address \_\_\_\_\_

Telex \_\_\_\_\_

Facsimile \_\_\_\_\_

*[Note' : Fill in the Blanks]*

1.6.2 Notice will be deemed to be effective as follows:

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

1.8 The Member in Charge is:

*(Note: If the Consultants consist of a joint venture of more than one entity, the name of the entity whose address is specified in SC 1.6.1 should be inserted here. If the Consultants consist of one entity, this Clause 1.8 should be deleted from the SC)*

1.9 The Authorised Representatives are:

For the Client:

For the  
Consultants:

\_\_\_\_\_  
\_\_\_\_\_

1.10 The Consultants, Sub-consultants and the Personnel shall pay the taxes, duties, fees, levies and other impositions levied under the existing, amended or enacted laws 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:

i) Approval of the Contract by the client

2.2 The time period shall be four months or such other time period as the parties may agree in writing.

2.3 The time period shall be one month or such other time period as the Parties may agree in writing.

2.4 The time period shall be 36 months

### **3.4 Limitation of the Consultants' Liability towards the Client**

(a) Except in case of gross 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) Consultant will maintain at its expenses; Professional Liability Insurance 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 period" (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 National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) in a joint venture or 'in association', the policy must be procured and provided to National Highways & Infrastructure Development Corporation Ltd. (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 National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) . The insurance company may provide an undertaking in this regard.
- (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.
  - (c) Professional Liability Insurance may be accepted for initially one year which shall be extended annually for five years. PLI shall be uniformly taken for a period of five years.

### **3.5 The risks and the coverage shall be as follows**

- (a) Third Party motor vehicle liability insurance as required under Motor Vehicles Act, 1988 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, of Rs. 1.0 million for the period of consultancy.
- (c) Professional liability insurance as per 3.4 (a) (ii) of SC of the consultancy, with a minimum coverage equal to estimated remuneration and reimbursable.
- (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
- (e) Insurance against loss of or damage to (i) equipment purchased in whole or in part with funds provided under this Contract, (ii) the Consultants' property used in the performance of the Services, and (iii) any documents prepared by the Consultants in the performance of the Services.

### **3.7(c) The other actions are**

- "(i) taking any action under a civil works contract designating the Consultants as "Engineer", for which action, pursuant to such civil works contract, the written approval of the Client as "Employer" is required".

- 3.9 The Consultants shall not use these documents for purposes unrelated to this Contract without the prior written approval of the Client.
- 4.6 "The person designated as Team Leader cum Senior Tunnel Expert in Appendix C shall serve in that capacity, as specified in Clause GC 4.6."
- 6.1(b) The ceiling in local currency is: \_\_\_\_\_
- 6.2(a) "Payments for remuneration and reimbursable items made in accordance with Clause GC 6.2 (a) in local currency shall be adjusted as follows :
- i) Consultants shall be paid billing rates for services rendered by the personnel of all categories namely (i) key Personnel; (ii) sub-Professional personnel and (iii) Support staff on man-month basis . Billing rates of remaining items of the financial proposal, namely (i) transportation, (ii) Duty travel to site (iii) Office Rent, (iv) office supplies communication etc (v) reports & document printing and (vi) survey equipment etc shall be worked out month wise as per actual expenditure. Beginning 13<sup>th</sup> months from the commencement of services, billing rates shall be increased to cover all items of contract i.e. remuneration, vehicle hire, office rent, consumables, furniture etc @ 5% every 12 months. However, for evaluation and award of the Bid proposals, the quoted initial rate (as applicable for first 12 months from commencement of services) shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates. All payments shall be made in Indian Rupees and shall be subjected to applicable Indian laws withholding taxes if any.
- (ii) Remuneration paid pursuant to the rates set forth in Appendix G shall be adjusted every twelve (12) months (and, the first time, with effect for the billing rates earned in the 13<sup>th</sup> calendar month after the commencement of services) by 5% every 12month for personnel

Notwithstanding any other provisions in the agreement in this regard, this provision will prevail and override any other provision to the contrary in this agreement.

- 6.2(b)
- (i) (1) Payment of Independent Engineer shall be released on approval of the monthly reports. Report shall be approved by the Authority only if it includes all the sections prescribed in the format and submitted as per specified timelines.
- (2) Payment shall be released as per rates quoted in Appendix C3- Breakup of Local currency costs
- (3) For equipment-based road inspection to be conducted in O&M phase, payment shall be released as per actual use of equipment on road and rates quoted in Appendix C3- Breakup of Local currency costs.
- (4) If any of the report is found to be misleading or containing incorrect information as determined by the Authority, 10% of payment linked to that report shall be deducted as penalty
- (5) It is understood (i) that the remuneration rates shall cover (A) such salaries and allowances as the Consultants shall have agreed to pay to the Personnel as well as factors for social charges and overhead, and (B) the cost of backstopping by home office staff not included in the Personnel listed in Appendix C, and (C) the Consultants' fee; (ii) that bonuses or other means of profit-sharing shall not be allowed as an element of overhead, and (iii) that any rates specified for persons not yet appointed shall be provisional and shall be subject to revision, with the written approval of the Client, once the applicable salaries and allowances are known.

- (6) Remuneration for periods of less than one month shall be calculated on an hourly basis for actual time spent in the Consultants' home office and directly attributable to the Services (one hour being equivalent to 1/240th of a month) and on a calendar-day basis for time spent away from home office (one day being equivalent to 1/30th of a month).
- 6.2(b)(ii) The rates for local Personnel are set forth in Appendix G
- 6.3(b)(i) Remuneration for local Personnel shall be paid in local currency.
- 6.4(a) The following provisions shall apply to the interest-bearing advance payment and the advance payment guarantee:
- 1) An advance payment of 10% of the contract price in proportion to the quoted Indian currency (INR) in the bid shall be made within 60 days after receipt and verification of advance payment bank guarantee. The advance payment will be set off by the Client in equal instalments against the statements for the first 12 months of the Service until the advance payment has been fully set off.
  - 2) The bank guarantee shall be in the amount of the advance payment
  - 3) Interest rate shall be 10% per annum (on outstanding amount) for local currency.
- 6.4 (d) The interest rate is 6% per annum for local currency.
- 6.4(e) The accounts are:
- For local currency: \_\_\_\_\_

[Note: Insert account number, type of account and name and address of the Bank]

#### **IV. APPENDICES**

##### **Appendix A: Description of the Services**

*[Give detailed descriptions of the Services to be provided; dates for completion of various tasks, place of performance for different tasks; specific tasks to be approved by Client, etc.]*

**Details as per TOR**

## **Appendix B: Reporting Requirements**

*[List format, frequency, contents of reports and number of copies; persons to receive them; dates of submission, etc. If no reports are to be submitted, state here "Not applicable".]*

**Please refer TOR**

## **Appendix C: Key Personnel and Sub-consultants**

[List under:     *C-1     Titles [and names, if already available], detailed job descriptions and minimum qualifications. Experience of Personnel to be assigned to work in India, and staff-months for each.*

*C-2     Same information as C-1 for Key local Personnel.*

*C-3     Same as C-1 for Key foreign Personnel to be assigned to work outside India.*

*C-4     List of approved Sub-consultants [if already available]; same information with respect to their Personnel as in C-1 through C-4)*

## **Appendix D: Medical Certificate**

*[Show here an acceptable form of medical certificate for foreign Personnel to be stationed in India. If there is no need for a medical certificate, state here: "Not applicable. "]*

### **Appendix E: Hours of Work for Key Personnel**

The Consultants Key personnel and all other Professional / Sub Professional / Support Staff / Sub-Consultancy personnel shall work 6 days (Mondays through Saturday) every week and observe the Gazetted Holidays of Government of India as Holidays. The Consultant shall work as per the work program of the concessionaire. In this context in case the work plan of the Consultant needs suitable modifications, the same shall be carried out and submitted to the client for consideration. The Consultants hours of work normally shall match with that of Contractor's activities on the site. No extra remuneration shall be claimed or paid for extra hours of work required in the interest of Project completion.

In addition, casual leave for 12 days shall be permitted in a year to each Key Personnel/ Sub-Professional with prior intimation to the Authority. Out of this, a maximum of 3 CLs can be availed either separately or together in a quarter and the period of the CLs would be counted as Key Personnel / Sub-professional being on duty.

## **Appendix F: Duties of the Client**

1. Access to the quality control laboratory for performing various types of tests, which will be provided by the concessionaire including the testing personnel.
2. To provide Concessionaire's RFP, Bid submission, Concession Agreement, Data and information for field surveys and investigations
3. To ensure availability of the Detailed Work plan and Programme for Design and Construction of Project Highways from Concessionaire.
4. To ensure availability of the Quality Assurance Plan and Quality Control Procedures from the Concessionaire.
5. To provide relevant reports and necessary data as per the reporting obligation of concessionaire under the concession Agreement.

## **Appendix G: Cost Estimates in Local Currency**

*List hereunder cost estimate in local currency:*

- 1. Monthly rates for local Personnel (Key Personnel and other Personnel)*
- 2. Reimbursable/Rental/Fixed expenditures as follows:*
  - a. Cost of local transportation.*
  - b. Cost of other local services, rentals, utilities, etc.*

## **Appendix H: Form of Performance Security**

### **(PERFORMANCE BANK GUARANTEE)**

(Clause-20 of TOR)

To

<Authority>

WHEREAS \_\_\_\_\_[Name and address of Consultants]<sup>1</sup> (hereinafter called “the consultants”) has undertaken, \_\_\_\_\_ in pursuance of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ to provides the services on terms and conditions set forth in this Contract \_\_\_\_\_ [Name of contract and brief description of works] (hereinafter called the “the Contract”).

AND WHEREAS it has been stipulated by you in the said Contract that the Consultants shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein 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]<sup>2</sup> \_\_\_\_\_ [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 presents 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. \_\_\_\_\_ (Rs. \_\_\_\_\_) and the guarantee shall remain valid till \_\_\_\_\_.

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<sup>1</sup> Give names of all partners if the Consultants is a Joint Venture.

Unless a claim or a demand in writing is made upon us on or before \_\_\_\_\_ all our liability under this guarantee shall cease.

This guarantee shall be valid for a period of 38 months i.e. upto 2 months beyond the expiry of contract of 36 month.

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 \_\_\_\_\_

## **Appendix I: Form of Bank Guarantee for Advance Payments**

### **(Reference Clause 6.4(a) of Contract)**

(To be stamped in accordance with Stamp Act, if any, of the country of issuing bank)

Ref: \_\_\_\_\_

Bank Guarantee: \_\_\_\_\_

Date: \_\_\_\_\_

Dear Sir,

*In consideration of M/s. \_\_\_\_\_ (hereinafter referred as the "Client", which expression shall, unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s. \_\_\_\_\_ (hereinafter referred to as the "Consultant" which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a contract by issue of client's Contract Agreement No. \_\_\_\_\_ dated \_\_\_\_\_ and the same having been unequivocally accepted by the Consultant, resulting in a Contract valued at \_\_\_\_\_ for \_\_\_\_\_ Contract (hereinafter called the "Contract") (scope of work) and the Client having agreed to make an advance payment to the Consultant for performance of the above Contract amounting to (in words and figures) as an advance against Bank Guarantee to be furnished by the Consultant.*

*We \_\_\_\_\_ (Name of the Bank) having its Head Office at \_\_\_\_\_ (hereinafter referred to as the Bank), which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators executors and assigns) do hereby guarantee and undertake to pay the client immediately on demand any or, all monies payable by the Consultant to the extent of \_\_\_\_\_ as aforesaid at any time upto \_\_\_\_\_ @ \_\_\_\_\_ without any demur, reservation, contest, recourse or protest and/or without any reference to the consultant. Any such demand made by the client on the Bank shall be conclusive and binding notwithstanding any difference between the Client and the Consultant or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. we agree that the Guarantee herein contained shall be irrevocable and shall continue to be enforceable till the Client discharges this guarantee.*

*The Client shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee, from time to time to vary the advance or to extend the time for performance of the contract by the Consultant. The Client shall have the fullest liberty without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Client and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any covenants, contained or implied, in the Contract between the Client and the Consultant any other course or remedy or security available to the Client. The bank shall not be relieved of its obligations under these presents by any exercise by the Client of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Client or any other indulgence shown by the Client or by any other matter or thing whatsoever which under law would but for this provision have the effect of relieving the Bank.*

*The Bank also agrees that the Client at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Consultant and notwithstanding any security or other guarantee that the Client may have in relation to the Consultant's liabilities.*

*Notwithstanding anything contained herein above our liability under this guarantee is limited to \_\_\_\_\_ and it shall remain in force upto and including \_\_\_\_\_ and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s. \_\_\_\_\_ on whose behalf this guarantee has been given.*

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_ at \_\_\_\_\_

WITNESS

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Official Address)

Designation (with Bank stamp)

Attorney as per Power of  
Attorney No. \_\_\_\_\_  
Dated \_\_\_\_\_

Strike out, whichever is not applicable

*Note 1: The stamp papers of appropriate value shall be purchased in the name of bank who issues the "Bank Guarantee".*

*Note 2: The bank guarantee shall be from a Nationalized Indian Bank or reputed foreign commercial Bank acceptable to client for Foreign Consultant with counter guarantee from Nationalized Bank. Bank guarantee furnished by Foreign consultant shall be confirmed by any Nationalized Bank in India.*

## **Appendix J: Letter of invitation**

## **Appendix K: Letter of Award**

## **Appendix L: Minutes of pre-bid meeting**

## **Appendix M: Memorandum of Understanding**

**between**

---

**And**

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Whereas National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) (hereinafter called 'Authority') has invited proposal for appointment of Independent Engineer for \_\_\_\_\_ (Name of project) hereinafter called the Project.

And Whereas \_\_\_\_\_ (Lead Partner) and \_\_\_\_\_ JV partner/s have agreed to form a Joint Venture to provide the said services to National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) as Independent Engineer; and

Now, therefore, it is hereby agreed by and on behalf of the partners as follows:

1. \_\_\_\_\_ will be the lead partner and \_\_\_\_\_ will be the other JV partner/s.
2. \_\_\_\_\_ (lead partner) shall be the incharge of overall administration of contract and shall be authorised representative of all JV partners for conducting all business for and on behalf of the JV during the bidding process and subsequently, represent the joint venture for and on behalf of the JV for all contractual matters for dealing with the National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) /Concessionaire if Consultancy work is awarded to JV.
3. All JV partners do hereby undertake to be jointly and severely responsible for all the obligation and liabilities relating to the consultancy work and in accordance with the Terms of Reference of the Request for Proposal for the Consultancy Services.
4. Subsequently, if the JV is selected to provide the desired consultancy services, a detailed MOU indicating the specific project inputs and role of each partner/s along with percentage sharing of cost of services shall be submitted to National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) (Consultant may submit the detailed MOU along with percentage sharing of cost at the time of bidding also).

For \_\_\_\_\_ (Name of Lead partner)

\_\_\_\_\_  
Managing Director/Head of the Firm  
Address

For \_\_\_\_\_ (Name of JV partner/s)

\_\_\_\_\_  
Managing Director/Head of the Firm  
Address

## Appendix N: Penal Actions against Independent Engineer (IE) and Concerned Key Personnel

Following penal actions shall be taken against Independent Engineer in case of lapses on their part / deficiencies in services provided under this contract

| Sr. No | Type of Deficiency                                                                                                                                                                                                                                                   | Penal Actions                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                       |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                                                                                                                                                                                                                                                                      | Key Personnel                                                                                                                                                                           | Firm                                                                                                                                                                                                                                                                                                                                                                  |
| 1 (a)  | Failure to detect design / quality deficiency in Non-key Components*                                                                                                                                                                                                 | For first three instances, key personnel may be kept on "watch list". Thereafter, the concerned key personnel & Team Leader to be removed from the project and debarred up to 6 months. | i. For first three instances, to be kept on watch list.                                                                                                                                                                                                                                                                                                               |
| 1 (b)  | Failure to issue follow-up notices to contractor / concessionaire for delays in closure of NCRS, delays in furnishing detail of time & cost claims / COS / revised work programmes / work methodologies, etc.                                                        |                                                                                                                                                                                         | ii. Thereafter, a monetary penalty of 1% of the consultancy fee (the aggregate of such penalties in a contract would not exceed the performance Guarantee amount) and / or declaring the consultant as Non-Performer up to 6 months or till rectification of deficiencies # and taking adequate measures not to repeat such instances in future whichever is earlier. |
| 1 (c)  | Delays or submission of improper MPRS, improper review of methodologies, temporary works, QA plan / manual, O&M plan / Manual etc.                                                                                                                                   |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                       |
| 2 (a)  | Failure to detect design / quality deficiency in Key Component** not having substantial cost (below 1% of civil work (cost) and / or time implication (below 5% or project completion period)                                                                        | The concerned key personnel & Team Leader to be removed from the project and debarred up to 1 year.                                                                                     | Declaring the Consultant as Non-Performer up to 1 year or till rectification of deficiencies# and taking adequate measures not to repeat such instances in future, whichever is earlier                                                                                                                                                                               |
| 2 (b)  | Failure to detect deficiency in quantity executed vis-à-vis design not having substantial financial implication (below 1% of civil work cost)                                                                                                                        |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                       |
| 2 (c)  | Failure to conduct / witness tests as prescribed in the consultancy contract agreement                                                                                                                                                                               |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                       |
| 2 (d)  | Delay in processing EOT / COS proposals, inaccurate assessment of COS proposals, not issuing NCRs, delays / improper review of designs / drawings / work programme or failure to submit Completion / Provisional Completion Certification as prescribed in contract. | The concerned key personnel & Team Leader to be removed from the project and debarred up to 1 year.                                                                                     | Declaring the Consultant as Non-Performer up to 1 year or till rectification of deficiencies# and taking adequate measures not to repeat such instances in future, whichever is earlier                                                                                                                                                                               |

|              |                                                                                                                                                                                                                                                                                                                                           |                                                                                                      |                                                                                                                                                                |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3 (a)</b> | Failure to detect deficiency in quantity executed vis-à-vis design having substantial financial implication (1% of civil work cost or more)                                                                                                                                                                                               | The concerned key personnel & Team Leader to be removed from the project and debarred up to 2 years. | In addition to rectification of deficiencies and taking adequate measures not to repeat such instances in future, the consultant to be debarred up to 2 years. |
| <b>3 (b)</b> | Failure to detect design / quality deficiency in Key Component having substantial cost (1% of civil work cost or more) and / or time implication (5% of project completion period or more)                                                                                                                                                |                                                                                                      |                                                                                                                                                                |
| <b>3 (c)</b> | Failure to detect deficiency / not reviewing design (including temporary works) and construction (including methodology) of structural components of flyover / bridges / underpasses / overpasses / R OB / RUB etc.                                                                                                                       |                                                                                                      |                                                                                                                                                                |
| <b>3 (d)</b> | Failure to propose action (like cure period notice, levy of damages, etc.) on contractor / concessionaire as per contract agreement for their default / poor progress having material adverse effect on the project implementation in terms of cost (1% of civil work cost or more) and / time (5% of project completion period or more). |                                                                                                      |                                                                                                                                                                |
| <b>3 (e)</b> | Improper / wrong interpretation of provision in contract agreement; or wrong certification of payment / COS value / cost & time claims; or poor performance of services leading to cost (1% of civil work cost) and / or time (5% of project completion period) claims against NHIDCL awarded by DRB / CCIE / Arbitration / Court.        |                                                                                                      |                                                                                                                                                                |

Note:

\*\* Key Components are specified as under:

- (i) Foundation, sub-structure and super-structure of flyovers, road over bridges, road under bridges, vehicular under passes, vehicular over passes, major bridges and minor bridges etc.
- (ii) Tunnels
- (iii) Expansion joint and bearings
- (iv) RE walls / Retaining walls
- (v) The crust layers of flexible Pavements
- (vi) The crust layers of rigid pavements

- (i) Embankment and slope protection
- (ii) (viii) Issues affecting Road Safety
- (ix) Any other work endangering / impacting / stability / reliability / durability / performance of pavement / structures

\* The items not covered in above list shall be in the category of Non-Key Components.

# Excluding the delay solely attributable to the Concessionaire beyond stipulated time.

1.2 The following penal actions shall be taken in case of any reports on failure of structures after ensuring proper investigation

| Sr. No. | Type of Deficiency                                                                                                                            | Penal Actions                                                                                                                    |                                                                                                        |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|         |                                                                                                                                               | Firm                                                                                                                             | Key Personnel                                                                                          |
| (i)     | Minor failure of structures / highway due to design / construction / maintenance defect wherein no casualty are reported.                     | Token penalty of Rs. 5 lakhs on consultancy firm engaged during construction / maintenance besides issuing written warning.      | The key personnel may be kept on watch list for any future recurrence besides issuing written warning. |
| (ii)    | Major failure of structures / highway due to design / construction / maintenance defect wherein no casualties are reported.                   | Monetary penalty of Rs. 20 lakhs on consultancy firm engaged during construction / maintenance and / or Debarment up to 1 year   | Debarment of concerned key personnel up to 2 years in NHIDCL works                                     |
| (iii)   | Major failure of structures / highway due to construction / maintenance defect leading to loss of human lives besides loss of reputation etc. | Monetary penalty of Rs. 40 lakhs on consultancy firm engaged during construction / maintenance and / or Debarment up to 2 years. | Debarment up to 3 years                                                                                |

Note:

(i) The term Consultant refers to Independent Engineer, Design Consultant, Proof Consultant & Safety Consultant.

(ii) In case of delayed failure i.e., failure due to construction but reported during maintenance period after the defaulting Consultant has been demobilised, action shall be taken against the concerned Consultant only.

For each repeated lapse by the firm, the penalty for the subsequent offence shall be enhanced by an additional 50% as compared to penalty imposed in the previous instance applicable against the category of penalty under consideration.

In case the outcome of investigation is unclear or on the basis of conjectures, no action on debarment shall be taken and only suitable monetary penalty shall be imposed on all consulting firms engaged in construction/ maintenance.