# National Highways & Infrastructure Development Corporation Ltd.
# (A Government of India Undertaking)

**CONSULTANCY SERVICES FOR AUTHORITY'S ENGINEER FOR SUPERVISION OF WIDENING/IMPROVEMENT TO 4 (FOUR) LANE WITH PAVED SHOULDER FROM KM 66+000 TO KM 81+000 (DESIGN CHAINAGE 65+923 TO 80+930) OF DOKMOKA – LORINGTHEPI SECTION (PACKAGE-3) OF NH-29 IN THE STATE OF ASSAM UNDER BHARATMALA PARIYOJNA ON EPC MODE**

# REQUEST FOR PROPOSAL

# (RFP)

National Highways and Infrastructure Development Corporation Limited
3rd Floor, PTI Building, 4, Parliament Street,
New Delhi – 110001

**August, 2020**

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## REQUEST FOR PROPOSAL (RFP)

### SECTION 1: INFORMATION TO CONSULTANTS

**Sub.: CONSULTANCY SERVICES FOR AUTHORITY'S ENGINEER FOR SUPERVISION OF Widening/Improvement to 4 (Four) Lane with Paved Shoulder from km 66+000 to km 81+000 (Design Chainage 65+923 to 80+930) of Dokmoka – LoringThepi Section (Package-3) of NH-29 in the state of Assam under Bharatmala Pariyojana on EPC mode.**

1. The **National Highways & Infrastructure Development Corporation Limited** (the '**Employer**') invites proposals from eligible Consultants for engaging an Authority's Engineer (AE) on the basis of International Competitive Bidding for the following contract packages in the State of **Assam**.

**TABLE1: DETAILS OF PROJECT**

| SNo | Consultancy Package | NH No. | State | Project Stretch | Project Length (Km) / Project Cost (Cr.) | Assignment period (months) |
|---|---|---|---|---|---|---|
| 1 | Widening/Improvement to 4 (Four) Lane with Paved Shoulder from km 66+000 to km 81+000 (Design Chainage 65+923 to 80+930) of Dokmoka – LoringThepi Section (Package-3) of NH-29 in the state of Assam under Bharatmala Pariyojna on EPC mode. | NH-29 | Assam. | from km 66+000 to km 81+000 (Design Chainage 65+923 to 80+930) | Project Length: 15.007 km, Tendered Cost: 129.14. | 18 months of construction + 60 month of Maintenance period |
| | | | | Total | 15.007 km/ 129.14.Cr. | |

2. **The RFP has also been uploaded on "INFRACON" (**www.infracon.nic.in). As such before submitting the proposal the Consultant shall mandatorily register and enlist themselves (the firm and all key personnel), 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.**

4. Bid must be submitted online at e-tender portal of https://nhidcl.com https://eprocure.gov.in on or before 24.09.2020**, 14.30 Hrs**.

5. Selection of AE shall be as per selection procedures given in the Model Agreement for Engineering Procurement and Construction. The selected AE shall be intimated to the Contractor.

6. The proposal shall be submitted in English Language and all correspondence would be in the same language.

7. **National Highways & Infrastructure Development Corporation Limited (NHIDCL)** *intends to appoint a Consultant to act as Authority's Engineer for implementation of the EPC project.* As per the Terms and Conditions of the EPC Agreement (s), the Authority's Engineer shall perform all the duties as per TOR given in this RFP along with any amendment thereof. The selection of Independent Engineer shall follow the laid down procedures given in the Contract Agreement signed between Employer and Contractor.

8. The interested consultancy firms may download the RFP document from the official website of the Employer w.e.f. 25.08.2020**, at 1700 hrs.** The Consultant who download the RFP document

from the website will be required to pay the non- refundable fee of **Rs. 5,900/- (Incl. GST @ 18%)** towards cost of RFP at the time of the submission of the Bid proposal through RTGS/NEFT/other digital mode in the given bank details of NHIDCL on or before 24.09.2020**, 14.30 Hrs** Proof of payment shall also be uploaded online along with bid documents.

**Name- MD-NHIDCL**
**Account no- 90621010002610**
**IFSC Code – SYNB0009062**
**Name of Bank- Canara Bank (erstwhile Syndicate Bank)**

9. The RFP will be invited through e-tendering portal. Refer Procedure under e-tendering for submission of RFP through e-tendering. As per schedule as given in Critical Date Sheet as under:-

| Sl. No. | Event Description | Date |
|---|---|---|
| 1. | Invitation of RFP (NIT) | 25.08.2020 (1700 Hrs) |
| 2. | Last date for receiving queries | 09.09.2020 (1100 Hrs) |
| 3. | Pre-BID meeting at venue 2.11.4 (i) | 09.09.2020 (1530 Hrs) |
| 4. | Authority response to queries latest by | 15.09.2020 |
| 5. | Last date of Request for BID Document | 24.09.2020 (1430) |
| 6 | BID Due Date | 24.09.2020 (1430) |
| 7. | Physical Submission of BID Securing Declaration /POA etc | To be intimated later |
| 8. | Opening of Technical BIDs at venue 2.11.4 (i) | 25.09.2020 (1630) |
| 9. | Declaration of eligible / qualified Bidders | To be intimated later |
| 10. | Opening of Financial BID | To be intimated later |
| 11. | Letter of Acceptance (LOA) | To be intimated later |
| 12. | Return of signed duplicate copy of LOA | To be intimated later |
| 13. | Validity of BID | 120 days from bid due date |

10. Unqualified bidders would be informed regarding their non qualification, without any explanation.

11. The proposal should be submitted by consultancy firms in two parts. The two parts of the proposal are **Part1: Technical Proposal** and **Part2: Financial Proposal.** For a given EPC 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 only be considered for further evaluation. Under stage 2, the financial proposal of such firms as selected above shall be opened and evaluated. Proposals will finally be ranked according to their combined technical and financial scores as specified in clause 5 of section 2.

12. The total time period for the assignment as Authority's Engineer will be for **Construction Period of months (18 Months) +Maintenance Period (60 Months)** with reduced man power.

13. 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 partners). Formulation of more than one JV/association

with different partners for the same work is not allowed and all such proposal involving the firms shall be treated as non-responsive. If the Consultant submits bids as sole applicant and also in JV/Association with another consultant, both bids shall be summarily rejected. No Consultant shall submit more than one bid.

14. (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 4 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 an 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).

15. 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 Limited** 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 Limited** 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.

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

* The construction period to be indicated in the RFP by concerned Technical Division 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 2/4/6**-laning/Bridge project of aggregate length equal to 2 times or more of similar category for which RFP is invited. | The firm should have minimum experience of Project Supervision/Independent Engineer/Consultant of 2/4/6**-laning/Bridge project of aggregate length equal to 3 times 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 experience of Project Supervision/ Independent Engineer/ Authority' Engineer of at least one project of similar category of two/four/six** laning/bridge work of length equal to 40% of project length. | |
| | | Additional requirement in case of specialized projects*** | |

** Similar project 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, but only for those 2 lane projects whose cost of consultancy services was more than Rs.3.0 crores. For standalone bridge projects, experience in bridge work (either standalone project or as a part of road project) only be considered.

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

The lead partner must fulfill at least 50% of requirements at 1(a) of table in para (A) above and other JV partner should fulfill at least 30% of eligibility criteria as indicated at 1(a) of table in para (A) above. Also the lead partner and JV partner jointly should meet 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. 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.

*** For weightage of experience in any past Consultancy assignment, experience certificate from the client shall be submitted. In absence of clear demarcation of JV share in client certificate, the weightage will be treated as 60 % for lead partner and 40% for minor partner. 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.

17. In case the financial figures and values of services provided are in foreign currency 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.

18. The Bidder including individual or any of its Joint Venture Member should, in the last 2 years, have neither failed to perform for the consultancy services pertaining to 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 fulfill the aforesaid condition as on last date of submission of proposal, need not apply as their RFP proposal will not be entertained.

19. Employer will not be responsible for any delay, loss or non-receipt of RFP document sent by post/courier. Further, Employer 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.

20. 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.

21. 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.

22. 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.

23. RFP submission must be received not later than **1430 hrs on 24.09.2020** in the manner specified in the RFP document at the address given below.

24. No consultancy firm will be awarded more than 3 projects of consultancy services as Authority's Engineer/Independent Engineer in NHIDCL. If any consultancy firm either as a sole bidder or s JV partner/Associate has already been awarded ongoing 03 consultancy projects as Authority's Engineer/Independent Engineer in NHIDCL then that consultancy firm will not be eligible for bidding for this work. Consultancy firm who are H1 in any of the projects of Authority's Engineer/Independent Engineer under NHIDCL will be considered as awarded projects. Consultancy firm must submit an undertaking w.r.t the above details in the specified format as per Appendix-

**Address of Employer:**

| | |
|---|---|
| Name: | Shri K.C. Bhatt |
| Designation: | Dy. General Manager (Tech) |
| Address: | 3rd Floor, PTI Building, 4, Parliament Street, New Delhi |
| Tel. No.: | 011-23461626 |
| E-mail: | kc.bhatt@gov.in |

## 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 AE 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 The assignment shall be implemented in **Construction Period (18 Months) and Maintenance Period (60 Months).**

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) Employer 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 Limited (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 Limited**:

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

(i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution;

(ii) "fraudulent practice" means a misrepresentation or omission of facts in order to influence a selection process or the execution of a contract;

(iii) "collusive practices" means a scheme or arrangement between two or more consultants with or without the knowledge of the Client, designed to establish prices at artificial, non-competitive levels;

(iv) "coercive practices" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract.

(b) will reject a proposal for award if it determines that the Consultant recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract; and

(d) will have the right to require that a provision be included requiring consultants to permit the Employer to inspect their accounts and records relating to the performance of the contract and to have them audited by authorized representatives of Employer.

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.

## 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 **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 Employer's website 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 3,4and 5) in 2 separate envelopes/ packages and put together in one single outer envelope/package. 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 online and the same shall be produced during signing of the Contract Agreement by the successful bidder. In case of JV or inclusion of Associate company, 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. 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. Applicant shall submit the details of the period of employment of the proposed personnel 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

**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 organization 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 following [Five] key personnel in the format as per Appendix- B-6 is to be furnished on INFRACON portal.

1. Team Leader cum Senior Highway Engineer-**1 No.**

2. Resident cum Highway Engineer-**1 No.**

3. Bridge /Structural Engineer-**1 Nos.**

4. Senior Quality cum Material Expert-**1 No.**

5. Road safety Expert-**1 No**.

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, at any stage, action including termination and debarment from future **NHIDCL** projects for a minimum period of 2 years may be taken by **NHIDCL** on the personnel and the Firm.

b. 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). If any information is found incorrect, at any stage, action including termination and debarment from future **NHIDCL** projects upto 2 years may be taken by **NHIDCL** on the personnel and the firm.

c. 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.

d. 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 5 **(Five**) 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 score 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 fulfill 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 fulfill 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 or **Team leader cum Senior Highway Engineer** scores less than 75% marks, the proposal shall be considered non-responsive.

g. In case CV of a person is turned out to be fake/incorrect/inflated during the assignment, 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 the salary and perks to be refunded shall be recovered from the Firm as penalty. In the event the penalty is not paid by the Consultancy Firm, the same shall be recovered from encashment of performance security of the firm.

h. 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 Authority's Engineer and hence no deduction in remuneration shall be affected. However, in this case the original CV will be considered for evaluation purpose

xi. Deployment Schedule for each key personnel should be formulated and incorporated in the Technical Proposal which will be reviewed on quarterly basis.

xii. 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.

xiii. Any additional information.

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

**Part 2: Financial Proposal**

**3.6** 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. Consultants shall be paid billing rates for services as per financial proposal submitted by them basis. Beginning 13th months from the last date of submission of bid, billing rates shall be increased to cover all items of the 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 last date of submission of bid) shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates. All payments shall be made in Indian Rupees and shall be subjected to applicable Indian laws withholding taxes if any.

**3.7** 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.

**3.8** Consultants may express the price of their services in the Indian Rupees only.

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

## 4. SUBMISSION, RECEIPT AND OPENING OF PROPOSALS

### 4.1 PREPARATION & SUBMISSION OF APPLICATIONS:

A. Detailed RFP may be downloaded from E-tendering 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) Technical Proposal {Only Electronic Form (to be uploaded on the E-tendering 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) Financial proposal as per format prescribed in section – 5 of RFP

Cost of RFP of **Rs. 5,900/- (Incl. GST @ 18%) (Rupees Five thousand Nine Hundred only)** through RTGS/NEFT/other digital mode in the given bank details of NHIDCL on or before 24.09.2020 **(1430 hrs).**

**Name- MD-NHIDCL**
**Account no- 90621010002610**
**IFSC Code – SYNB0009062**

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

C. The successful bidder shall submit the original documents specified above in point no.4.1 B (I) (a), (b), (c)& (d) above together with their respective enclosures to the Authority before signing of the Agreement.

i.) 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 **14:30 hours** Indian Standard Time on the Application due date i.e. on 24.09.2020**.** 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 both Financial Proposal and 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.

(iii) The Employer will open the Technical Proposal at **1630** hours Indian Standard Time on the Application due date i.e. 25.09.2020 in the presence of the Applicants who choose to attend and evaluate the Applications in accordance with the provisions set out in the RFP.

(iv) 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 Employer 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.) Only those Applicants whose Technical proposal score 75 marks or more out of 100 shall qualify for further consideration. However, if the number of such pre-qualified applications is less than two, the Employer may, in its sole discretion, pre-qualify the applicant(s) whose technical score is less than 75 marks.

**Financial Proposal**

5.4 After the evaluation of Technical Proposals is completed and the shortlist of firms is finalised, the Employer may notify those consultants whose proposals were not considered as per conditions of RFP. The Employer shall simultaneously notify the 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.) and without computational error. 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 lowest financial proposal (FM) will be given a financial score (SF) of 100 points. The financial scores of other proposals will be computed as follows:

$S_F = 100 \times F_M / F$ (F= amount of financial proposal)

5.8 Proposals will finally be ranked according to their combined technical (ST) and financial (SF) scores as follows:

$$S = S_T \times Tw + S_F \times Fw$$

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 Authority's 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.

## 6 AWARD OF CONTRACT

6.1 The Client shall issue letter of award to selected Consultant and ask the Consultant to provide Performance Security as in Para 7 below. 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 2nd 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 10% of the Contract Value within 15 days of issue of LOA. The BG shall be valid for a period of **80 Months** i.e. upto 2 months beyond the expiry of the Contract period of **78 months**. 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 1000 crore as per latest Annual Report of the Bank. In the case of a Foreign Bank (issued by a Branch in India) the net worth in respect of Indian operations shall only be taken into account. In case of Foreign Bank, the BG issued by Foreign Bank should be counter guaranteed by any Nationalized Bank in India. In case of JV, the BG shall be furnished on behalf of the JV and not individually by the members.

Further, in case where the bid of the successful consulting firm is less than 85% of the average of all bids received, the successful consulting firm shall have to submit an

Additional Performance Security (APS) in the form of a Bank Guarantee for 30% of the differential value between the successful bid and average of all the bids received. The BG shall be valid for a period of **80 months** i.e. upto 2 months beyond the expiry of the Contract of **70 months.** The other requirements of APS are same as those of Performance Security.

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 7.1 within the time specified

therein or such extended period as may be provided by the Authority, in accordance with the provisions of Clause 7.2 and thereupon 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.

## DATASHEET

### (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: Employer's Office on 09.09.2020 at 15:30 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:

| | |
|---|---|
| Name: | Shri K.C.Bhatt |
| Designation: | Dy. General Manager (Tech) |
| Address: | 3rd Floor, PTI Building, 4, Parliament Street, New Delhi |
| Tel. No.: | 011-23461626 |
| E-mail: | kc.bhatt@gov.in |

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 **NHIDCL** shall reimburse only Goods and service tax. Authority's Engineer 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 as stipulated in MoRT&H Circular No. RW-NH-35075/1/2010-S&R® dt. 28.10.2015.

8 The Consultants to state cost in INR .

**9** The time and date of submission: 24.09.2020 **at 1430 hrs .**

**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 |
| | **Total** | **100** |

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

| | |
|---|---|
| Average Annual Turnover (last 3 years) from consultancy business (Min 5 crore) | 2 |
| Nos of Highway Professionals with the firm * 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. | 10 |
| Experience as Independent Engineer/Authority Engineer/Construction Supervision in Number of Highway Projects of length equal to 40% of project length of similar category for which RFP invited of 2/ 4/6**-laning or more in last 7 years* | 10 |
| Experience in DPR preparation for Number of Highway Projects (of length 40% of project length of similar category for which RFP invited of 2/4/6**-laning or more) in last 7 years * | 5 |
| In hand DPRs for Authority (Ministry /NHAI/NHIDCL-As applicable) Projects (presently under progress) | 10 |
| Experience in Construction Supervision/DPR /Design Review of Major structures having length of more than 500 meter in last 7 years | 3 |
| Additional requirement in case of specialized projects*** | *** |

***** 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 not be considered as relevant experience for current assignment.

****** Similar projects 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, but only for those 2 lane projects whose cost of consultancy services was more than Rs.3.0 crores.

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** | **7** | |
| **1.1** | **Equipment** | **4** | |
| | (a) Equipment on MOU with Associate or on hiring basis | | 2 |
| | (b) Own Equipment | | 4 |
| **1.2** | **Experience** | **3** | |
| | (a) 1-2 projects | | 1 |
| | (b) 3-5 projects | | 2 |
| | (c) >5projects | | 3 |
| **2** | **Experience in Falling Weight Deflecto-meter (FWD) or better technology for pavement strength measurement** | **4** | |
| **2.1** | **Equipment** | **2** | |
| | **(**a) Equipment on MOU with Associate or on hiring basis | | 1 |
| | (b) ) Own Equipment | | 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** | **5** | |
| **3.1** | **Equipment** | **2** | |
| | (a) Equipment on MOU with Associate or on hiring basis | | 1 |
| | (b) Own Equipment | | 2 |
| **3.2** | **Experience** | **3** | |
| | (a) 1-2 projects | | 1 |
| | (b) 3-5 projects | | 2 |
| | (c) 5 projects | | 3 |
| **4** | **Experience in Retro reflectometer technology** | **4** | |
| **4.1** | **Equipment** | **2** | |
| | a) Equipment on MOU with Associate or on hiring basis | | 1 |
| | (b)Own Equipment | | 2 |
| **4.2** | **Experience** | **2** | |
| | (a)1-3 projects | | 1 |
| | (b)> 3 projects | | 2 |
| | **Total** | **20** | |

**Note: A.** The Authority's Engineer owning the equipments shall be required to submit proof of ownership.

**B.** 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 shall not be considered.

**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 Highway Engineer (1 No) | 12 |
| 2 | Resident cum Highway Engineer (1 No) | 7 |
| 3 | Bridge/Structural Engineer (1 No) | 7 |
| 4 | Senior Quality cum Material Expert (1 No) | 7 |
| 5 | Road safety Expert (1No) | 7 |
| | **Total** | **40** |

**iv. Sub criteria for qualification of Key Personnel (i.e. Professional staff)**

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

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

v) Detailed evaluation criteria which is to be used for evaluation of technical bids is as indicated below as Appendix-EC.

vi) The Authority's Engineer should carryout self-evaluation based on the evaluation criteria at Appendix-EC. While submitting the self-evaluation along with bid, Authority's Engineer shall make references to the documents which has been relied upon in his self-evaluation.

vii) 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.

viii) 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.

ix) The weightage given to technical proposal is 70%.

The weightage given to financial proposal is 30%.

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., NHIDCL may modify the above criteria for Selection of AE.

***** The currency conversion rate of USD and EUR shall be taken as on Bid Due Date.

## Appendix-EC

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

| S. No. | Description | | Max. Marks | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|---|
| 1 | Average Annual Turnover (last 3 years) from consultancy business<br>< 2% of TPC – 0 marks<br>2% of TPC – 1.5 marks<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 * | | **10** | | |
| 2.1 | <10 | 0 | | | |
| 2.2 | 10-20 | 8 | | | |
| 2.3 | >20 but ≤30 | 9 | | | |
| 2.4 | >30 | 10 | | | |
| ***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.** | | | | | |
| 3 | Experience as Independent Engineer/ Authority Engineer/ Construction Supervision in Number of Highway Projects of 2/4/6-laning** of length (40% of project length) or more in last 7 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/Feasibility Study cum Preliminary Design Report preparation for Number of Highway Projects of 2/4/6-laning** of length (40% of project length) or more in last 7 years.<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 of Highway/Bridge/Tunnel Projects ( presently under progress) | | **10** | | |
| 5.1 | <2 | 0 | | | |
| 5.2 | 2-5 | 5 | | | |

| | | | | | |
|---|---|---|---|---|---|
| 5.3 | >5 | 10 | | | |
| 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 | Additional requirement in case of specialized projects*** | | *** | | |

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: **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.

Note 4: The details required for S.No. 2 & 5 under Table of Appnedix-EC needs to be submitted in the format attached at Appendix-…….

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

| **Evaluation sheet for assessment of experience in use of technology for road inspection** | | | | | |
|---|---|---|---|---|---|
| **S. No** | **Description** | | **Maximum Points** | **Reference/Details of projects Claimed for self-assessment** | **Marks self-assessed by the bidder** |
| **1** | Experience in Network Survey Vehicle (NSV) or better technology for pavement inspection | | **7** | | |
| 1.1 | Equipment | | **4** | | |
| | (a) Equipment on MOU with Associate or on hiring basis- 2 marks | | | | |
| | (b) Own Equipment – 4 marks | | | | |
| 1.2 | Experience | | **3** | | |
| (i) | 1-2 projects | 1 | | | |
| (ii) | 3-5 projects | 2 | | | |
| (iii) | > 5 projects | 3 | | | |
| 2 | Experience in Falling Weight Deflectometer (FWD) or better technology for pavement strength measurement | | **4** | | |
| 2.1 | Equipment | | **2** | | |
| | (a) Equipment on MOU with Associate or on hiring basis- 1 mark | | | | |
| | (b) Own Equipment – 2 marks | | | | |
| 2.2 | Experience | | **2** | | |

| | | | | | |
|---|---|---|---|---|---|
| (i) | 1-3 Projects | 1 | | | |
| (ii) | >3 Projects | 2 | | | |
| 3 | Experience in Mobile Bridge Inspection Unit or better technology for bridge inspection | | **5** | | |
| 3.1 | Equipment | | **2** | | |
| | (a) Equipment on MOU with Associate or on hiring basis- 1 mark | | | | |
| | (b) Own Equipment – 2 marks | | | | |
| 3.2 | Experience | | **3** | | |
| (i) | 1-2 Projects | 1 | | | |
| (ii) | 3-5 Projects | 2 | | | |
| (iii) | > 5 Projects | 3 | | | |
| 4 | Experience in Retro reflectometer technology | | **4** | | |
| 4.1 | Equipment | | **2** | | |
| | (a) Equipment on MOU with Associate or on hiring basis- 1 mark | | | | |
| | (b) Own Equipment – 2 marks | | | | |
| 4.2 | Execution with owned/hired Equipment/through Associate | | **2** | | |
| (i) | 1-3 Projects | 1 | | | |
| (ii) | >3 Projects | 2 | | | |
| | **Total** | | **20** | | |

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

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

### 3.1 Team Leader cum Senior Highway Engineer

| S. No. | Description | | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|---|
| **1** | **General Qualification** | | **25** | | |
| i) | Graduate in Civil Engineering | 21 | | | |
| ii) | Post-Graduation in Management/ Construction/ Transportation/Highway Engineering/Structural Engineering or equivalent specialised stream of civil engineering | 04 | | | |
| **2** | **Adequacy for the Project** | | **70** | | |
| **a)** | **Professional Experience in Highway Projects:** | | | | |
| i) | Total Professional Experience in handling Highway projects<br>< 12 years -0<br>12 years -8 marks<br>Add 1 mark extra for each additional year of experience subject to maximum 2 (two) marks. | | 10 | | |
| ii) | Experience as Team Leader or similar capacity in Highway Development Projects(similar configuration (2/4/6 laning**) and above)<br>< 5 years -0<br>5 years -11 marks<br>Add 1 marks extra for each additional year of experience subject to maximum 4 (four) marks. | | 15 | | |
| iii) | Experience as Team Leader or similar capacity in Highway Development projects (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above) on EPC<br>1 project -4 marks add 1 mark extra for additional projects subject to maximum1 (one) mark | | 5 | | |
| b) | Experience as Team Leader or similar capacity of project Preparation including design of major highway Project (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above).<br>< 2 projects -0 | | 15 | | |

| S. No. | Description | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|
| | 2 Projects -11 marks<br>Add 2 marks for each additional project subject to maximum 4 marks. | | | |
| c) | Experience in position of Team Leader/Project Manager or similar capacity in Construction Supervision/IC involving length 40% of project length or more of similar configuration (2/4/6** laning) and above<br>< 2 projects – 0<br>2 Projects – 16 marks<br>Add 2 marks extra for each additional project subject to maximum 4 (four) marks | 20 | | |
| d) | Experience as Team Leader or similar capacity in Operation and Maintenance of Major Highway (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above).<br>1 project – 4 marks<br>Add 1 mark extra for each additional project subject to maximum 1 (one) mark | 5 | | |
| **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 maximum 2 marks | **5** | | |
| | **Total :** | **100** | | |

## Note:

(1) Similar Capacity includes the following positions

i) On behalf of Consultant: Team Leader/Resident Engineer (Construction Supervision/IE/AE/DPR).

ii) On behalf of Contractor: Project Manager (Construction/Construction Supervision)

iii) In Government Organizations: Superintending Engineer (or equivalent) and above

(2) Only those projects will be considered for evaluation at S. No. 2(b) where the input of the personnel is not < 9 months.

(3) Only those projects will be considered for evaluation at S. No. 2I, (d) where the input of the personnel is not < 12 months.

(4) In case of experience on behalf of Authority's Engineer 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.

## 3.2 Resident cum Highway Engineer

| S. No. | Description | | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|---|
| **1** | **General Qualification** | | **25** | | |
| i) | Graduate in Civil Engineering | 21 | | | |
| ii) | Post Graduation in Transportation/Highway Engineering/Structural Engineering/Geotechnical Engineering | 04 | | | |
| **2** | **Adequacy for the Project** | | **70** | | |
| | **Professional Experience** | | | | |
| i) | Total Professional Experience in handling Highway projects<br>< 12 years -0<br>12 years -8 marks<br>Add 1 mark extra for each additional year of experience subject to maximum 2 (two) marks. | | 20 | | |
| ii) | Experience as Resident Engineer/Project Director/Project Manager/Superintending Engineer or equivalent/Executive Engineer or equivalent on construction works/Authority Engineer/Independent Engineer Projects (similar configuration (2/4/6 laning*) and above).<br>< 5 years -0; 5 years -15 marks<br>Add 1 marks extra for each additional year of experience subject to maximum 5 (five) marks. | | 20 | | |
| iii) | Experience in similar capacity in handling major 2/4/6-laning** projects (of length 40% of project length or more of<br>similar configuration (2/4/6 laning**) and above)<br>< 2 nos. -0<br>2 nos. -19 marks<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 EPC Mode | | 5 | | |

| S. No. | Description | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|
| | (of length 40% of project length or more of similar configuration (2/4/6 laning**) and above)<br>1 Project- 4 marks<br>Add 1 (one) mark extra for each additional project subject to maximum 1 (one) mark | | | |
| **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 maximum 2 marks | **5** | | |
| | **Total :** | **100** | | |

**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 Authority's Engineer 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

| S. No. | Description | | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|---|
| **1** | **General Qualification** | | **25** | | |
| i) | Graduate in Civil Engineering | 21 | | | |
| ii) | Post-Graduation in Structural Engineering | 04 | | | |
| **2** | **Adequacy for the Project** | | **70** | | |
| i) | Total Professional Experience in handling Highway/Bridge projects<br>< 10 years -0 | | 15 | | |

| S. No. | Description | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|
| | 10 years -11 marks<br>Add one mark extra for each additional 2 year subject to maximum 4(four) marks | | | |
| 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; 5 years -15 marks<br>Add 1 (one) mark extra for each additional completed year of experience subject to maximum 5 (five) marks | 20 | | |
| iii) | Experience in similar capacity in supervision of Major Highway Bridges/ROB/Flyover/ Interchanges/ any other structures<br>< 2 Bridges -0<br>02 Bridge -15 marks<br>Add 2.5 mark extra for each additional bridge subject to maximum 5 marks | 20 | | |
| iv) | Experience in similar capacity in supervision of Rehabilitation and repair of Major Bridges/ROB/Flyover/ Interchanges/ any other structures<br>< 2 nos. – 0<br>2 nos. -8 marks<br>> 3 nos.- 10 | 10 | | |
| v) | Experience in similar capacity of modern bridge construction technology viz., Precast Segmental, Balanced Cantilever Construction, Extra dosed Bridge, Full Span Launching, Incremental Launching.<br>Experience in 1 project – 4 marks<br>More than one project – 5 marks | 5 | | |
| **3** | **Employment with the Firm**<br>< 1 year -0<br>1 year -3 marks | **5** | | |

| S. No. | Description | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|
| | Add 0.5 marks for each subsequent year subject to maximum 2 marks | | | |
| | **Total :** | **100** | | |

**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 Authority's Engineer 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 Senior Quality/Material Expert

| S. No. | Description | | Max. Points | Reference/Details of projects Claimed for self-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|---|
| **1** | **General Qualification** | | **25** | | |
| | I) Graduate in Civil Engineering | 21 | | | |
| | II) Post Graduation in Geotechnical Engineering/ Foundation Engineering/ Soil Mechanics/ Rock Mechanics | 04 | | | |
| **2** | **Adequacy for the Project** | | **70** | | |
| | **Professional Experience** | | | | |
| 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 Construction/Construction Supervision of major Highway Projects ((similar configuration (2/4/6 laning**) and above))<br>< 5 years -0; 5 years -19<br>Add 2.0 (two) marks extra for each additional year of experience subject to maximum 6 (Six) marks. | | 25 | | |

| | | | | |
|---|---|---|---|---|
| iii) | Experience in similar capacity in handling Similar 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. - 25<br>Add 2.5 marks extra for each additional project subject to maximum 5 (five) marks. | 30 | | |
| **3** | Employment with the Firm<br>< 1 year – 0<br>1 year – 3<br><br>Add 0.5 marks for each subsequent year subject to maximum 2 marks | **5** | | |
| | **Total :** | **100** | | |

**Note:**

(1) Similar Capacity includes the following positions

i) On behalf of Consultant/Contractor: Quality Expert/ Material Engineer/Material Expert/ Quality Engineer/ Geo-Technical Expert.

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 Authority's Engineer 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.

## 3.5 Road Safety Expert

| S. No. | Description | | Max. Points | Reference/ Details of projects Claimed forself-assessment | Marks self-assessed by the bidder |
|---|---|---|---|---|---|
| **1** | **General Qualification** | | **25** | | |
| I) | Graduate in Civil Engineering | 21 | | | |
| II) | Post-Graduation in Traffic/ Transportation/ Safety Engineering or equivalent | 04 | | | |
| **2** | **Adequacy for the Project** | | **70** | | |
| | **Professional Experience** | | | | |

| | | | | |
|---|---|---|---|---|
| i) | Total Professional Experience in handling Highway/Bridge projects<br>< 10 years -0<br>10 years -11 marks<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 marks<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. -15 marks<br>Add 2.5 marks extra for each additional project subject to maximum 5 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. -8 marks<br>Add 2 marks extra for each additional improvement of black spots subject to maximum 2 marks. | 10 | | |
| v) | Experience in similar capacity of preparing Road Safety Management Plans for Inter Urban Highway<br>1 project -4 marks<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 marks<br>Add 0.5 marks for each subsequent year subject to maximum 2 marks | **5** | | |
| | **Total :** | **100** | | |

**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

**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 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 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.

## SECTION 3: FORMATS FOR SUBMISSION OF FIRMS CREDENTIALS

As per the INPUT Format of INFRACON PORTAL

## Appendix A

As per the INPUT Format of INFRACON PORTAL

## SECTION 4: FORMAT FOR SUBMISSION OF TECHNICAL PROPOSAL

| | |
|---|---|
| **Appendix B-1** | Technical proposal submission form. |
| **Appendix B-2** | Site Appreciation |
| **Appendix B-3** | Approach paper on methodology for performing the assignment |
| **Appendix B-4** | Facility for field investigation and testing |
| **Appendix B-5** | Composition of the Team and Task(s) of each Team member |
| **Appendix B-6** | Curriculum vitae of proposed Professional staff. |
| **Appendix B-7** | Time schedule for deployment of Professional staff |
| **Appendix B-8** | Activity (works) schedule. |
| **Appendix B-9** | Affidavit – Correctness of Experience claimed by the Firms |
| **Appendix B-10** | Integrity Pact |

## APPENDIX B-1-Technical proposal submission form.

FROM (Name of Firm) To: (Name and Address of Client)

_____ _____

_____ _____

_____ _____

_____ _____

Ladies/Gentlemen:

**Subject**: Submission of Technical and Financial Proposal for engagement as Authority Engineer for the EPC work.

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 Authority's Engineer 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 1page]

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 and 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 (Month / Year) | Completion Date (Month / Year) | Approx. Value of Services in INR/current USD): |
| Name of JV/Association Firm(s)if any: | | No. of Months of Professional Staff provided by Associated Firm(s) |
| Status of your Company in the Assignment i.e., Sole/Lead Member/Other Member/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

2. Technical/Managerial Staff

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

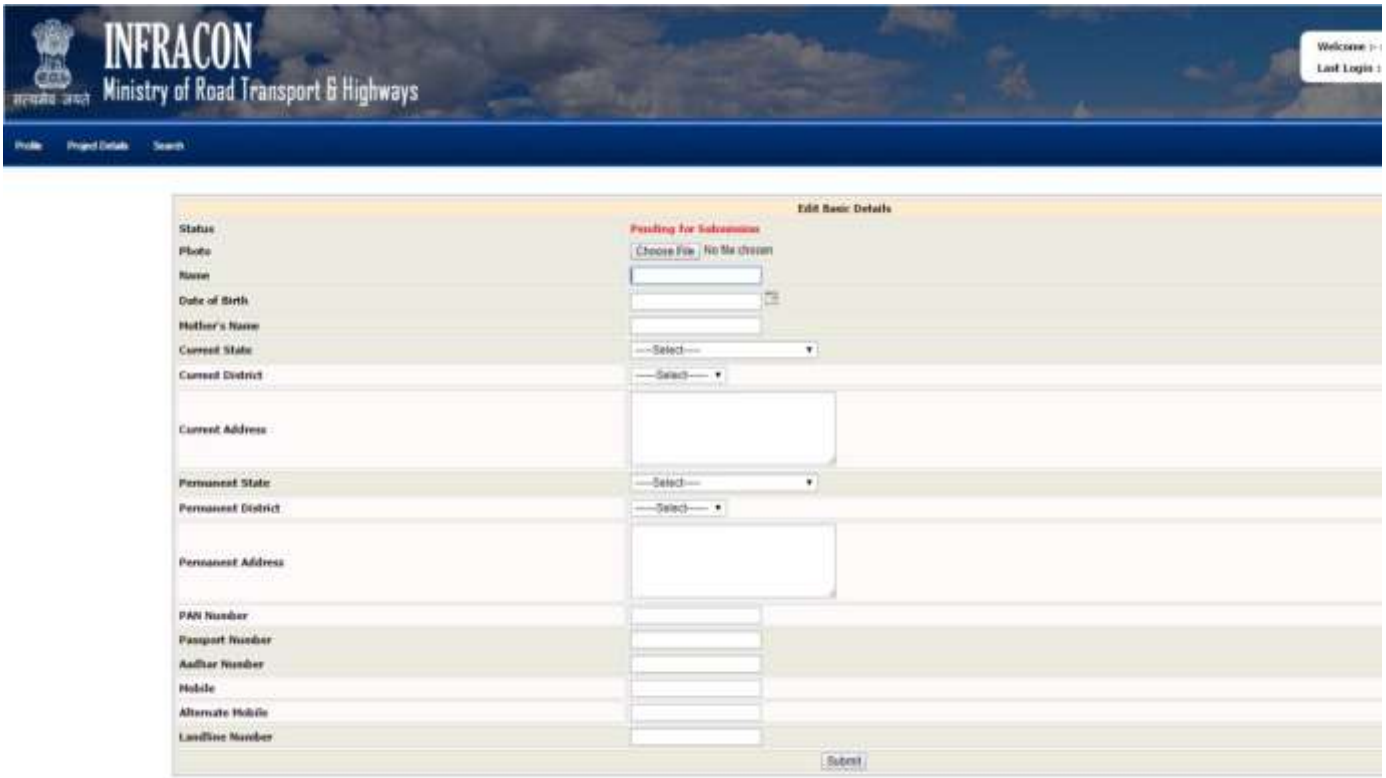
i. Support Staff

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

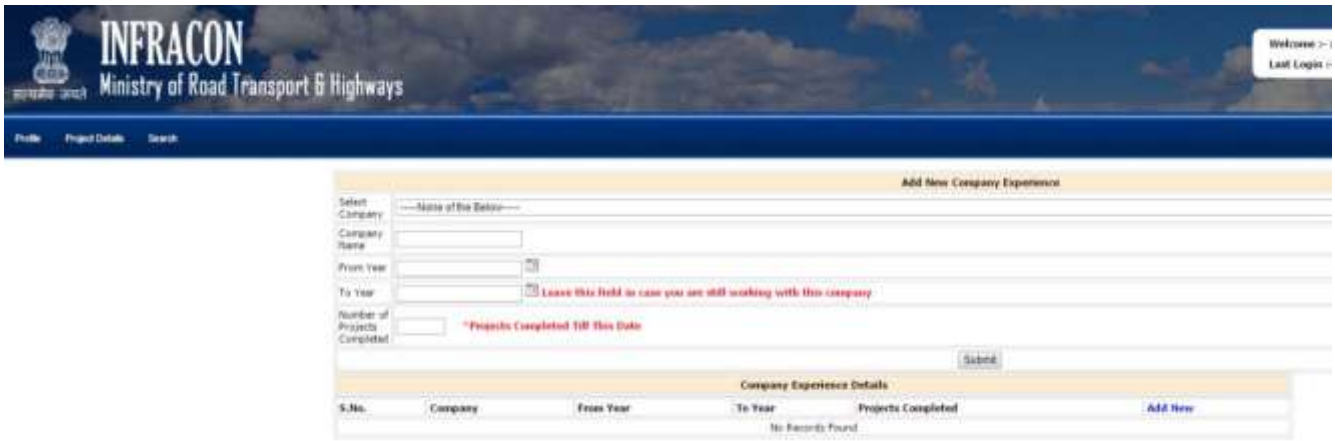
## APPENDIX B-6 : FORMATOF CURRICULUM VITAE (CV) FOR PROPOSED PROFESSIONALSTAFF

FORMATOF CURRICULUM VITAE (CV) FOR PROPOSED PROFESSIONALSTAFF (Snap Shot of CV as per the detail on INFRACON Portal). However Preferred Bidder shall be required to submit the CVs of Key Personnel as per clause 3.4 (iv) (d) of Section-1

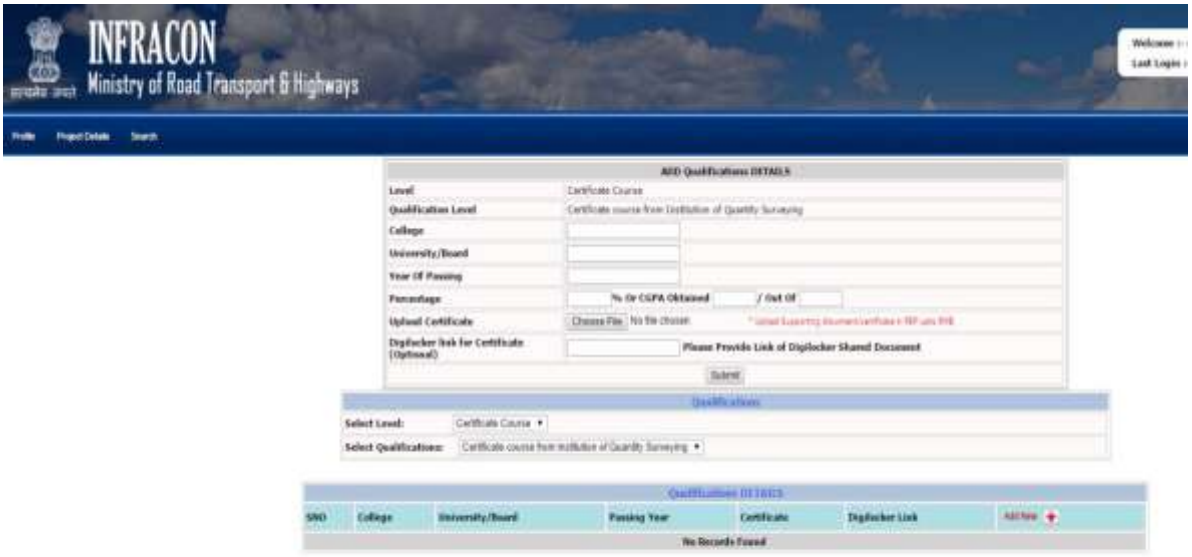
1. Basic details




2. Company experience



3. Qualifications details



For Key Personnel having intermittent inputs, add the following: (Upload the following certificate on INFRACON portal).

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 affect 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) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

Note : 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 do not exceed3 (three) for Senior Contract Specialist, and Sr. Quantity Surveyor.

…….. Date :( Day/Month/Year)

(Signature of Key Personnel)

Certification by the Firm and Key Personnel (Upload the following Certificate on CPPP Portal alongwith other documents as specified under Clauses 4.1 (B))

The undersigned on behalf of ---------- (name of consulting firm) certify that the qualification and experience details of Shri ------ (name **o**f the proposed personnel and address) as proposed under Team ID No._____ has been checked and found to be correct. It is also certified that Shri-------- (name of proposed personnel) to the best of our knowledge has neither been debarred by MoRTH, NHAI or any other Central/State Government organization nor left his assignment with any other consulting firm engaged by the Employer/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 the Employer, Employer would be at liberty to remove the personnel from the present assignment and debar the firm and key Personnel for an appropriate period to be decided by the Employer.

Dated: Dated:

[Signature of authorized representative of the Firm] [Signature of authorized representative of the Key Personnel]

## APPENDIXB-7: TIME SCHEDULE FOR PROFESSIONAL PERSONNEL

### A. Activity Schedule

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

## APPENDIXB-8 : ACTIVITY(WORKS)SCHEDULE

### B. Activity Schedule

| | | Month wise Program(information of Bar Chart) [1st,2nd, etc. are months from the start of assignment] | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sr.No.** | **Item of Activity (Works)** | **1st** | **2nd** | **3rd** | **4th** | **5th** | **6th** | **7th** | **8th** | **9th** | **10th** | **11th** | **12th** |
| 1 | ..... .. | | | | | | | | | | | | |
| 2 | ..... .. | | | | | | | | | | | | |
| 3 | ..... .. | | | | | | | | | | | | |
| 4 | ..... .. | | | | | | | | | | | | |
| - | ..... .. | | | | | | | | | | | | |
| - | ..... .. | | | | | | | | | | | | |

### C. Completion and Submission of Reports

| **Sr.No** | **Reports :** | **Programme Date)** |
|---|---|---|
| 1 | Monthly reports (Design and Co**n**struction) | |
| 2 | Quarterly Reports | |
| 3 | Various others reports as provided in the Concession Agreement such as Completion Report | |

## APPENDIX B-9: AFFIDAVIT FOR CORRECTNESS OF CV OF KEY PERSONNEL AND EXPERIENCE CLAIMED BY THE FIRMS

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

I, the undersigned, on behalf of_____(name of the Authority's Engineer submitting the proposal), do hereby certify that the details furnished in this proposal including CV of key personnel and 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_____2019.

Between

**NHIDCL** , hereinafter referred to as "**The Principal**", which expression shall unless repugnant to the meaning or contract thereof include its successors and permitted assigns.

And

_____ hereinafter referred to as "**The Bidder/Contractor /Concessionaire/Consultant**" and which expression shall unless repugnant to be meaning or context thereof include its successors and permitted assigns.

## Preamble

Whereas, the Principal intends to award, under laid down organizational procedures, contract/s for "**Authority Engineer Services for the project of ******in the State of ****** under NHDP Phase-**** on ****** mode".** The Principal values full compliance with all relevant laws of the land, rules of land, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/ or Contractor(s)/Concessionaire(s)/ Consultant(s).

And whereas to meet the purpose aforesaid, both the parties have agreed to enter into this Integrity Pact (hereafter referred to as Integrity Pact) the terms and conditions of which shall also be read as integral part and parcel of the Tender 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 with the tender for, or the execution of a contract, demand, take a promise for or accept, for self, or third person, any material of immaterial benefit which the person is not legally entitled to.

    b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s)

confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. The Principal will exclude all known prejudiced persons from the process, whose conduct in the past has been of biased nature.

2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act or any other Statutory Acts or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions as per its internal laid down Rules/Regulations.

## Article – 2 Commitments of the Bidder(s)/ 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 contracts, 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 principle, if any.

(e) The Bidder(s)/ Contractor(s)/ Concessionaire(s)/ Consultant(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection

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

(f) The Bidder(s)/ 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/ Contractor/ Concessionaire/ Authority's Engineer 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/ Contractor/ Concessionaire/ Authority's Engineer 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/ Contractor/ Concessionaire/ Authority's Engineer and the amount of the damage. The exclusion will be imposed for a minimum of 1 year.

3. A transgression is considered to have occurred if the Principal after due consideration of the available evidence concludes that "On the basis of facts available there are no material doubts".

4. The Bidder/ Contractor/ Concessionaire/ Authority's Engineer 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/ Contractor/ Concessionaire/ Authority's Engineer shall be final and binding on the Bidder/ Contractor/ Concessionaire/ Consultant.

6. On occurrence of any sanctions/ disqualification etc arising out from violation of integrity pact, the Bidder/ Contractor/ Concessionaire/ Authority's Engineer shall not be entitled for any compensation on this account.

7. Subject to full satisfaction of the Principal, the exclusion of the Bidder/ Contractor/ Concessionaire/ Authority's Engineer could be revoked by the Principal if the Bidder/ Contractor/ Concessionaire/ Authority's Engineer 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 Arcticle-3, the Principal shall be entitled to blacklist Bidder/ Contractor/ Concessionaire/ Authority's Engineer for any period determined by the Authority.
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/ Authority's Engineer and/ or demand and recover liquidated and all damages as per the provisions of the contract/concession agreement against Termination.

**Article – 5 Previous Transgression**

1. The Bidder declares that no previous transgressions occurred in the last 3 years immediately before signing of this Integrity Pact with any other Company in any country conforming to the anti corruption/ Transparency International (TI) approach or with any other Public Sector Enterprise/ Undertaking in India or any Government Department in India that could justify his exclusion from the tender process.

2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action for his exclusion can be taken as mentioned under Article-3 above for transgressions of Article-2 and shall be liable for compensation for damages as per Article-4 above.

**Article-6 Equal treatments of all 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).

If the Principal obtains knowledge of conduct of a Bidder/ Contractor/ Concessionaire/ Authority's Engineer or Subcontractor, or of an employee or a representative or an associate of a Bidder/ Contractor/ Concessionaire/ Authority's Engineer 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/ Authority's Engineer 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.

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 – 9 Other Provisions.

1. This pact is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal, i.e. .....

2. Changes and supplements as well as termination notices need to be made in writing.

3. If the Bidder/Contractor/Concessionaire/Authority's Engineer is a partnership or a consortium, this pact must be signed by all partners or consortium members.

4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

5. Any disputes/ differences arising between the parties with regard to term of this pact, any action taken by the Principal in accordance with this Pact or interpretation thereof shall not be subject to any Arbitration.

6. The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

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

| | |
|---|---|
| (For & On behalf of the Principal) | (For & On behalf of the Bidder/ Contractor/ Concessionaire/ Authority's Engineer) |
| (Office Seal )<br>Place_____<br>Date_____ | |

**Witness 1 :**
(Name & Address):_____

**Witness 2 :**
(Name & Address): _____

## 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 costs

## APPENDIX C-1: FINANCIALPROPOSALSUBMISSIONFORM

**FROM : (Name of Firm)** **TO :**

**Address of Employer**

**Subject :**

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 upto 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

## APPENDIX C-2: SUMMARY OF COSTS

| No. | Description | Amount (Rs.) |
|---|---|---|
| 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 | Contingencies | |
| | Sub Total | |
| | Goods and Services Tax Payable in India | |
| | Total Costs (Including Tax) | |

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

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

### II. REMUNERATION FOR LOCAL PROFESSIONAL STAFF

**Normal Highway Project**

**For Project with Construction Period of 18 months with 60 month DLP period**

| No. | Position | Name | Construction Period months of 18+ DLP 60 months | | |
|---|---|---|---|---|---|
| | | | Rate | No. of man-months* | Amount |
| | **Professional Staff** | | | | |
| 1. | Team Leader cum Senior Highway Engineer | | | 1*18 | |
| 2. | Resident cum Highway Engineer | | | 1*18+1*60 | |
| 3. | Bridge/Structural Engineer | | | 1*18 | |
| 4. | Senior Quality cum Material Expert | | | 1*18 | |
| 5. | Road Safety Expert | | | 1*18 | |
| | **Sub – Total** | | | **150** | |
| | **Sub-professional** | | | | |
| 1. | Survey Engineer | | | 1*18 | |
| 2 | Assistant Bridge Engineer | | | 1*18+ 1*30 | |
| 3 | Assistant Quality cum Material Engineer | | | 1*18+ 1*60 | |
| 4 | Lab Technician | | | 1*18 | |
| 5 | Quantity Surveyor | | | 1*18+ 1*30 | |
| | ***Sub Total*** | | | **210** | |
| | **Total** | | | **360** | |

***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 (Construction Months + DLP/Maintenance Period) | Billing Rate() | Amount( ) |
|---|---|---|---|---|---|
| 1. | Office Manager cum Accountant | TBN | 1*18+ 1*60 | | |
| 2. | Steno cum Computer Operator | TBN | 1*18+ 1*60 | | |
| 3. | Office Boy | TBN | 1*18+ 1*60 | | |
| | | | | **Total :** | |

**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)

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

| Sr. No | Description of Vehicles | Qty. (No. of vehicle-month) | | Total | Rate/ Vehicle-Month | Amount |
|---|---|---|---|---|---|---|
| | | During Construction Period | During DLP and O&M Period | | | |
| 1 | Innova/Scorpio or equivalent (not more than 2 years old) | 1*18 | 1*60 | | | |
| | **Total** | | | | | |

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

| Trips | Number of Trips | Rate* | Amount |
|---|---|---|---|
| Employer's Head Office (9 Round Trip) | 18 | | |
| Employer's Regional Office (9 Round Trip) | 18 | | |

* Rate quoted includes Hotel charges, travel cost 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.

| Period | Nos. of Months | Rate/month | Amount |
|---|---|---|---|
| Construction Period: 1 office should be rented only after the consultation of GM (P) regarding the location of the same. | 1*18 | | |
| Maintenance Period: 1 office should be rented only after the consultation of GM (P) regarding the location of the same. | 1*60 | | |

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

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

| No | Item | Months | Monthly Rate | Amount in Rs. |
|---|---|---|---|---|
| 1. | Office Supplies | 1*18+1*60 | | |
| 2. | Drafting Supplies | 1*18+1*60 | | |
| 3. | Computer Running Costs | 1*18+1*60 | | |
| 4. | Domestic and International Communication | 1*18+1*60 | | |

## 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 |
|---|---|---|
| 1*18 (during Construction period) | | |
| 1*60 (during Maintenance Period) | | |

## 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) | 78 | 3 | 234 | | |
| 2 | Half yearly Reports | 13 | 3 | 39 | | |
| 3 | Various others reports as provided in the Contract Agreement such as Completion Report | LS | 1 | | | |
| | | | | **Total** | | |

## IX. Road Survey Equipment

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

| Item | Kms | Rate per km (INR) | No of times survey to be conducted | Amount (INR) |
|---|---|---|---|---|
| Surface defects detection and roughness measurement using Network Survey Vehicle | 15.007 km | | 11 | |

| | | | | |
|---|---|---|---|---|
| Pavement strength measurement using FWD | 15.007 km | | 5 | |
| Bridge inspection using Mobile Bridge Inspection Unit | 0.0817 km | | 11 | |
| Road signs inspection using Retro Reflectometer | 15.007 km | | 11 | |
| | | | **Total** | |

## X. Contingencies

A fixed amount of Indian Rupees ONE MILLION 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 AUTHORITY'S ENGINEER

**[Note: The term "Agreement" and clauses thereof refer to the EPC Agreement dated----- - entered between Authority and --------(the Contractor) for the work of..... from km---- to ---- of NH No.------- in the State of ----------on Engineering, Procurement and Construction (EPC) basis].**

### 1. Scope

1.1 These Terms of Reference (the "**TOR"**) for the Authority's Engineer are being specified pursuant to the EPC Agreement dated..... (the "**Agreement**"), which has been entered into between the Authority and..... (the "**Contractor**") for [Two-Laning] of the **** section (km ** to km**) of National Highway No. ** in the State of *** on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Project Highway.

### 2 Definitions and interpretation

2.1 The words and expressions beginning with or in capital letters 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 reference 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 General

3.1 The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

3.2 The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining.

(a) any Time Extension.

(b) Any additional cost to be paid by the Authority to the Contractor;

(c) The Termination Payment; or

(d) Any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. Fifty lakh.)

3.3 The Authority's Engineer shall submit regular periodic reports, once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2 EPC Agreement.

3.5 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

3.6 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 Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

**4. Role and responsibility of Officers of the Authority**

The officer in-charge of the Authority (e.g. PD/ RO/ CGM/ Member in the case of NHAI; RO/CE/ADG in the case of MoRTH projects executed through the State PWDs; and PD/ED/Director in the case of NHIDCL) is responsible for the overall supervision and monitoring of the execution of project as the representative of the owner of the project. The Authority's Engineer is appointed to assist the Authority for carrying out the functions as detailed under clause 18.2 of the EPC Agreement. As such, an officer of the Authority is vested with all such powers and responsibilities as are enjoined upon the Authority's Engineer and is fully competent to issue any instructions for proper monitoring and supervision of the project, either by himself or through the Authority's Engineer. Instructions issued by the concerned officer of the Authority shall have the same effect as that of the Authority's Engineer in terms of this Agreement. Wherever such concerned officer issues any instructions or notice to the Contractor, he shall endorse a copy thereof to the Authority's Engineer.

**5 Construction Period**

5.1 During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6 of EPC Agreement. The Authority's Engineer shall complete such review and approve and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

5.2 The Authority's Engineer shall review and approve any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings. The review/approval of drawing should be authenticated by Authority's Engineer.

5.3 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 Authority's Engineer 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 Authority's Engineer Authority's Engineer shall also offer their comments for modifying/ improving the document. After receiving the corrected document, the Authority's Engineer shall review and formally approve the QAM and Quality Plan and send one copy to the Authority. The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

5.4 The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4 EPC Agreement.

5.5 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the contractor within 7 (seven) days of receipt of such report.

5.6 On a daily basis, the concerned key personnel of Authority Engineer shall inspect the Construction Works. Following activities need to be undertaken during the visits.

- ☐ Review of construction including progress, quality and safety of construction
- ☐ Inspection of defects and deficiencies in construction works
- ☐ Witnessing quality inspection tests at labs established by Concessionaire on a sample basis

Review of quality of work shall be done in reference to Quality Assurance Plan (QAP)/Manual and ISO 9001:2008, IRC: SP: 47-1998 and IRC: SP: 57-2000 for road bridges and roads respectively. The Authority's Engineer also needs to capture following documents and send to **NHIDCL** field office via email on a daily basis

- ☐ *Scanned copy of filled RFI (Request for Inspection) form including commentary on 'Satisfactory/Unsatisfactory' nature of work completed by Concessionaire*
- ☐ *Daily inspection report Proforma as provided in Annexure I*
- ☐ *Readings of quality inspection tests witnessed by the Consultant*
- ☐ *Minimum 6 high resolution photographs supporting the remarks made by the Authority's Engineer in RFI form*

Team Leader will be responsible for sending daily emails to **NHIDCL** office.

5.7 On a monthly basis, the Authority Engineer shall prepare a **Monthly Inspection Report** in accordance with the format prescribed in **Annexure V** setting forth an overview of the status, progress, quality and safety of construction, including the work methodology adopted, the materials used and their sources, and conformity of Construction Works with the Scope of the Project and the Specifications and Standards. In a separate section of the Inspection Report, the Authority Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in the construction of the Project Highway. The Authority Engineer shall send a copy of its Inspection Report to the Authority and the Concessionaire latest by 7th of every month. Key sections of the Monthly Progress Report are as follows.

| S No. | Section | Sub-Sections |
|---|---|---|
| 1 | **Executive Summary** | 1.1 Construction progress in current month |
| | | 1.2 Summary of strip plan |
| | | 1.3 Detailed strip plan |
| | | 1.4 Current issues and recommended actions by AE |
| 2 | **Project Overview** | 2.1 Salient Features of the Project |
| | | 2.2 Project Milestones |
| | | 2.3 Location Map |
| | | 2.4 Key Plan |
| 3 | **Critical issues and Action log** | 3.1 Pending issues and action log |
| | | 3.2 Obligations as per contract |
| 4 | **Physical Progress** | 4.1 Detailed physical progress by component |
| 5 | **Land Acquisition and Clearances** | 5.1 LA summary |
| | | 5.2 LA detail by CALA |
| | | 5.3 LA detail by village |
| | | 5.4 Manpower with each CALA |
| | | 5.5 Clearances summary |
| | | 5.6 Status of utility shifting |
| 6 | **Change of Scope** | 6.1 Status of pending COS proposals |
| 7 | **Mobilization of Resources** | 7.1 Resource mobilization by contractor/ concessionaire |
| 8 | **Financial Progress Details** | 8.1 Pen picture- Escrow |
| | | 8.2 Escrow details |
| 9 | **Summary of quality control tests** | 9.1 Tests witnessed by IE/AE |
| | | 9.2 Tests conducted by IE/AE |
| 10 | **Monitoring of maintenance obligations during construction phase** | 10.1 Critical issues and action log |
| | | 10.2 Cumulative defects and deficiencies |
| | | 10.3 Status of damages |
| 11 | **Safety features** | 11.1 Pen picture on safety features at construction site |
| | | 11.2 Accident report |
| 12 | **Annexures** | Annex 1: Detailed list of physical components as per Schedule G |
| | | Annex 2 onwards: Additional details provided by AE |

5.8 If at any time during the Construction Period, the Authority Engineer determines that the Concessionaire has not made adequate arrangements for the safety of workers and Users in the zone of construction or that any work is being carried out in a manner that threatens the safety of the workers and the Users, it shall make a recommendation to the Authority forthwith, identifying the whole or part of the Construction Works that should be suspended for ensuring safety in respect thereof.

5.9 The Authority's Engineer shall conduct the pre-construction review of manufacturer's reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

5.10 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORT&H (the "Quality Control Manuals") or any modifications/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

5.11 The Authority's Engineer shall test check at least 60(sixty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

5.12 The timing of tests referred to in Paragraph 5.10, and the criteria for acceptance/rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

5.13 In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

5.14 The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 of EPC Agreement shall apply.

5.15 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be take to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the

Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

5.16 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2 of EPC Agreement.

5.17 Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

5.18 In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

5.19 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate as the case may be. For carrying out is functions under this Paragraph 4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K. The Authority's Engineer shall use following equipment in carrying out the tests.

| S No | Key metrics of Asset | Equipment to be used |
|---|---|---|
| 1 | Surface defects of pavement | Network Survey Vehicle (NSV) |
| 2 | Roughness of pavement | Laser Profilometer |
| 3 | Strength of pavement | Falling Weight Reflectometer (FWD) |
| 4 | Bridges | Mobile Bridge Inspection Unit (MBIU) |
| 5 | Road signs and road markings | Retro-reflectometer |

## 6 Maintenance Period

6.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with Contractor.

6.2 The Authority's Engineer shall undertake regular inspections, at least once every month to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

### 6.3 Visual Inspection of project highway

6.3.1 The Authority 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 |
|---|---|---|
| **ROADS** | | |
| **(a)** | **Carriageway and paved shoulders** | |
| (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)** | **Hard/earth shoulders, side slopes, drains and culverts** | |
| (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 |
| **I** | **Road side furniture including road signs and pavement marking** | |
| (i) | Damage to shape or position;<br>poor visibility or loss of retro-reflectivity | Daily |
| **(d)** | **Street lighting and telecom (ATMS)** | |
| (i) | Any major failure of the system | Daily |
| (ii) | Faults and minor failures | Daily |
| (iii) | Streetlight with Lux Meter | Weekly |
| **(e)** | **Trees and plantation** | |
| (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 |
| **(f )** | **Rest areas/Wayside amenities** | |
| (i) | Cleaning of toilets | Daily |
| (ii) | Defects in electrical, water and sanitary installations | Daily |
| **(g)** | **Toll plaza[s]** | |
| (i) | Failure of toll collection equipment including ETC or lighting | Daily |
| (ii) | Damage to toll plaza | Weekly |
| **(h)** | **Other Project Facilities and Approach roads** | |
| (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 |
| **(j)** | **Incident Management** | |

| Nature of defect or deficiency | | Frequency of inspection |
|---|---|---|
| (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 |
| **BRIDGES** | | |
| **(a)** | **Superstructure of bridges** | |
| (i) | Cracks | Weekly |
| (ii) | Spalling/scaling | Weekly |
| **(b)** | **Foundations of bridges** | |
| (i) | Scouring and/or cavitation | Weekly |
| **I** | **Piers, abutments, return walls and wing walls of bridges** | |
| (i) | Cracks and damages including settlement and tilting | Weekly |
| **(d)** | **Bearings (metallic) of bridges** | |
| (i) | Deformation | Weekly |
| **(e)** | **Joints in bridges** | |
| (i) | Loosening and malfunctioning of joints | Weekly |
| **(f)** | **Other items relating to bridges** | |
| (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 |
| (vii) | Growth of vegetation affecting the structure or obstructing the waterway | 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 Authority's Engineer shall also be responsible for inspection and monitoring of Wayside

Amenities. ETC (Electronic Toll Collection) and ATMS (Advanced Traffic Management System) 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 Authority Engineer shall carry out condition surveys using equipment and following a frequency as defined under.

| S No | Key metrics of Asset | Equipment to be used | Frequency of condition survey |
|---|---|---|---|
| 1 | Surface defects of pavement | 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) |
| 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 Authority 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 | ☐ Length<br>☐ Width<br>☐ Depth |
| Potholes | ☐ Area<br>☐ Depth |
| Raveling | ☐ Indicator |

| Surface defect | Dimensions to be reported |
|---|---|
| | ☐ % <br> ☐ Area |
| Rutting | ☐ Depth <br> ☐ Width |
| Concrete Joint/ Faulting | ☐ Length |
| Roughness | ☐ IRI in both wheel paths |

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 upto at least 75 km/ hr.
- ☐ Profile depth accuracy of 0.5mm
- ☐ Capability for lane tracking to control driver wander' and ensure high repeatability of data between surveys.
- ☐ Measure at least 3.5m width of highway lane.
- ☐ Transverse Profile including rut depth measurement of pavement surface widths of both carriageway and shoulders. The rut depth data must be convertible to different straightedge lengths (1.8m to 3.5m) and meet industry standards (ASTM E1703 / E1703M).
- ☐ Pavement images with capability to automatically identify and rate distresses
- ☐ Roughness measurement with outputs of both raw longitudinal profiles and International Roughness Index (IRI) calculation shall be reported at least 100m referenced to the preceding Location Reference Post (LRP). The roughness must meet ASTM-E950 (equivalent to Class I road profiler). The IRI shall be determined in both wheel paths.
- ☐ Ability to record images at user-defined intervals (e.g. every 5, 10m, etc.)
- ☐ Minimum images resolution of 1600x1200
- ☐ Outputs must include Standard JPEG image or similar industry standard
- ☐ Distance resolution of <1mm,
- ☐ Capable of achieving distance accuracy of 0.1% (i.e. within 1m over 1km distance)
- ☐ All data outputs should be in a non-proprietary format (e.g. .CSV, .MDB, Excel) and not require specialist software in order to view or format data
- ☐ Data should also be capable of being easily formatted into data compatible with HDM-4

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 Authority 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 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. For flexible pavements, the sample size and the interval of the data to be collected depends on the length of the uniform section calculated and condition of the pavement section i.e. 'good', 'fair' and 'poor' for each lane, established on the pavement condition data based on the criterion given in IRC:115-2014. For rigid pavements, the deflection data may be collected at interiors, 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 Authority 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 Authority 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 retro reflection measurement

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

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

6.5 The Authority Engineer shall carry out following inspections of ETC lanes at toll plazas on a month basis:

*(i) 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/NHIDCL technical specifications and requirements*

*(ii) 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 Authority 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** | **Executive Summary** | 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** | **Project Overview** | 2.1 Key project details |
| | | 2.2 Location map |
| | | 2.3 Key plan |
| | | 2.4 Summary of project features |
| | | 2.5 RoW availability |
| **3** | **Critical issues and action taken** | 3.1 Issue and action log |
| | | 3.2 Summary of deficiencies |
| | | 3.3 Obligations as per contract |
| | | 3.4 Inspection schedule |
| 4 | **Monthly Inspection Report** | 4.1 Summary of NCR issued |
| | | 4.2 Equipment based inspection report |
| **5** | **Monitoring of ETC Lanes** | 5.1 Monthly ETC Report |
| | | 5.2 On-ground infrastructure report |
| | | 5.3 On ground ETC operations & SLA adherence |
| **6** | **Status of damages** | 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** | **Change of Scope proposals** | 7.1 Change of Scope proposals |
| **8** | **Status of pending disputes** | 8.1 Status of pending disputes |
| **9** | **Reports** | 9.1 Toll collection statement |
| | | 9.2 Accident Report |

| S.No | Sections | Sub sections |
|---|---|---|
| | | 9.3 Details of user complaints |
| | | 9.4 Encroachment list |
| | | 9.5 Lane closure report |
| **10** | **Annexures** | Annex I- Detailed visual inspection report of project highway |
| | | Annex II onwards- Additional details provided by AE |

6.7 The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and remedial measures, if any, taken by the Contractor in this behalf.

6.8 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-E, the Authority's 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 Authority's Engineer shall examine the request of the Contractor for closure of any lane (s) of the Project Highway for undertakings maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane (s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5 of EPC Agreement

## 7 Determination of costs and time

7.1 The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.

7.2 The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

7.3 The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5 of EPC Agreement.

## 8 Payments

8.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provision of Clause 10.2.4 (d) of EPC Agreement.

8.2 Authority's Engineer shall

(a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10 of EPC Agreement.

7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the First stage Maintenance Payment Statement from the Contractor pursuant to Clause 19.6 of EPC Agreement, verify the Contractor's statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

7.4 The Authority's Engineer shall certify final payment with 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16 of EPC Agreement.

## 9 Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

## 10 Miscellaneous

10.1 All key personnel and sub professional staff of the Authority 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 Authority 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

10.2 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

10.3 The Authority's 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.

10.4 Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as built Drawings in 2 (two) hard copies and in micro film form

or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of project Facilities; and shall hand them over to the Authority against receipt thereof.

10.5 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

10.6 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

## 11. PERFORMANCE CLAUSE

Authority's 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 EPC Agreement and other schedules. Any failure of the Authority Engineer in notifying to Employer and the Contractor on non-compliance of the provisions of the EPC Contract Agreement and other schedules by the EPC Contractor, non-adherence to the provision of ToR and non-adherence to the time schedule prescribed under ToR shall amount to non-performance.

The Authority Engineer shall appoint its authorized representative, who shall issue on behalf of the AE, Completion Certificate along with the Team Leader and shall carry out any such task as may be decided by Employer. The AE shall take prior approval of Employer before issuing Completion Certificate. The proposal submitted shall also include the name of the authorized representative along with the authorization letter and power of attorney.

## 12. CONSULTANT'S PROPOSAL

**12.1** List of key personnel to be fielded by the Consultants shall be as below:

i. Team Leader Cum Senior Highway Engineer
ii. Resident cum Highway Engineer
iii. Senior Quantity cum Material Expert
iv. Bridge/Structural Engineer
v. Road Safety Expert

12.2 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. All the CV's of the personals mentioned in Para5.3 (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 Authorized signatory for the Consultant. The key personnel shall also certify at the end of their bio- data Performa that they have not left any of the Employer 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 Authority Engineer, if the Project is awarded. In case the key personnel leave the

assignment without approval of Employer, Employer would beat liberty to take any appropriate action against that key personnel including debarment. The CV submitted by selected firm/JV shall be hoisted on official website of Employer.

12.3 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**.

## 13. PERIOD OF SERVICES

13.1 The services of an Authority's Engineer will be in phases as per Contract Agreement.

13.1.1 The appointment of the Authority's Engineer shall initially be as per details given below.

| Period of service (in months) | Construction period (in months) | Maintenance/ DLP Period (in months) |
|---|---|---|
| **Construction Period + DLP Period as per Civil Contract Agreement** | **18 months** | **60 Months** |

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**. Extension of Time for providing services of the Authority's Engineer may be extended concurrently with the Extension of Time granted, if any, to the EPC Contractor for the project, subject to satisfactory performance of the Authority's Engineer.

## 14. Project Coordinator

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

**Enclosure-A**

# MAN MONTHS INPUT FOR KEY PROFESSIONAL STAFF

## AUTHORITY ENGINEER

| S. No. | Key Personnel | Man-month in Construction Period of 18 months | Man-month in Defect Liability Period of 60 months |
|---|---|---|---|
| **A: Key Personnel** | | | |
| 1. | Team Leader cum Senior Highway Engineer | 1*18 | 0 |
| 2. | Resident cum Highway Engineer | 1*18 | 1*60 |
| 3. | Bridge/Structural Engineer | 1*18 | 0 |
| 4. | Senior Quality cum Material Expert | 1*18 | 0 |
| 5. | Road Safety Expert | 1*18 | 0 |
| | **Sub Total** | **90** | **60** |
| | **Total for Construction and Maintenance** | **150** | |
| **B: Sub Professional Staff** | | | |
| 1. | Survey Engineer | 1*18 | 0 |
| 2 | Assistant Bridge Engineer | 1*18 | 1*30 |
| 3 | Assistant Quality cum Material Engineer | 1*18 | 1*60 |
| 4 | Lab Technician | 1*18 | 0 |
| 5 | Quantity Surveyor | 1*18 | 1*30 |
| | **Sub Total** | **90** | **120** |
| | **Total for Construction and Maintenance** | **210** | |
| **Grand Total** | | **360** | |

**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 or Legal expert or 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 or Legal expert or Contract Specialist shall be paid at the rates quoted for Senior Pavement Specialist.

*Enclosure-B*

## QUALIFICATION OF KEY PERSONNEL

## QUALIFICATION OF KEY PERSONNEL

**TEAM LEADER CUM SENIOR HIGHWAY ENGINEER**

This is the senior most position and the expert engaged as the team leader shall be responsible for reviewing the entire Project preparation and implementation activities of the Concessionaire. He shall check all the Designs being prepared by the Concessionaire, ensure execution of works on site as per specification and standards, and continuously interact with the NHIDCL and the Concessionaire. He shall undertake Project site visits and shall guide, supervise, coordinate and monitor the work of other experts in his team as well as those of the Concessionaire. The candidate is required to be a Senior Highway Engineer, who should have a proven record of supervising, organising and managing of construction of highway projects and also of Project preparation of large magnitudes projects, as defined below, financed by international lending agencies and others. Knowledge of Project management shall be an added advantage.

He should have the following qualification / experience.

1. **Essential Qualifications.**

   a) Graduate in Civil Engineering from recognized university.

   b) Total Professional Experience of at least 12 years in handling Highway Projects.

   c) At least 5 years experience as Team Leader/Project Manager or similar capacity in Highway Development Project.

   d) He should have handled as Team Leader/Project Manager or similar capacity of at least two projects in Construction Supervision / IC (of length 40% of project length or more of similar configuration (2/4/6 laning**)

   e) He should have handled as Team Leader or similar capacity of at least two Projects of project Preparation of major highway Project (of length 40% of project length or more of similar configuration (2/4/6 laning**).

   f) Experience as Team Leader/Project Manager or similar capacity in Operation and Maintenance of Major Highway Projects(of length 40% of project length or more of similar configuration (2/4/6 laning**).

2. **Preferential Qualifications.**

   a) Post Graduate Degree in Construction Management/Transportation/Highway Engineering//Structural Engineering/ any specialised stream of Civil Engineering.

   b) Highway Development Projects (of length 40% of project length or more of similar configuration (2/4/6 laning**) taken up under EPC.

   c) Degree/Diploma/Certificate in Project Management

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

i. On behalf of Consultant: Team Leader / Resident Engineer (Construction Supervision/IE/AE).

ii. On behalf of Contractor : Project Manager (Construction/ Construction Supervision)

iii. In Government Organizations : Superintending Engineer (or equivalent) and above

(2) Only those projects will be considered for evaluation at Sl. No. 1(d), 1(e) & 1(f) above, where the input of the personnel is 12 months, 9 months and 12 months respectively.

**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.

**1. <u>Essential Qualifications.</u>**

a) Graduate in Civil Engineering from a recognized University.

b) Professional Experience of at least 12 years in Highway Projects.

c) At least 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).

**2. <u>Preferential Qualifications.</u>**

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 of Highway projects

**BRIDGE & STRUCTURAL ENGINEER**

The Bridge& Structural Engineer shall be responsible for checking the designs of bridges, ROBs, 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.

**1. <u>Essential Qualifications.</u>**

a) Graduate in Civil Engineering from a recognized University.

b) Professional Experience of at least 10 years in handling Highway/Bridge projects.

c) At least 5 years experience in Construction / Construction Supervision of bridge /

interchange / any other structures.

d) Experience in similar capacity in supervision of at least 2 Major Highway Bridges.

e) Experience in supervision of Rehabilitation and repair of 2 nos Major Bridges.

**2. <u>Preferential Qualifications.</u>**

a) Post Graduate Degree in Structural Engineering.

b) 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.

**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 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. <u>Essential Qualifications.</u>**

a) Graduate in Civil Engineering from a recognized University.

b) Professional Experience of at least 10 years in Pavement Design / Pavement Construction / Pavement Maintenance of Highways / Roads / Airfield Runways

c) Experience of at least 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. <u>Preferential Qualifications.</u>**

a) Post Graduate Degree in Highway Engineering / Pavement Engineering /Transportation Engineering

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

**SENIOR QUALITY/MATERIAL EXPERT**

The Quality/Material Expert shall review the test results of bore holes, quarry and borrow area material to find out their strength characteristics and suitability for using them in construction. He shall inspect the Concessionaire's field laboratories to ensure that they are

adequately equipped and capable of performing all the specified testing requirements of the contract. He shall look into the quality assurance aspect of the construction works and supervise the setting-up of the various Concessionaire's rock crushers and bituminous mixing plants to ensure that the specified requirements for such equipment are fully met. Experience in latest Quality Management techniques in highway projects shall have added advantage.

He should have the following qualification / experience.

**1. <u>Essential Qualifications.</u>**

a) Graduate in Civil Engineering from a recognized University.

b) Professional Experience of at least 10 years in handling Highway projects.

c) Experience of at least 5 years as Senior Quality/ Material Expert or in similar capacity in Construction / Construction Supervision /major highway projects

d) Experience as Senior Quality/ Material Expert or in similar capacity in handling of at least 2 similar highway projects.(of length 40% of project length or more of similar configuration (2/4/6 laning**) and above)

**2. <u>Preferential Qualifications.</u>**

a) Post Graduate Degree in Geotechnical Engineering / Foundation Engineering / Soil Mechanics.

**ROAD SAFETY EXPERT**

Shall be responsible for the overall Road Safety Aspect of the Project. He shall ensure that safety provisions as per relevant codes are strictly followed at site during Construction of Road and also during the Maintenance Period

**1. <u>Essential Qualifications.</u>**

a) Graduate in Civil Engineering from a recognized University.

b) Professional Experience of at least 10 years in handling Highway projects.

c) Minimum 5 years experience in Road Safety works of Major Highway Projects (4 / 6 laning projects)

d) Experience in similar capacity in Road Safety Audit of at least 2 nos. 2/4/6 lane** highway / expressway project including 1 nos. at design stage

e) Experience in similar capacity in the field of Road Safety Management Plan.

**2. <u>Preferential Qualifications</u>**

a) Post Graduate Degree in Traffic Transportation/Safety Engineering.

b) Experience in similar capacity in identification and improvement of black spots on Major Highway Project.

c) Experience in similar capacity in Preparation of Road Safety Management Plan for inter urban Highways.

**SUB PROFESSIONAL:-**

**SURVEY ENGINEER**

The candidate should be Graduate in Civil Engineering Firm may field Survey Engineer with diploma in Civil Engineering/Survey having at least 5 years experience in the field of surveying out of which at least 3 years should be in highway projects and they should have also dealt with at least 1 project of similar nature. This position requires thorough understanding of modern computer based method of surveying with total station digital level etc.

**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.

**ASSISTANT QUALITY CUM MATERIAL ENGINEER**

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

**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.

**LAB TECHNICIAN:**

They should be at least Diploma-holders in civil engineering with at least 6 years of experience in handling the quality control tests laboratories for road/bridge works or Graduates in Science with atleast 4 years of relevant experience in the field of testing of road/bridge projects.

## Annexure I- Daily Inspection Report in construction period

| Component | Item Description | Description of inspection work carried out | Results of lab tests conducted (Test conducted, Pass/Fail) | Name of key personnel inspecting the work |
|---|---|---|---|---|
| 1. Road works including culverts, and minor bridges | Embankment/ Sub Grade/GSB/WMM/ DBM/ BC | | | |
| 2. Major Bridge works, Flyovers, ROB, RUB,VUP, PUP | Foundation/ Sub structure/ Super structure | | | |
| 3. Approach to ROB/RUB/ Major Bridges/ Viaduct / RE wall | Foundation/ Sub structure/ Super structure | | | |
| 4. Other Works | | | | |

## Annexure II- Daily Inspection Report in O&M period

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

| Nature of defect or deficiency | | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | AE Remarks |
|---|---|---|---|---|---|
| **ROADS** | | | | | |
| **(a)** | **Carriageway and paved shoulders** | | | | |
| (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)** | **Hard/earth shoulders, side slopes, drains and culverts** | | | | |
| (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 | | | | |

| Nature of defect or deficiency | | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | AE Remarks |
|---|---|---|---|---|---|
| (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 | | | | |
| **(c)** | **Road side furniture including road signs and pavement marking** | | | | |
| (i) | Damage to shape or position;<br><br>poor visibility or loss of retro-reflectivity | | | | |
| **(d)** | **Street lighting and telecom (ATMS)** | | | | |
| (i) | Any major failure of the system | | | | |
| (ii) | Faults and minor failures | | | | |
| **(e)** | **Trees and plantation** | | | | |
| (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 | | | | |
| **(f )** | **Rest areas** | | | | |
| (i) | Cleaning of toilets | | | | |
| (ii) | Defects in electrical, water and sanitary installations | | | | |
| **(g)** | **Toll plaza[s]** | | | | |
| (i) | Failure of toll collection equipment including ETC or lighting | | | | |
| (ii) | Damage to toll plaza | | | | |
| **(h)** | **Other Project Facilities and Approach roads** | | | | |

| Nature of defect or deficiency | | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | AE Remarks |
|---|---|---|---|---|---|
| (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] | | | | |
| **BRIDGES** | | | | | |
| **(a)** | **Superstructure of bridges** | | | | |
| (i) | Cracks | | | | |
| (ii) | Spalling/scaling | | | | |
| **(b)** | **Foundations of bridges** | | | | |
| (i) | Scouring and/or cavitation | | | | |
| **(c)** | **Piers, abutments, return walls and wing walls of bridges** | | | | |
| (i) | Cracks and damages including settlement and tilting | | | | |
| **(d)** | **Bearings (metallic) of bridges** | | | | |
| (i) | Deformation | | | | |
| **(e)** | **Joints in bridges** | | | | |
| (i) | Loosening and malfunctioning of joints | | | | |
| **(f)** | **Other items relating to bridges** | | | | |
| (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 | | | | |

| Nature of defect or deficiency | | Defect found (Yes/No) | If defect found, Chainage & side | Compliance of previous defect (Yes/No/NA) | AE Remarks |
|---|---|---|---|---|---|
| (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 | | | | |

## Annexure IV- Month of survey for equipment based road condition assessment

Equipment based road inspection shall be done by the Authority's Engineer 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 2nd equipment based survey shall be conducted in the month of November, the 3rd survey shall be conducted in the month of May and so on. As regards FWD, the first test/survey shall be conducted at the time of completion in April. The 2nd test/survey shall be conducted in April of next year and so on.

| 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 |
| North | Punjab | May | Nov |
| North | Uttar Pradesh | May | Nov |

| Region | State | Survey before rains | Survey after rains |
|---|---|---|---|
| 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**

**National Highways & Infrastructure Development Corporation Ltd.**
**(A Government of India Undertaking)**

**CONSULTANCY SERVICES FOR AUTHORITY'S ENGINEER FOR SUPERVISION OF: WIDENING/IMPROVEMENT TO 4 (FOUR) LANE WITH PAVED SHOULDER FROM KM 66+000 TO KM 81+000 (DESIGN CHAINAGE 65+923 TO 80+930) OF DOKMOKA – LORINGTHEPI SECTION (PACKAGE-3) OF NH-29 IN THE STATE OF ASSAM UNDER BHARATMALA PARIYOJNA ON EPC MODE.**

# Authority Engineer

*[NAME OF CONSULTING FIRM]*

## MONTHLY PROGRESS REPORT

## NO. *[XX]* FOR THE MONTH OF:

## *[MONTH], [YEAR]*

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# 1 Executive Summary

## 1.1 Construction progress in current month

| Key reporting metrics | Value/ %/ Amount |
|---|---|
| Scheduled Physical Progress (%) | |
| Cumulative Physical Progress upto current month (%) | |
| Physical Progress during current month (%) | |
| Financial progress (%) | |
| Cumulative Expenditure till date (Rs Cr) | |
| Tests passed as % of total tests witnessed by IE | |
| Tests passed as % of total tests conducted by IE | |
| Number of pending COS proposals | |
| Amount for pending COS (Rs Cr) | |

## 1.2 Current issues and recommended actions by IE / AE

1. **Slow Progress of Structures: The progress of structures (especially, major bridges, flyovers and ROB's) is very slow. Overall progress is only XX%. Out of the total YY underpasses not even single underpass structure and its approaches is completed so far. No bridge is open to traffic so far.**

   a. ***Recommendation: Concessionaire should improve the progress of structures. Request for revised workplan from Concessionaire including specific activities on structures.***

2. Status of Change of Scope Proposals: Concessionaire has submitted *Xx No.* Change of Scope proposals. *Yy No.* of them are still pending for decision. Concessionaire has not submitted necessary clarifications /details for the following Changes of Scope in spite of several reminders.

   a. ***Recommendation:*** *Concessionaire to submit all pending clarifications to Authority. Authority and Concessionaire to expedite pending COS proposals.*

## 1.3 Strip Plan (Summary)

### 1. Workfront Unavailable & reason for Unavailability

| | Length (km) | % Total Pending Length |
|---|---|---|
| **Total Length** | 80 | |
| **Total Workfront Unavailable** | 7 | 12% |
| **Pending Land Acq.** | 0 | 0% |
| **Pending Clearances** | 7 | 12% |
| **Encumbrances** | 0 | 0% |

### 2. Length completed by layer (MCW)

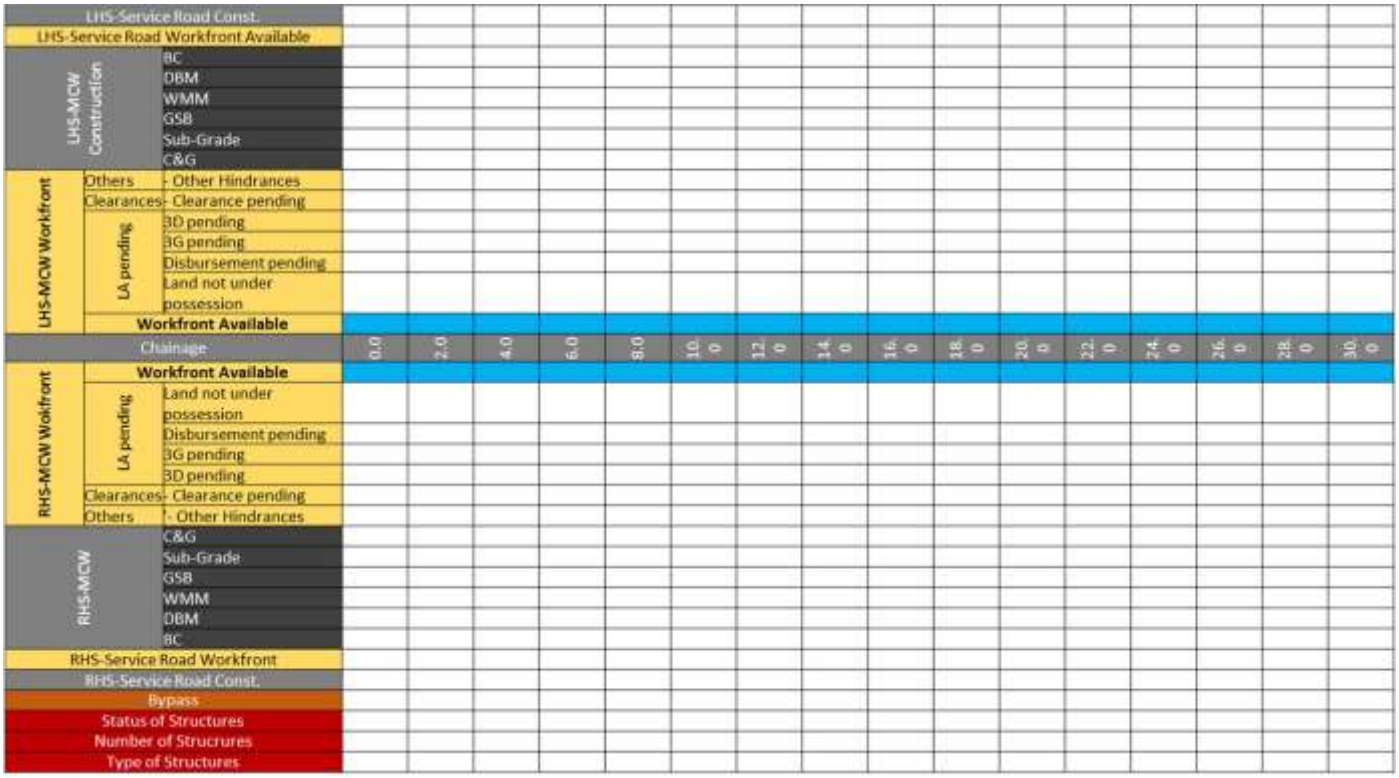
| | Length (km) | % Total Length |
|---|---|---|
| **Total Length** | 80 | |
| **Total Length Completed (Till DBM)** | 27.5 | 33% |
| **BC** | 27 | 32% |
| **DBM** | 27.5 | 33% |
| **WMM** | 29.5 | 35% |
| **GSB** | 32.5 | 39% |
| **Sub-Grade** | 35 | 42% |
| **C&G** | 47.9 | 57% |

### 3. Length completed by layer (Service Road)

| | Length (km) | % Total Length |
|---|---|---|
| **Total Length** | 35 | |
| **Total Length Completed (Till DBM)** | 0 | 0% |
| **BC** | 0 | 0% |
| **DBM** | 0 | 0% |
| **WMM** | 0 | 0% |
| **GSB** | 0 | 0% |
| **Sub-Grade** | 0 | 0% |
| **C&G** | 0 | 0% |

## 1.4 Strip Plan (Details)

Not Started/ NA | Work In Progress | Completed




Workfronnt Available

Workfront Unavailable

# 2 Project Overview

## 2.1 Salient Features of Project

| | |
|---|---|
| **Project Name** | |
| **NH No. (New/ Old)** | |
| **Scheme/ Phase** | |
| **Mode of the Execution** (BOT Toll/ BOT Annuity/ EPC/ HAM/ Item Rate/ Others) | |
| **No. of Lanes/ Configuration** | |
| **Length of the Project (in Km)** | |
| **Total Project Cost (in Cr)** | |
| **No. of Bypasses** (Name of Town, Length) | |
| **No. of Major Bridges** (Number and Location) | |
| **No. of Toll Plazas** (Number and Location) | |
| **No. of Fly Overs** (Number and Location) | |
| **DPR Authority's EngineerName** | |
| **Lead & Consortium Members of Banks** | |
| **Concessionaire Name** (SPV & Parent Company) | |
| **Date of Award** (LOA Date) | |
| **Appointed Date** | |
| **Concession Period** | |
| **Construction Period** (in Days) | |
| **O&M Period** (in Days) | |
| **Scheduled Date of Completion** | |
| **Authority Engineer** | |
| **IE / AE Agreement Date** | |
| **IE / AE Mobilization Date** | |

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

## 2.2 Project Milestones

| Project Milestone | Description (Days from Appointed Date) | Planned | | Actual | | Delay (No. of months) | Current Status |
|---|---|---|---|---|---|---|---|
| | | Physical Progress (%) | Scheduled Date | Physical Progress (%) | Revised Date | | |
| **Milestone I** | *[Description]* | 25 | *[DD/MM/YYYY]* | 25 | *[DD/MM/YYYY]* | 5 | Achieved |
| **Milestone II** | *[Description]* | 65 | *[DD/MM/YYYY]* | | *[DD/MM/YYYY]* | 22 | Started, not achieved |
| **Scheduled Completion** | *[Description]* | 100 | *[DD/MM/YYYY]* | | *[DD/MM/YYYY]* | 21 | Not started |

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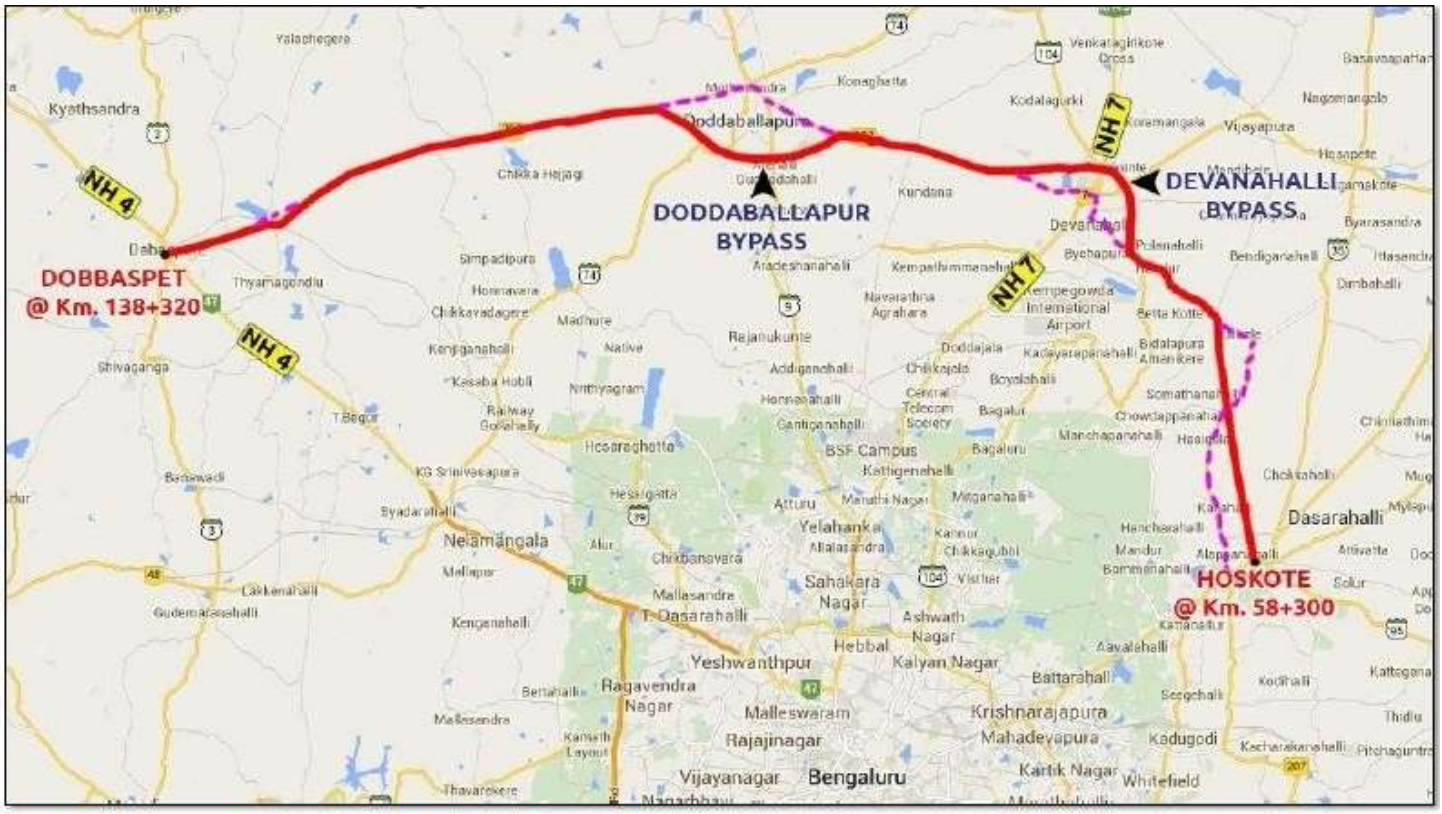
## 2.3 Location Map



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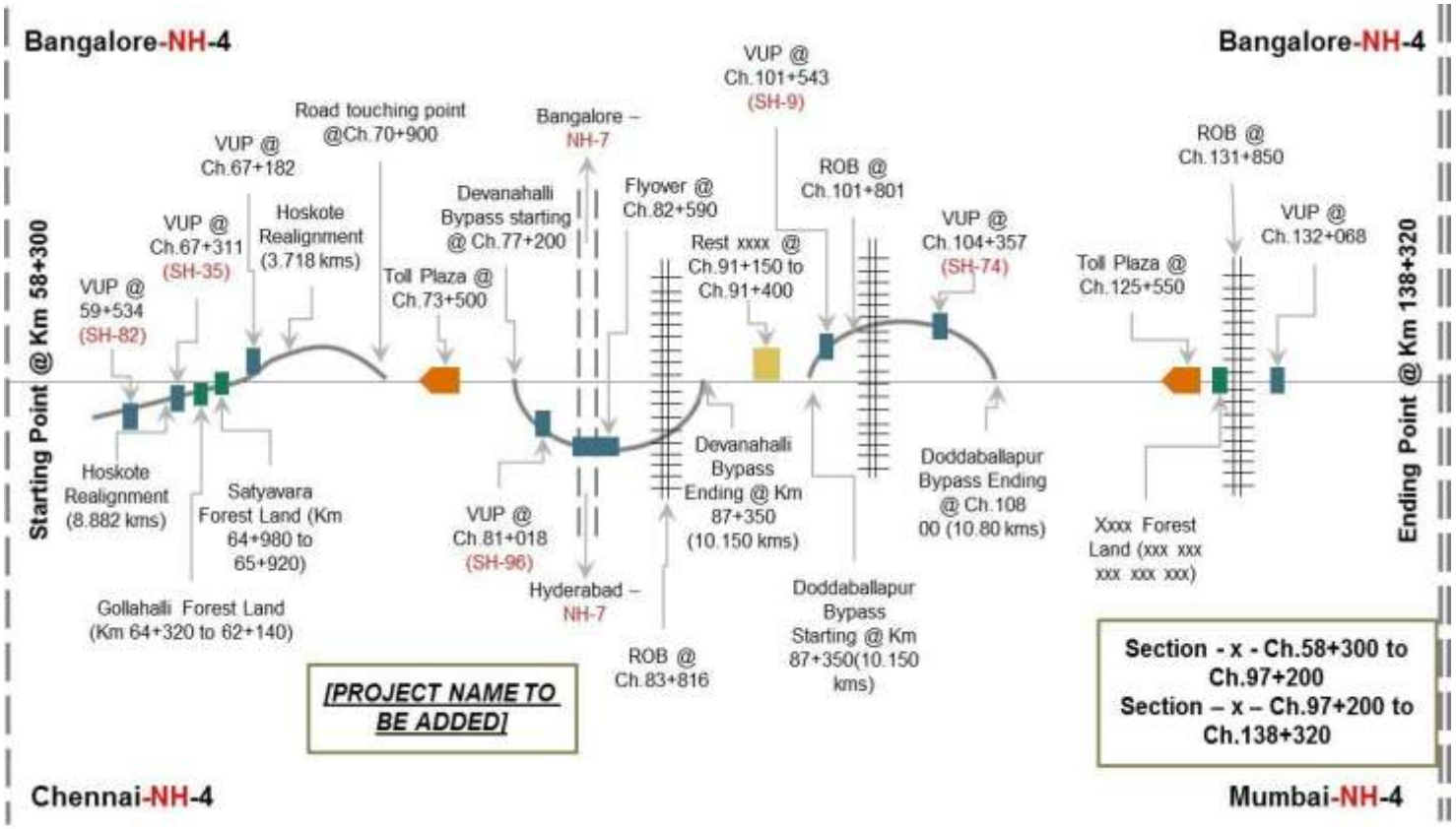
## 2.4 Key Plan




*[Above image is illustrative only. Please include chainage and name below the axis and list of features above the axis]*

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

# 3 Critical Issues & Action Log

## 3.1 Pending Issues & Action Log

| S.No | Issue Description | Type | Ongoing/ New Issue/ Resolved | Concerned Authority | Chainage(s) affected due to the issue | Length affected (km) | Action(s) taken till now | Action(s) suggested by the AE | Expected date/ Actual Date for resolving issue |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **Diversion of Xx ha of forest Land** | Clearance | **Ongoing Issue** | MoEF | *[Chainage]* | 4 kms | *1.* Proposal submitted to MoEF Letter sent by RO to MoEF nodal officer on *[DD/MM/YYYY]* | Escalate to higher level officers at MoEF | *[DD/MM/YYYY]* |
| 2 | **21 Crcompensation disbursement pending** | Land Acquisition | **Resolved** | *[CALAName]* | *[Chainage]* | 2.4 km | 1. Escalated to chief secretary level through DO from Chairman/ Secretary, dated *[DD/MM/YYYY]* | | *[DD/MM/YYYY]* |
| 3 | **Slow progress by concessionaire** | Concessionaire Issue | **New Issue** | *[Concess. Name]* | *[Chainage]* | 57 km | None | Project Director to call higher ups of concessionaire | *[DD/MM/YYYY]* |

## 3.2 Obligations as per Contract

| Expected Contents & Structure |
|---|
| *Please write a summary of non-compliances of contractual obligations highlighting reasons for delay, stating pending actions and their potential risk to the project's progress and recommended actions by the IE.*<br>☐ ***Critical obligation sand constraints of concessionaire as per contract***<br>☐ ***Critical obligations of authority as per contract***<br>☐ ***Critical pending obligations of IE as per contract***<br>***NOTE: Please include important issues requiring intervention of various parties, giving details and background wherever necessary*** |

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

# 4 Physical Progress

| Component | % Weightage | Physical Progress(During Current Month) | Physical Progress (Cumulative, Upto Current Month) |
|---|---|---|---|
| **Road Works** | 35.00% | 5% | 15.0% |
| **MajorBridgeworksandROB/RUB** | 40.00% | 1.20% | 26.2% |
| **Structures** | 21.00% | 0.00% | 0.8% |
| **Other Works** | 4.00% | 0.00% | 0.0% |
| **Physical Progress** | | **2%** | **42.0%** |

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

## 4.1 Detailed Scope of Work & Physical Progress by Component

| Component | Cost Weightage in Project (%) | Item Description | Cost Weightage in Component (%) | Planned in Scope (As per Scope of Work) | Progress till Date | %Physical Progress | Value of Physical Progress (7X4) |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **1. Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/ Major Bridges/ Structures (but excluding service roads)** | 35.00% | 1. C&G | 5.00% | 80 km | 45 km | 56% | 2.8% |
| | | 2. Embankment | 5.00% | 80 km | 40 km | 50% | 2.5% |
| | | 3. Sub Grade | 5.00% | 80 km | 35 km | 44% | 2.2% |
| | | 4. GSB | 5.00% | 80 km | 33 km | 41% | 2.1% |
| | | 5. WMM | 5.00% | 80 km | 30 km | 38% | 1.9% |
| | | 6. DBM | 5.00% | 80 km | 28 km | 35% | 1.8% |
| | | 7. BC | 5.00% | 80 km | 27 km | 34% | 1.7% |
| **2. Major Bridge works and ROB/RUB** | 40.00% | 1. Major Bridges | 10.00% | 6 No | 6 No | 100% | 10.0% |
| | | 2. Minor Bridges | 5.00% | 23 No | 21 No | 91% | 4.6% |
| | | 3. Flyovers | 5.00% | 2 No | 0 | 0% | 0.0% |
| | | 4. ROB | 5.00% | 228 No | 121 No | 53% | 2.7% |
| | | 5. VUP | 5.00% | 11 No | 6 No | 55% | 2.7% |
| | | 6. PUP | 5.00% | 15 No | 6 No | 40% | 2.0% |
| | | 7. RUB | 5.00% | 136 No | 114 No | 84% | 4.2% |
| **3. Structures (elevated sections, reinforced earth)** | 21.00% | 1. Foundation | 5.00% | 35 km | 2.2 km | 6% | 0.2% |
| | | 2. Sub-structure | 5.00% | 35 km | 2.1 km | 6% | 0.2% |
| | | 3. Super-structure | 5.00% | 35 km | 2.1 km | 6% | 0.2% |
| | | 4. Reinforced Earth Wall | 6.00% | 35 km | 2.1 km | 6% | 0.2% |
| **4. Other Works** | 4.00% | 1. Toll Plaza | 4.00% | 4 No | 0 | 0% | 0.0% |
| **GRAND TOTAL** | | | **100%** | | | | **42.0%** |

# 5 Land Acquisition and Clearance

## 5.1 LA Summary

| Description | Total Required (ha) | Total in possession at start (ha) | Total to be acquired (ha) |
|---|---|---|---|
| **Existing ROW** | 135.00 | 135.00 | 0.00 |
| **Pvt. Land To be Acquired** | 240.00 | 0.000 | 240.00 |
| **Public Land To be Transferred** | 52.00 | 50.35 | 1.65 |
| **Grand Total** | **427** | **185** | **242** |

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## 5.2 LA Detail by CALA

| CALA | Total Land left to be Acquired (Ha) | 3H Pend-ing (ha) | 3HDone(ha) | 3G Pend-ing (ha) | 3GDone(ha) | 3DPending(ha) | 3DDone(ha) | 3APending(Ha) | 3ADone(ha) | Amount Awarded (Crore Rs.) | Amount Deposited (Crore Rs.) | Amount Disbursed by CALA(Crore Rs.) | Pending Amount (Crore Rs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *CALA1]* | 150 | 15 | 15 | 15 | 135 | 0 | 150 | 0 | 150 | 396 | 370 | 327 | 43 |
| *[CALA2]* | 67 | 0 | 0 | 0 | 67 | 0 | 67 | 0 | 67 | 132 | 132 | 120 | 23 |
| *[CALA 3]* | 23 | 23 | 23 | 23 | 0 | 14 | 9 | 0 | 23 | 0 | 0 | 0 | 0 |
| **Grand Total** | **240** | **38** | **202** | **38** | **202** | **14** | **226** | **0** | **240** | **528** | **502** | **447** | **66** |

## 5.3 LA Detail by Village for each

### CALA CALA 1

| Village | Total Land left to be Acquired (Ha) | 3H Pend-ing (ha) | 3H Done (ha) | 3G Pend-ing (ha) | 3G Done (ha) | 3D Pending (ha) | 3D Done (ha) | 3A Pending (Ha) | 3A Done (ha) | Amount Awarded (Crore Rs.) | Amount Deposited (Crore Rs.) | Amount Disbursed by CALA (Rs Cr) | Pending Amount (Rs Cr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *[Village 1]* | 150 | 15 | 15 | 15 | 135 | 0 | 150 | 0 | 150 | 396 | 370 | 327 | 43 |
| *[Village 2]* | 67 | 0 | 0 | 0 | 67 | 0 | 67 | 0 | 67 | 132 | 132 | 120 | 23 |
| *[Village 3]* | 23 | 23 | 23 | 23 | 0 | 14 | 9 | 0 | 23 | 0 | 0 | 0 | 0 |
| **Grand Total** | **240** | **38** | **202** | **38** | **202** | **14** | **226** | **0** | **240** | **528** | **502** | **447** | **66** |

ALL FIGURES & GRAPHS IN TEMPLATES ARE ILLUSTRATIVE. PLEASE ADD ACTUAL DETAILS

## 5.4 Manpower details of CALA

| CALA | Provided by <NHIDCL> / State Govt | Amins/ Surveyors | Patwaris/ Village accountant | Revenue Inspectors/ Kanungo | Tehsildars/ Dep. Tehsildars | Clerks/ Sahayaks | Accountants | Computer operators | Peons | Chainman | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *[CALA 1]* | <NHIDCL> | 4 | 1 | 0 | 0 | 3 | 0 | 3 | 1 | 0 | 12 |
| *[CALA 1]* | State Govt | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| *[CALA 2]* | <NHIDCL> | | | | | | | | | | |
| *[CALA 2]* | State Govt | | | | | | | | | | |
| **Grand Total** | | | | | | | | | | | |

## 5.5 Clearances Summary

| **Environment** | | | | |
|---|---|---|---|---|
| **Proposal Description** | **Status** | **Length Impacted** | **Current Stage** | **Issues/ Comments** |
| Approval of construction in coastal zone | Obtained | Nil | Completed | |
| **Forest Land** | | | | |
| **Proposal Description** | **Status** | **Length Impacted** | **Current Stage** | **Issues/ Comments** |
| Diversion of Xx ha (*[Chainage]*) | Pending | *[Length in km]* | Completed | Stage 1 clearance pending |
| Diversion of Xx Ha. (*[Chainage]*) | Obtained | Nil | Ongoing | |

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| Wildlife | | | | |
|---|---|---|---|---|
| **Proposal Description** | **Status** | **Length Impacted** | **Current Stage** | **Issues/ Comments** |
| Diversion of Xx Ha. of forest land | Pending | *[Length in km]* | Ongoing | Queries sent to MoEF by RO, compliance pending |
| **TreeCutting** | | | | |
| **Proposal Description** | **Status** | **Length Impacted** | **Current Stage** | **Issues/ Comments** |
| N.A. | N.A. | N.A. | N.A. | N.A. |
| **Railway (ROBs/RUBs)** | | | | |
| **Proposal Description** | **Status** | **Length Impacted** | **Current Stage** | **Issues/ Comments** |
| *[GAD Number]* | Proposal Submitted, Approval pending | *[Chainage]* | Uploaded on portal on *[DD/MM/YYYY]* | N.A. |

## 5.6 Status of utilities shifting

| Utility Category | Name | Status | Length affected | Department | Date of request by Authority for estimate | Date when Estimate was Received from concerned dept. | Date of Approval by Authority RO/ HQ | Date of Deposit of super-vision charge | Progress ofPhysical Shifting | Date of Certification from Agency for Completion | Estimate Amount | Issue/ Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Water** | | **Estimate Approved** | *[Length in km]* | *[DEPARTMENT]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | Not started | TBD | | |
| **Electricity** | | **Estimate Approved** | *[Length in km]* | *[DEPARTMENT]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | Not started | TBD | | |
| **Others** | | **Estimate Approved** | *[Length in km]* | *[DEPARTMENT]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | *[DD/MM/YYYY]* | | TBD | | |

# 6 Change of Scope

| S No. | Proposal Details | Date of first submission to AE | Current Status | COS Amount | ed/ Actual Date of Approval |
|---|---|---|---|---|---|
| 1 | Construction of *[Flyover Name]* at *[Chainage]* | *[DD/MM/YYYY]* | Approved in principle by Authority. Detailed quantities 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]* |

## 7 Mobilization of Resources

| S No. | Equipment Name | Make | Model | Age of Equipment | Planned/ Required Quantity | Actual Quantity | Deployed During theMonth | Reason(s) for Under/Over Mobilization | Expected Delay due to Under-Mobilization | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | Excavator/ Poclain | | | | | 5 | | | | |
| | Paver | | | | | 2 | | | | |
| | Transit Meter | | | | | 0 | | | | |
| | Plate Compactors | | | | | 0 | | | | |
| | *[ADD OTHERS]* | | | | | | | | | |

## 8 Financial Progress Details (for PPP projects)

### 8.1 Pen Picture - Escrow

| TPC (Cr) | Cumulative inflow to Escrow till previous month (Cr) | Cumulative outflow from Escrow till previous month(Cr) | Inflow to Escrow during the month (Cr) | Outflow from Escrow during the month(Cr) |
|---|---|---|---|---|
| 1,206 | 1,033 | 900 | 30 | 35 |

Are the Escrow withdrawals in accordance with the order of withdrawal as specified in the Concession Agreement?

*Tick as applicable*

If not, details to be provided below:

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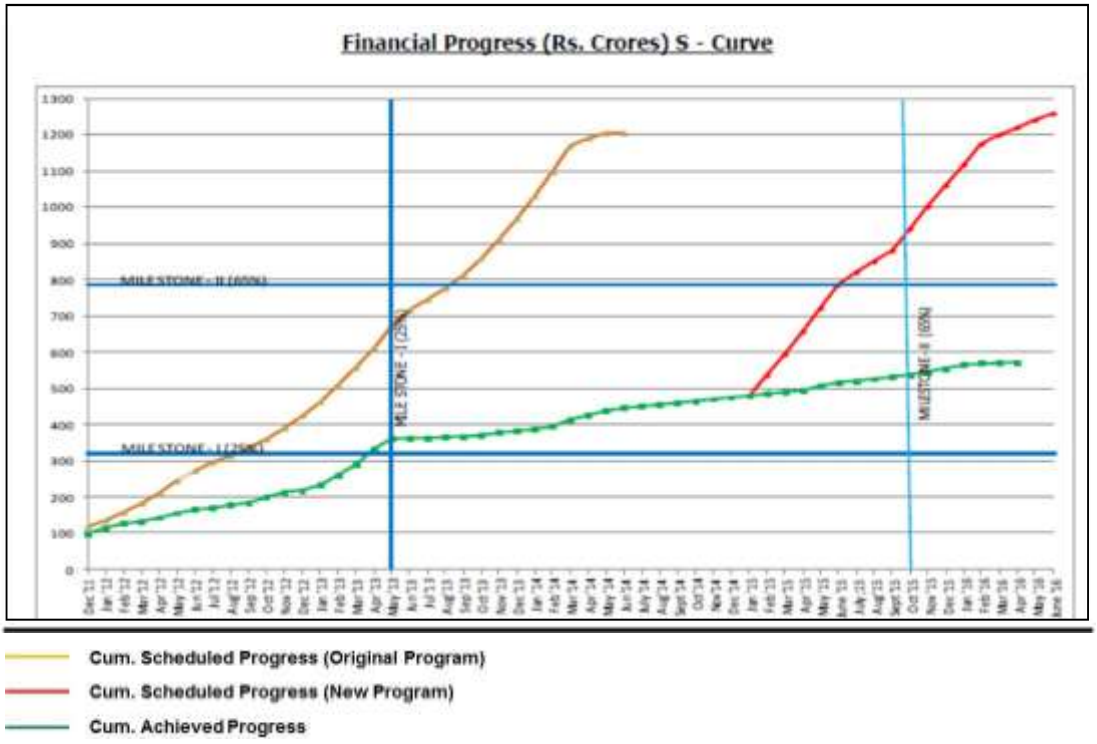
## 8.2 Escrow details

| TPC (Cr) | Cumulative exp. till date (Cr) | Escrow Plan till date-Debt (BOT)(Cr) | Escrow Plan till date-Equity (BOT) (Cr) | Escrow Plan till date- VGF (BOT) (Cr) | Escrow Actual till date-Debt (BOT) (Cr) | Escrow Actual till date-Equity (BOT) (Cr) | Escrow Actual till date- VGF (BOT) (Cr) |
|---|---|---|---|---|---|---|---|
| 1,206 | 1,033 | 900 | 306 | - | 769 | 264 | - |




PLEASE EXCLUDE OUTSTANDING MOBILIZATION FEE/ ADVANCE IN S-CURVE

# 9 Summary of quality control tests

## 9.1 Tests witnessed by IE/ AE

| Description | Frequency of tests | | Unit | Total test up to Previous Month | | | Total test in This Month | | | Cumulative No. of tests | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nos | Qty. | | Conducted | Pass | Fail | Conducted | Pass | Fail | Conducted | Pass | Fail | |
| **Sub grade** | | | | | | | | | | | | | |
| Procter test | 1 | 1500 | m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Atterberg Limits | 1 | 1500 | m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Free Swell Index | 1 | 1500 | m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Grain Size Analysis | 1 | 1500 | m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| C.B.R | 1 | 3000 | m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Granular Sub Base** | | | | | | | | | | | | | |
| Gradation | 1 | 200 | m3 | 151 | 151 | 0 | 5 | 5 | 0 | 156 | 156 | 0 | |
| Atterberg Limits | 1 | 200 | m3 | 151 | 136 | 15 | 5 | 5 | 0 | 151 | 136 | 15 | |
| Procter test | 1 | 1500 | m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Wet Mix Macadam** | | | | | | | | | | | | | |
| **Filter material** | | | | | | | | | | | | | |
| **Concrete** | | | | | | | | | | | | | |
| **Cement** | | | | | | | | | | | | | |
| **Water** | | | | | | | | | | | | | |
| **Prime Coat** | | | | | | | | | | | | | |
| **Tack coat** | | | | | | | | | | | | | |
| **Dense Bituminou** | | | | | | | | | | | | | |

| Description | Frequency of tests | | Unit | Total test up to Previous Month | | | Total test in This Month | | | Cumulative No. of tests | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nos | Qty. | | Conducted | Pass | Fail | Conducted | Pass | Fail | Conducted | Pass | Fail | |
| s Macadam | | | | | | | | | | | | | |
| Bituminous Concrete | | | | | | | | | | | | | |
| Bitumen test | | | | | | | | | | | | | |
| DLC | | | | | | | | | | | | | |
| Steel | | | | | | | | | | | | | |

## 9.2 Tests conducted by IE / AE

*<Quality inspection test results to be reported in a table similar to the table provided in previous section>*

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# 10 Monitoring of maintenanceobligations during construction phase

## 10.1 Critical issues 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 | Concessionair e | *325+200 to 327+800* | 2.6 | Irregular watering | Replacemen t of plants and daily watering | NA |
| 2 | Large potholes | New | Concessionair e | *387+300 LHS* | 0.1 | None | Filling of potholes | <DD/M M> |

## 10.2 Summary of repair work

| SNo | Description | Unit | Total | Work done upto previous month | Work done during reporting month | Balance | Remarks |
|---|---|---|---|---|---|---|---|
| **1** | **Carriageway and paved shoulders** | | | | | | |
| (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/Skiding | Sqm | | | | | |
| (f) | Ravelling | Sqm | | | | | |
| (g) | Damage to pavement edges exceeding 10cm | m | | | | | |
| **2** | **Hard/Earth Shoulders** | | | | | | |

| SNo | Description | Unit | Total | Work done upto previous month | Work done during reporting month | Balance | Remarks |
|---|---|---|---|---|---|---|---|
| (a) | Rain cuts/ gullies in slope | Cum | 650 | 25 | - | 625 | |
| (b) | Edge drop at shoulders exceeding 40 mm | m | | | | | |
| **3** | **Drains and culverts** | | | | | | |
| (a) | Cleaning of Culvert | Nos | 1 | - | - | 1 | |
| (b) | Damage to or silting of culverts | | | | | | |
| (c) | Silting of drains in urban/ semi urban areas | | | | | | |
| **4** | **Road furniture** | | | | | | |
| (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 | |
| **5** | **Street lighting and telecom (ATMS)** | | | | | | |
| (a) | Street lights | Nos | | | | | |
| (b) | Telecom | Nos | | | | | |
| **6** | **Trees and plantation** | | | | | | |
| (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 | |

| SNo | Description | Unit | Total | Work done upto previous month | Work done during reporting month | Balance | Remarks |
|---|---|---|---|---|---|---|---|
| **7** | **Buildings and bridges** | | | | | | |
| (a) | Rest areas | | | | | | |
| (b) | Toll plazas | | | | | | |
| (c ) | Bridges | | | | | | |

## 10.3 Status of damages

| SNo | Period | Amount of damages (Rs) |
|---|---|---|
| 1 | Upto June 2016 | |
| 2 | Jul 2016 | |
| 3 | Aug 2016 | |
| 4 | Sep 2016 | |
| | **Total** | |

# 11 Safety features

## 11.1 Pen picture of safety features

Details to be provided after assessment of the site requirement vis-à-vis provisions in the Concession Agreement:

| Location of Black Spots | Suggested Remedial Measures within provisions of Concession Agreement | Additional Remedial Measures (if any) | Financial implications of additional Remedial Measures for Authority(Cr.) |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

**11.2 Accident Report**

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

## 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 |
| 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 |

## 12 Annexures

### Annex 1. Detailed List of Physical Components as per Schedule G

| Component | Physical Item |
|---|---|
| **Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/ Major Bridges/ Structures (but excluding service roads)** | **A- Widening and strengthening of existing road** |
| | (1) Earthwork up to top of the sub-grade |
| | (2) Granular work (sub- base, base, shoulders) |
| | (a) GSB |
| | (b) WMM |
| | (3) Shoulders |
| | (4) Bituminous work |
| | (a) DBM |
| | (b) BC |
| | (5) Rigid Pavement |
| | Concrete work |
| | (6) Widening and repair of culverts |
| | (7) Widening and repair of minor bridges |
| | **B- New realignment/bypass** |
| | **(1) Earthwork up to top of the sub-grade** |
| | (2) Granular work (sub- base, base, shoulders) |
| | (a) GSB |
| | (b) WMM |
| | (3) Shoulders |
| | (4) Bituminous work |
| | (a) DBM |
| | (b) BC |
| | (5) Rigid Pavement |
| | Concrete work |
| | **C-New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:** |
| | (1) Culverts |
| | (2) Minor bridges |
| | (a) Foundation |
| | (b) Sub-structure |
| | (c) Super-structure (including crash barriers etc. complete) |
| | (3) Cattle/Pedestrian underpasses |
| | (a) Foundation |
| | (b) Sub-structure |
| | (c) Super-structure (including crash barriers etc. complete) |
| | (4) Pedestrian overpasses |
| | (a) Foundation |
| | (b) Sub-structure |
| | (c) Super-structure (including crash barriers etc. complete) |
| | (5) Grade separated structures |
| | (a) Underpasses |

| Component | Physical Item |
|---|---|
| | (i) Foundation |
| | (ii) Sub-structure |
| | (iii) Super-structure (including crash barriers etc.complete) |
| | (b) Overpass |
| | (i) Foundation |
| | (ii) Sub-structure |
| | (iii) Super-structure (including crash barriers etc. complete) |
| | (c) Flyover |
| | (i) Foundation |
| | (ii) Sub-structure |
| | (iii) Super-structure (including crash barriers etc. complete) |
| | (d) Foot over Bridge |
| Major Bridge works and ROB/RUB | **A- Widening and repairs of Major Bridges** |
| | (1) Foundation |
| | (a) Open Foundation |
| | (b) Pile Foundation/Well Foundation |
| | (2) Sub-structure |
| | (3) Super-structure (including crash barriers etc. complete) |
| | **B- Widening and repair of** |
| | (a) ROB |
| | (1) Foundation |
| | (2) Sub-structure |
| | (3) Super-structure (including crash barriers etc. complete) |
| | (b) RUB |
| | (1) Foundation |
| | (2) Sub-structure |
| | (3) Super-structure (including crash barriers etc. complete) |
| | **C- New Major Bridges** |
| | (1) Foundation |
| | (a) Open Foundation |
| | (b) Pile Foundation/Well Foundation |
| | (2) Sub-structure |
| | (3) Super-structure (including crash barriers etc. complete) |
| | **D- New rail-road bridges** |
| | (a) ROB |
| | (1) Foundation |
| | (2) Sub-structure |
| | (3) Super-structure (including crash barriers etc. complete) |
| | (b) RUB |
| | (1) Foundation |
| | (2) Sub-structure |
| | (3) Super-structure (including crash barriers etc. complete) |
| **Structures (elevated sections, reinforced earth)** | **(1) Foundation** |
| | **(2) Sub-structure** |
| | **(3) Super-structure (including crash barriers etc. complete)** |

| Component | Physical Item |
|---|---|
| | **(4) Reinforced Earth Wall (includes Approaches of ROB, Underpasses, Overpasses, Flyover etc.** |
| **Other Works** | **(i) Service roads/ Slip Roads** |
| | **(ii) Toll Plaza** |
| | **(iii) Road side drains** |
| | **(iv) Road signs, markings, km stones, safety devices, ….** |
| | **(a)Road signs, markings, km stones, ….** |
| | **(b) Concrete Crash Barrier/ W-Beam Crash Barrier in Road work** |
| | **(v) Project facilities** |
| | (a) Bus bays |
| | (b) Truck lay-byes |
| | (c) Rest areas |
| | **(vi) Repairs to bridges/structures** |
| | **(vii) Road side plantation** |
| | **(viii) Protection works** |
| | (a) Boulder Pitching on slopes |
| | (b) Toe/Retaining wall |
| | **(ix) Tunnel** |
| | (a) Excavation |
| | (b) Construction of support system including rock bolting, lining etc. |
| | (c) On complete completion of tunnel |
| | **(x) Miscellaneous** |

* The above list is illustrative and may require modification as per the actual scope of the work

## Annex 2. Onwards

IE / **AE** 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:

- ☐ Review status of drawings/ design reports
- ☐ Review status of other documents
- ☐ Minutes of review meeting
- ☐ Detailed Inspection report of project highway
- ☐ Correspondence details
- ☐ Weather report
- ☐ Organizational chart of Concessionaire / Contractor and IE / AE
- ☐ List of lab equipment
- ☐ Details of user complaints
- ☐ Project photographs

**National Highways & Infrastructure Development Corporation Ltd.**
**(A Government of India Undertaking)**

**CONSULTANCY SERVICES FOR AUTHORITY'S ENGINEER FOR SUPERVISION OF WIDENING/IMPROVEMENT TO 4 (FOUR) LANE WITH PAVED SHOULDER FROM KM 66+000 TO KM 81+000 (DESIGN CHAINAGE 65+923 TO 80+930) OF DOKMOKA – LORINGTHEPI SECTION (PACKAGE-3) OF NH-29 IN THE STATE OF ASSAM UNDER BHARATMALA PARIYOJNA ON EPC MODE.**

# Authority Engineer

*[NAME OF CONSULTING FIRM]*

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

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

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9.2 Accident Report

9.3 Details of complaints

9.4 Encroachment list

9.5 Lane Closure Report

10 Annexures

*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 | ☐ Concessionaire has commenced the work for renewal and repair of pavement on the project highway w.e.f 14th September 2016 |
| Shoulder | |
| Drainage | ☐ Cleaning of drainage in built up areas n progress |
| Median | |
| Road furniture | ☐ Concessionaire has taken up repairs and maintenance of MBCB and electric poles, etc on issuance of NCPs from Authority Engineer |
| Bridges | |
| Buildings | ☐ As per provisions of CA and policy decided by MoRTH/<Agency>, 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 |
| Horticulture | ☐ Planting of new trees from Chainage 200+300 to 226+650<br>☐ Trimming of plants which were causing obstruction to highway users |

## 1.4 Pending issues

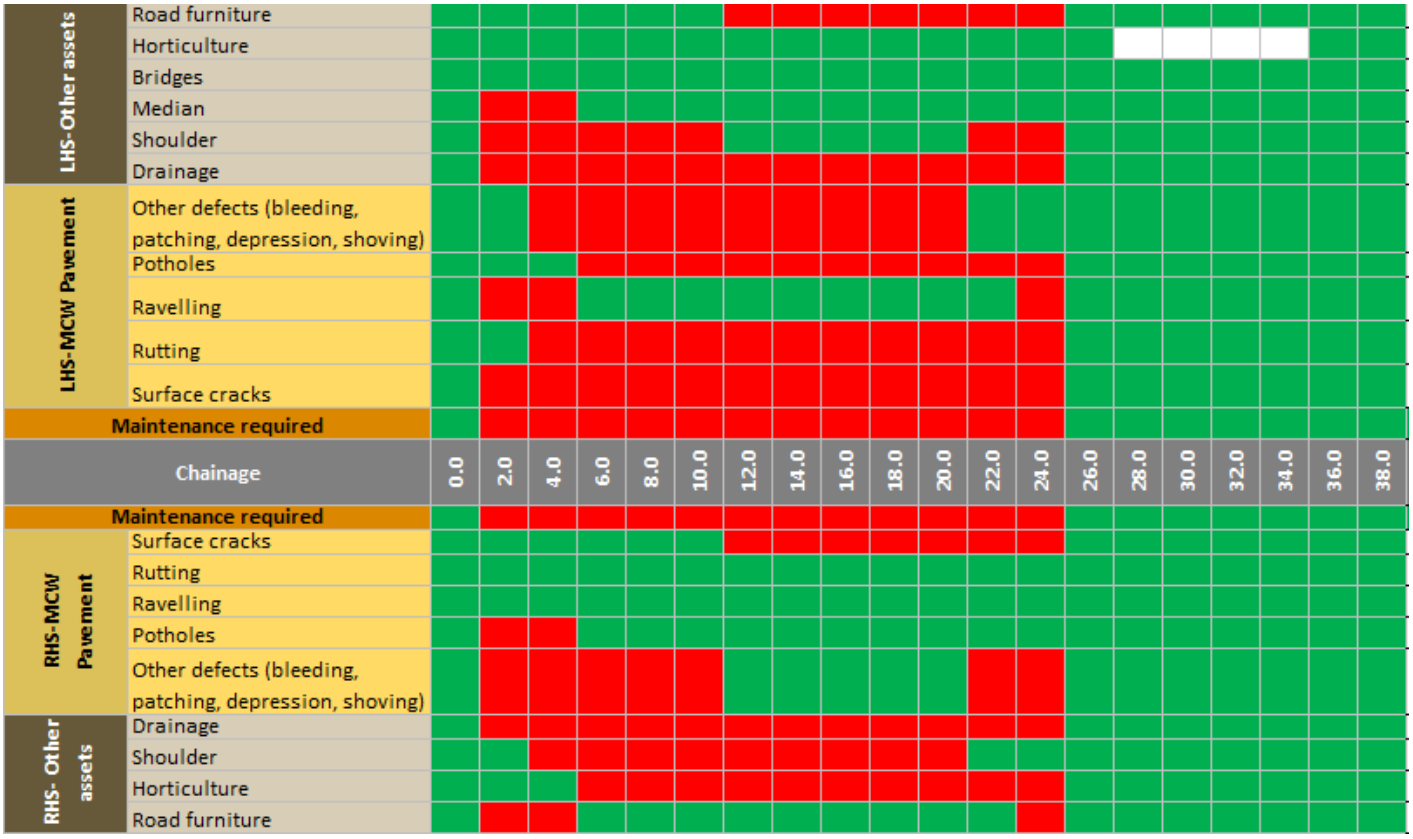
- Overlay on the entire stretch of project length of 252 km and service roads has not been taken up by Concessionaire yet since the date of completion of overlay is due in next 25 days
- Over all progress is very slow regarding repair of potholes and rutting on Main Carriageway which is causing inconvenience 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 Authority 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. AE 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 (Maintenance not required)** | |
| **Poor road condition (Maintenance required)** | |

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

# Main report

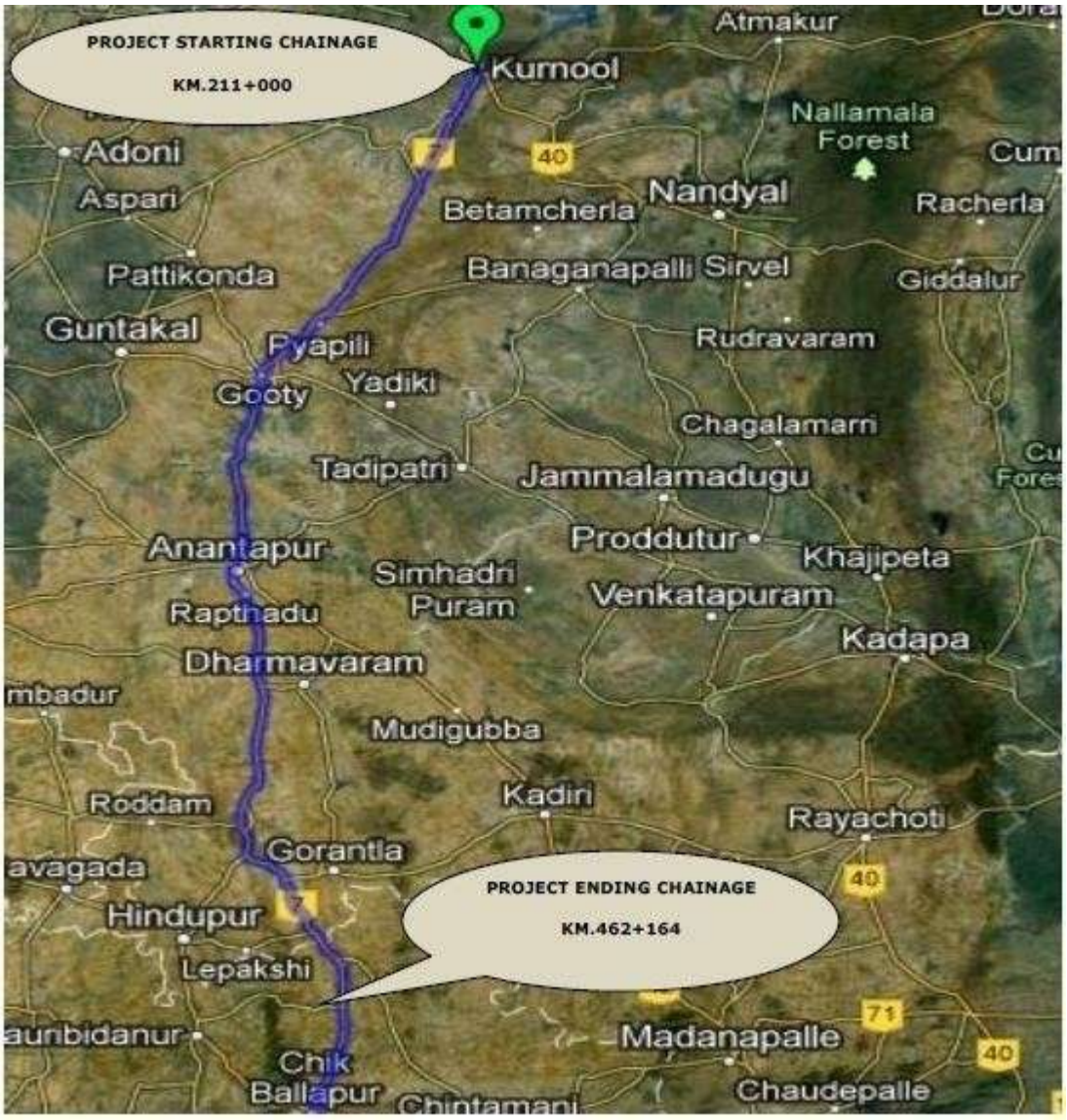
## 2 Project Overview

### 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** | |
| **Authority Engineer** | |
| **AE Agreement Date** | |
| **AE Mobilization Date** | |
| **AE Scheduled Completion Date** | |
| **AE EOT (Extension Of Time)** | |

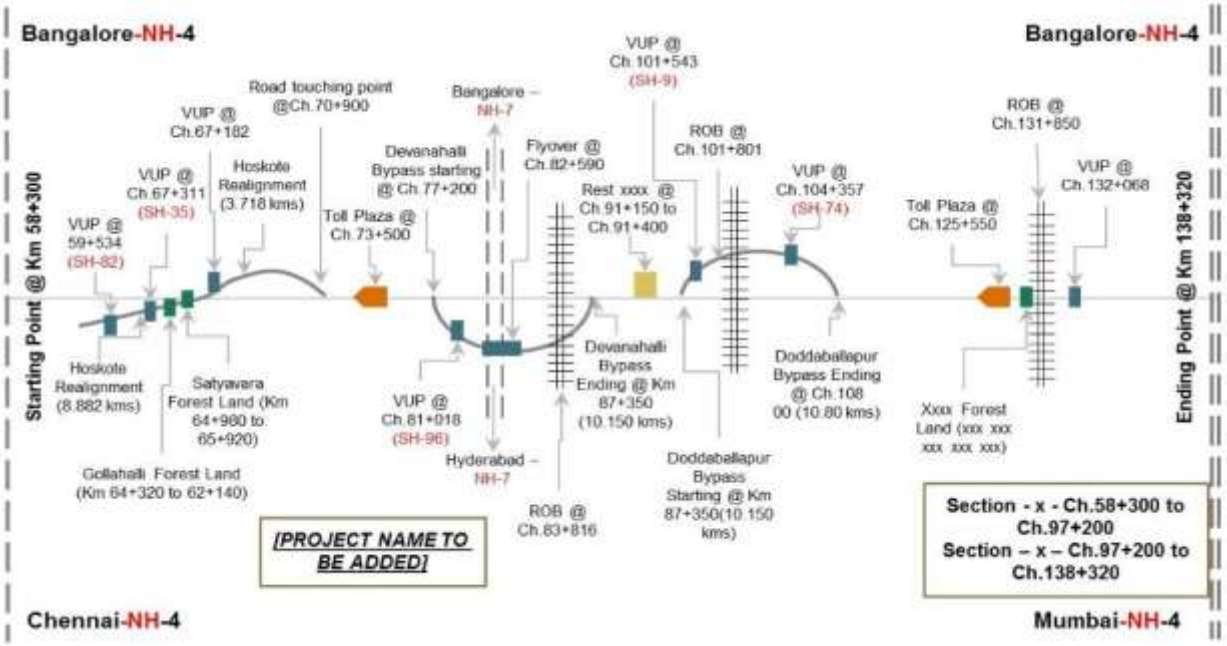
*All figures and graphs in templates are illustrative. Please add actual details.*

## 2.2 Location Map



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

## 2.3 Key plan




## 2.4 RoW availability

### Width of RoW available on both sides of the highway

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LHS- Width of RoW available | >20 m | | | | | | | | | | | | | | | | | | | |
| | 20 m | | | | | | | | | | | | | | | | | | | |
| | 18 m | | | | | | | | | | | | | | | | | | | |
| | 16 m | | | | | | | | 16 | 16 | 16 | 16 | 16 | 16 | 16 | | | | | |
| | 14 m | | | | | | | | | | | | | | | | | | | |
| | 12 m | | | | | | | | | | | | | | | | | | | |
| | 10 m | | | | | | | | | | | | | | | | | | | |
| | 8 m | | | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | | | | | | | | | | | | |
| | 6 m | | | | | | | | | | | | | | | | | | | |
| | 4 m | | | | | | | | | | | | | | | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 |
| | 2 m | 1.8 | 1.8 | | | | | | | | | | | | | | | | | |
| Chainage | | | | | | | | | | | | | | | | | | | | |
| RHS- Width of RoW available | 2 m | | | | | | | | | | | | | | | | | | | |
| | 4 m | | | | | | | | | | | | | | | | | | | |
| | 6 m | | | | | | | | | | | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | | | |
| | 8 m | | | | | | | | | | | | | | | | | | | |
| | 10 m | 10 | 10 | | | | | | | | | | | | | | | | | |
| | 12 m | | | | | | | | | | | | | | | | | | | |
| | 14 m | | | | | | | | | | | | | | | | | | | |
| | 16 m | | | | | | | | | | | | | | | | | | | |
| | 18 m | | | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | | | | | | | | | |
| | 20 m | | | | | | | | | | | | | | | | | | | |
| | >20 m | | | | | | | | | | | | | | | | | 25 | 25 | 25 |

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

## 2.5 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 |

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

# 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 | Concession aire | *325+200 to 327+800* | 2.6 | Irregular watering | Replacemen t of plants and daily watering | NA |
| 2 | Large potholes | New | Concession aire | *387+300 LHS* | 0.1 | None | Filling of potholes | <DD/M M> |

*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 |
|---|---|---|---|---|---|---|---|
| **1** | **Carriageway and paved shoulders** | | | | | | |
| (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/Skiding | Sqm | | | | | |
| (f) | Ravelling | Sqm | | | | | |
| (g) | Damage to pavement edges exceeding 10cm | m | | | | | |
| **2** | **Hard/Earth Shoulders** | | | | | | |
| (a) | Rain cuts/ gullies in slope | Cum | 650 | 25 | - | 625 | |

| SNo | Description | Unit | Total | Work done upto previous month | Work done during reporting month | Balance | Remarks |
|---|---|---|---|---|---|---|---|
| (b) | Edge drop at shoulders exceeding 40 mm | m | | | | | |
| **3** | **Drains and culverts** | | | | | | |
| (a) | Cleaning of Culvert | Nos | 1 | - | - | 1 | |
| (b) | Damage to or silting of culverts | | | | | | |
| (c) | Silting of drains in urban/ semi urban areas | | | | | | |
| **4** | **Road furniture** | | | | | | |
| (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 | |
| **5** | **Street lighting and telecom (ATMS)** | | | | | | |
| (a) | Street lights | Nos | | | | | |
| (b) | Telecom | Nos | | | | | |
| **6** | **Trees and plantation** | | | | | | |
| (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 | |
| **7** | **Buildings and bridges** | | | | | | |
| (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*

- **<u>Critical obligations</u> of Concessionaire as per contract**

- **<u>Non compliances</u> 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 | Authority Engineer | *[DD/MM/YY]* | *[DD/MM/YY]* |
| Roughness using Laser Profilometer | Authority Engineer | *[DD/MM/YY]* | *[DD/MM/YY]* |
| Pavement strength using FWD | Authority Engineer | *[DD/MM/YY]* | *[DD/MM/YY]* |
| Bridge inspection using MBIU | Authority Engineer | *[DD/MM/YY]* | *[DD/MM/YY]* |
| Road sign inspection using Reflectometer | Authority 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 |
| 3 | Drainage | | | | |
| 4 | Median | | | | |
| 5 | Road furniture | | | | |
| 6 | Bridges | | | | |
| 7 | Buildings | | | | |
| 8 | Horticulture | | | | |
| 9 | *[Other assets]* | | | | |
| | **Total** | | | | |

## 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 | IRI (International Roughness Index) | Elastic Modulus Bituminous E1 | Elastic Modulus | Elastic Modulus SubGrade E2 |
| 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 retroreflected luminance $R_A$ (night time retroreflection) 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 | Equipmentas 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 | | | | | | |
| (g) | Static weigh bridge | | | | | | |
| (h) | Any other items | | | | | | |
| 2 | **Softwares** | | | | | | |

| SNo | Description | Total units | Units working | Units damaged/ missing | Equipment owner/ provider | Equipmentas per specifications (Y/N) | Remarks |
|---|---|---|---|---|---|---|---|
| (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 transction 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 |
| | **Total** | **20,96,51,000** |

**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 |
| | **Total** | **1,65,83,836** |

**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 |
| | **Total** | **6,02,64,000** |

**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

| SNo | Proposal Details | Date of first submission to AE | 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

| SNo | Dispute Details | Date of first submission to AE | Suggested resolution by AE | 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 <NHIDCL> | *NA* | SAROD |
| 2 | Filling stations energized without obtaining NOC from ministry | *[DD/MM/YYYY]* | <NHIDCL>to consider the Concessionaire's request for intervention and assistance | *[+/- Amount]* | B/w Concessionaire and <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 |
| | | 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 | 18,265,661 |

*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 Potholes 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

| SNo | Stretch Chainage (km) | Side (LHS/RHS) | District/ Tehsil | Village | Encroachment type (Temporary/ Permanent) | Category (Tea stall, Temple, etc) | Establishment (New/ existing) | Distancefromroadedge(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 | Permanen t | 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 | AE 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:

AE 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 AE
- ☐ Project photographs

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

**National Highways & Infrastructure Development Corporation Ltd.**
**(A Government of India Undertaking)**

**CONSULTANCY SERVICES FOR AUTHORITY'S ENGINEER FOR SUPERVISION OF WIDENING/IMPROVEMENT TO 4 (FOUR) LANE WITH PAVED SHOULDER FROM KM 66+000 TO KM 81+000 (DESIGN CHAINAGE 65+923 TO 80+930) OF DOKMOKA – LORINGTHEPI SECTION (PACKAGE-3) OF NH-29 IN THE STATE OF ASSAM UNDER BHARATMALA PARIYOJNA ON EPC MODE.**

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

A sample output is shown below for reference

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

A sample output is shown below for reference

| 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 |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Road Type | Classification of road on basis of number of lanes<br>☐ Single Lane<br>☐ Two Lane<br>☐ Intermediate Lane<br>☐ Four Lane<br>☐ Six Lane | Four Lane |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

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

## 1.4 Pavement Type

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Pavement Type | Classification of pavement based on type of surface: | Asphalt |

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

A sample output is shown below for reference:

| 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 |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Pavement Width | Width of the pavement in metres, classified into one of the below categories<br>☐ >= 3.75m and <5.5m<br>☐ >5.5m and < 7m<br>☐ >= 7m and <10.5m<br>☐ >=10.5m and <=12.5m<br>☐ > 12.5m | >7m and <10.5m |
| Pavement Width Value | Width of the pavement in metres, rounded to two places after decimal | 7.0 |

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

A sample output is shown below for reference:

| NH Number | Section Code | Start Chainage | End Chainage | Direction | Pavement Width | Pavement Width Value | Survey Date | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| NH00xx | ABC-DEF | 0.000 | 0.794 | Both | 7 – 10.5 m | 7.00 | 06-05-17 | 9.98897 | 78.02671 |
| NH00xx | ABC-DEF | 0.794 | 1.000 | Both | 7 – 10.5 m | 7.00 | 06-05-17 | 9.98444 | 78.02934 |
| NH00xx | ABC-DEF | 1.000 | 2.810 | Both | 7 – 10.5 m | 7.00 | 06-05-17 | 9.98341 | 78.03004 |
| NH00xx | ABC-DEF | 2.810 | 4.335 | Both | 7 – 10.5 m | 7.00 | 06-05-17 | 9.98107 | 78.03078 |
| NH00xx | ABC-DEF | 4.335 | 6.666 | Both | 7 – 10.5 m | 7.00 | 06-05-17 | 9.96328 | 78.04160 |
| NH00xx | ABC-DEF | 6.666 | 12.906 | Both | 7 – 10.5 m | 7.00 | 06-05-17 | 9.95385 | 78.05255 |

## 1.6 Shoulder Type

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Shoulder Type | Type of shoulder, classified into one of the below categories:<br>☐ None<br>☐ Paved<br>☐ Gravel<br>☐ Earth | Gravel |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

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

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NH00xx | ABC-DEF | 0.834 | 1.254 | Increasing | Gravel | 09-01-16 | 9.98341 | 78.03004 |
| NH00xx | ABC-DEF | 1.254 | 2.945 | Increasing | Gravel | 05-01-16 | 9.98107 | 78.03078 |
| NH00xx | ABC-DEF | 2.945 | 4.327 | Increasing | Gravel | 05-01-16 | 9.96328 | 78.04160 |
| NH00xx | ABC-DEF | 4.327 | 4.405 | Increasing | Gravel | 05-01-16 | 9.95385 | 78.05255 |
| NH00xx | ABC-DEF | 4.405 | 6.844 | Increasing | Gravel | 05-01-16 | 9.93102 | 78.05648 |
| NH00xx | ABC-DEF | 6.844 | 9.359 | Increasing | Gravel | 05-01-16 | 9.91229 | 78.04961 |
| NH00xx | ABC-DEF | 9.359 | 12.966 | Increasing | Gravel | 05-01-16 | 9.89041 | 78.03458 |

## 1.7 Shoulder Width

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Shoulder Width | Width of the shoulder in metres, classified into one of the below categories<br>☐ No shoulder<br>☐ < 1m<br>☐ >= 1m and <= 2m<br>☐ > 2m | < 1m |
| Shoulder Width Value | Width of the shoulder in metres, rounded to one place after decimal | 0.5 |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NH Number | Section Code | Start Chainage | End Chainage | Direction | Shoulder Width | Shoulder Width Value | Survey Date | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| NH0xxx | ABC-DEF | 0.000 | 0.785 | Increasing | No Shoulder | 0.0 | 03-01-16 | 9.98897 | 78.02671 |
| NH0xxx | ABC-DEF | 0.785 | 2.612 | Increasing | No Shoulder | 0.0 | 03-01-16 | 9.98444 | 78.02934 |
| NH0xxx | ABC-DEF | 2.612 | 3.170 | Increasing | 1-2m | 2.0 | 03-01-16 | 9.98341 | 78.03004 |
| NH0xxx | ABC-DEF | 3.170 | 5.194 | Increasing | 1-2m | 2.0 | 03-01-16 | 9.98107 | 78.03078 |
| NH0xxx | ABC-DEF | 5.194 | 6.793 | Increasing | 1-2m | 2.0 | 03-01-16 | 9.96328 | 78.04160 |
| NH0xxx | ABC-DEF | 6.793 | 11.404 | Increasing | 1-2m | 2.0 | 03-01-16 | 9.95385 | 78.05255 |

## 1.8 Topography

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

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

A sample output is shown below for reference:

| NH Number | Section Code | Start Chainage | End Chainage | Topography | Survey Date | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| NH0xxx | ABC-DEF | 0.000 | 0.808 | Flat | 05-01-16 | 9.98897 | 78.02671 |
| NH0xxx | ABC-DEF | 0.808 | 1.254 | Flat | 05-01-16 | 9.98444 | 78.02934 |
| NH0xxx | ABC-DEF | 1.254 | 2.828 | Flat | 05-01-16 | 9.98341 | 78.03004 |
| NH0xxx | ABC-DEF | 2.828 | 4.363 | Flat | 05-01-16 | 9.98107 | 78.03078 |
| NH0xxx | ABC-DEF | 4.363 | 6.724 | Flat | 05-01-16 | 9.96328 | 78.04160 |
| NH0xxx | ABC-DEF | 6.724 | 12.933 | Flat | 05-01-16 | 9.95385 | 78.05255 |

## 1.9 Cross Section

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Cross Section | Cross section type, classified into one of the below categories | Fill |

| Field | Description | Example |
|---|---|---|
| | ☐ Cut<br>☐ Fill<br>☐ Cut and Fill<br>☐ Level | |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NH Number | Section Code | Start Chainage | End Chainage | Direction | Cross Section | Survey Date | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|
| NH0xxx | ABC-DEF | 0.000 | 0.822 | Increasing | Level | 03-01-16 | 9.98897 | 78.02671 |
| NH0xxx | ABC-DEF | 0.822 | 2.642 | Increasing | Level | 03-01-16 | 9.98444 | 78.02934 |
| NH0xxx | ABC-DEF | 2.642 | 3.199 | Increasing | Level | 03-01-16 | 9.98341 | 78.03004 |
| NH0xxx | ABC-DEF | 3.199 | 5.360 | Increasing | Level | 03-01-16 | 9.98107 | 78.03078 |
| NH0xxx | ABC-DEF | 5.360 | 5.715 | Increasing | Fill | 03-01-16 | 9.96328 | 78.04160 |
| NH0xxx | ABC-DEF | 5.715 | 6.941 | Increasing | Level | 03-01-16 | 9.95385 | 78.05255 |
| NH0xxx | ABC-DEF | 6.941 | 11.163 | Increasing | Level | 03-01-16 | 9.93102 | 78.05648 |

## 1.10 Drain Type

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Drain Type | Type of drain, classified into one of the below categories<br>☐ Open unlined drain<br>☐ Open lined drain<br>☐ Covered line drain<br>☐ No drain | Open lined drain |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NHNumber | SectionCode | StartChainage | EndChainage | Direction | DrainType | SurveyDate | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|
| NH0xxx | ABC-DEF | 0.000 | 0.069 | Increasing | Open Unlined Drain | 09-01-16 | 9.98897 | 78.02671 |
| NH0xxx | ABC-DEF | 0.069 | 0.782 | Increasing | Open Lined Drain | 09-01-16 | 9.98444 | 78.02934 |
| NH0xxx | ABC-DEF | 0.288 | 0.000 | Decreasing | Open Unlined Drain | 09-01-16 | 9.98341 | 78.03004 |
| NH0xxx | ABC-DEF | 0.782 | 0.846 | Increasing | Open Unlined Drain | 09-01-16 | 9.98107 | 78.03078 |
| NH0xxx | ABC-DEF | 0.846 | 1.254 | Increasing | Open Unlined Drain | 09-01-16 | 9.96328 | 78.04160 |
| NH0xxx | ABC-DEF | 1.254 | 2.265 | Increasing | Open Unlined Drain | 05-01-16 | 9.95385 | 78.05255 |
| NH0xxx | ABC-DEF | 1.929 | 0.288 | Decreasing | Open Unlined Drain | 09-01-16 | 9.93102 | 78.05648 |
| NH0xxx | ABC-DEF | 1.952 | 1.929 | Decreasing | No Drain | 09-01-16 | 9.91229 | 78.04961 |
| NH0xxx | ABC-DEF | 2.265 | 3.005 | Increasing | Open Unlined Drain | 05-01-16 | 9.89041 | 78.03458 |
| NH0xxx | ABC-DEF | 2.680 | 1.952 | Decreasing | Open Unlined Drain | 09-01-16 | 9.88489 | 78.02995 |
| NH0xxx | ABC-DEF | 3.005 | 4.424 | Increasing | Open Unlined Drain | 05-01-16 | 9.87474 | 78.02828 |
| NH0xxx | ABC-DEF | 3.109 | 2.680 | Decreasing | Open Unlined Drain | 09-01-16 | 9.87363 | 78.02744 |
| NH0xxx | ABC-DEF | 3.320 | 3.109 | Decreasing | Covered Line Drain | 09-01-16 | 9.84857 | 78.01535 |
| NH0xxx | ABC-DEF | 3.917 | 3.320 | Decreasing | Open Unlined Drain | 09-01-16 | 9.83764 | 78.00392 |
| NH0xxx | ABC-DEF | 4.424 | 4.601 | Increasing | Open Unlined Drain | 05-01-16 | 9.83711 | 77.98576 |
| NH0xxx | ABC-DEF | 4.601 | 5.693 | Increasing | Open Unlined Drain | 05-01-16 | 9.83386 | 77.97729 |

## 1.11 Median Opening

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Median Type | Type of median, classified into one of the below categories<br>☐ Raised;<br>☐ Depressed;<br>☐ Barrier;<br>☐ None. | Raised |

| Field | Description | Example |
|---|---|---|
| Median Width | Width of the median in metres, rounded to one place after decimal | 0.5 |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

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

## 1.12 Right Of Way

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Row Width | Width of Right of Way (in metres) | 24 |
| Remarks | | |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NHNumber | Section Code | Start Chainage | End Chainage | Direction | ROW Width | Remarks | Survey Date | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| NH0xxx | ABC-DEF | 0.000 | 1.000 | Increasing | 28 | | 05-05-15 | 9.98897 | 78.02671 |
| NH0xxx | ABC-DEF | 1.000 | 2.000 | Increasing | 24 | | 05-05-15 | 9.98444 | 78.02934 |
| NH0xxx | ABC-DEF | 2.000 | 3.000 | Increasing | 30 | | 05-05-15 | 9.98341 | 78.03004 |
| NH0xxx | ABC-DEF | 3.000 | 4.000 | Increasing | 26 | | 05-05-15 | 9.98107 | 78.03078 |
| NH0xxx | ABC-DEF | 4.000 | 11.000 | Increasing | 24 | | 05-05-15 | 9.96328 | 78.04160 |

## 1.13 Pavement composition

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Pavement Type | Type of pavement<br>☐ Asphalt<br>☐ Cement concrete | Asphalt |
| Bituminous Surface Course Type | Type of bituminous surface course | BC |
| Bituminous Surface Course Thickness MM | Thickness of BSC layer in mm | 40 |
| BSC Construction Year | Year of construction of BSC layer in flexible pavements | 2015 |
| Bituminous Base Course Type | Type of bituminous base course | DBM |
| Bituminous Base Course Thick—ness | Thickness of BBC layer in mm | 100 |
| BBC Construction Year | Year of construction of BBC layer in flexible pavements | 2015 |
| Granular Base Type | Type of granular base | WMM |
| Granular Base Thick-ness | Thickness of GB layer in mm | 250 |
| GB Construction Year | Year of construction of GB layer in flexible pavements | 2015 |
| Pavement Quality Concrete Type | Type of pavement quality concrete | PQC |
| Pavement Quality Concrete Thickness | Thickness of PQC layer in mm | 300 |
| PQC Construction Year | Year of construction of PQC layer in rigid pavements | 2015 |
| Dry Lean Concrete Thickness MM | Thickness of DLC layer in mm | 100 |
| Dry Lean Concrete Type | Type of dry lean concrete | DLC |
| DLC Construction Year | Year of construction of DLC layer in rigid pavements | 2015 |
| Granular Sub Base Type | Type of granular sub base | GSB |
| Granular Sub Base Thickness | Thickness of GSB layer in mm | 200 |
| GSB Construction Year | Year of construction of GSB layer | 2014 |
| Design CBR | Design CBR of the subgrade, expressed in % | 5% |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |

| Field | Description | Example |
|---|---|---|
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NH No. | Sec-tion Code | Start Chai nage | End Chai nage | Direc-tion | Paveme nt Type | Bituminou s Surface Course Type | Bituminou s Surface Course Thickness | BSC Constru c-tion Year | Bitumino us Base Course Type | Bitumino us Base Course Thicknes s | BBC Constru c-tion Year | Granul ar Base Type | Granular Base Thickne ss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NH00x x | ABC-DEF | 0.0 | 5.0 | Both side | Asphalt | BC | 40.0 | 2015 | DBM | 100 | 2015 | WMM | 250 |
| NH00x x | ABC-DEF | 5.0 | 11.0 | Both side | Asphalt | BC | 40.0 | 2015 | DBM | 80 | 2015 | WMM | 250 |
| NH00x x | ABC-DEF | 11.0 | 20.0 | Both side | Asphalt | SDBC | 25.0 | 2015 | BM | 115 | 2015 | WMM | 250 |
| NH00x x | ABC-DEF | 20.0 | 22.0 | Both side | Asphalt | BC | 40.0 | 2015 | DBM | 100 | 2015 | WMM | 250 |
| NH00x x | ABC-DEF | 22.0 | 30.0 | Both side | Asphalt | SDBC | 25.0 | 2015 | BM | 115 | 2015 | WMM | 250 |
| NH00x x | ABC-DEF | 30.0 | 31.0 | Both side | Asphalt | BC | 40.0 | 2015 | DBM | 100 | 2015 | WMM | 250 |

**(table continued…)**

| GB Constr uction Year | Paveme nt Quality Concret e Type | Paveme nt Quality Concret e Thickne ss | PQC Constr uction Year | Dry Lean Concret e Thickn ess | Dry Lean Concret e Type | DLC Constr uction Year | Granul ar SubBas e Type | Granula r SubBase Thickne ss | GSB Construc tion Year | Desig n CBR | Survey Date | Latit ude | Longit ude |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015 | NA | NA | NA | NA | NA | NA | GSB | 300 | 2015 | 5% | 05-05-15 | 9.99 | 78.03 |
| 2015 | NA | NA | NA | NA | NA | NA | GSB | 300 | 2015 | 5% | 05-05-15 | 9.98 | 78.03 |
| 2015 | NA | NA | NA | NA | NA | NA | GSB | 300 | 2015 | 5% | 05-05-15 | 9.98 | 78.03 |
| 2015 | NA | NA | NA | NA | NA | NA | GSB | 300 | 2015 | 5% | 05-05-15 | 9.98 | 78.03 |
| 2015 | NA | NA | NA | NA | NA | NA | GSB | 300 | 2015 | 5% | 05-05-15 | 9.96 | 78.04 |
| 2015 | NA | NA | NA | NA | NA | NA | GSB | 300 | 2015 | 5% | 05-05-15 | 9.95 | 78.05 |

## 1.14 Carriageway Furniture

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

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

| Field | Description | Example |
|---|---|---|
| Wayside Amenity Type | Wayside amenities classified into one of the below categories:<br>☐ Crash barriers<br>☐ Signs<br>☐ Street Lights<br>☐ Km stone | Road sign |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

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

## 1.15 Wayside Amenities

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Chainage | Chainage of the point (in km) | 0.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Wayside Amenity | Wayside amenities classified into one of the below categories:<br>☐ Bus shelter;<br>☐ Culverts;<br>☐ Restaurant/Motel;<br>☐ Toilet/Public convenience;<br>☐ Rest Rooms for short stay;<br>☐ Toll Plaza;<br>☐ First aid/Medical centre; | Restaurant/Motel |

| Field | Description | Example |
|---|---|---|
| | ☐ Telephone booth;<br>☐ Petrol pump/minor repair shop (optional);<br>☐ Police Station;<br>☐ Temple /Mosque;<br>☐ Bridges. | |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Data Source | | |
| Remarks | | |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NH Number | Section Code | Chainage | Direction | Wayside Amenity | Survey Date | Data Source | Remarks | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| NH00xx | ABC-DEF | 0.650 | Increasing | Restaurant/Motel | 05-01-16 | | | 9.98897 | 78.02671 |
| NH00xx | 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 |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Land Use | Land use classified into one of the below categories:<br>☐ Residential;<br>☐ Commercial;<br>☐ Industrial;<br>☐ Agricultural;<br>☐ Water bodies;<br>☐ Mixed. | Commercial |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |

| Field | Description | Example |
|---|---|---|
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NHNumber | SectionCode | StartChainage | EndChainage | Direction | LandUse | SurveyDate | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|
| NH00xx | ABC-DEF | 0.000 | 0.797 | Increasing | Mixed | 03-01-16 | 9.98897 | 78.02671 |
| NH00xx | ABC-DEF | 0.511 | 0 | Decreasing | Mixed | 03-01-16 | 9.98444 | 78.02934 |
| NH00xx | ABC-DEF | 0.797 | 2.699 | Increasing | Mixed | 03-01-16 | 9.98341 | 78.03004 |
| NH00xx | ABC-DEF | 0.835 | 0.511 | Decreasing | Mixed | 03-01-16 | 9.98107 | 78.03078 |
| NH00xx | ABC-DEF | 0.987 | 0.835 | Decreasing | Mixed | 03-01-16 | 9.96328 | 78.04160 |
| NH00xx | ABC-DEF | 1.641 | 0.987 | Decreasing | Agriculture | 03-01-16 | 9.95385 | 78.05255 |
| NH00xx | ABC-DEF | 2.081 | 1.641 | Decreasing | Barren Land | 03-01-16 | 9.93102 | 78.05648 |
| NH00xx | ABC-DEF | 2.378 | 2.081 | Decreasing | Agriculture | 03-01-16 | 9.91229 | 78.04961 |
| NH00xx | ABC-DEF | 2.458 | 2.378 | Decreasing | Agriculture | 03-01-16 | 9.89041 | 78.03458 |
| NH00xx | ABC-DEF | 2.699 | 3.234 | Increasing | Agriculture | 03-01-16 | 9.88489 | 78.02995 |

## 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 2nd survey shall be conducted in the month of November, the 3rd survey shall be conducted in the month of May and so on. As regards FWD, the first test/survey shall be conducted at the time of completion in April. The 2nd test/survey shall be conducted in April of next year and so on.

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

### 2.1 Visual condition

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |

| Field | Description | Example |
|---|---|---|
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Lane Number | Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on | L1 |
| Ravelling | Percent of pavement area affected by ravelling, which is converted to the following rating scale:<br>☐ 1 - Very Poor (> 30%)<br>☐ 2 - Poor (11-30%)<br>☐ 3 - Fair (6-10%)<br>☐ 4 - Good (1-5%)<br>☐ 5 - Very Good (0%) | 2 |
| Pot Holes | No. of potholes, which is converted to the following rating scale:<br>☐ 1 - Very Poor (>5)<br>☐ 2 - Poor (3-5)<br>☐ 3 - Fair (2)<br>☐ 4 - Good (1)<br>☐ 5 - Very Good (0) | 1 |
| Edge Break | Pavement area containing edge breaks, which is converted to the following rating scale:<br>☐ 1 - Very Poor (> 5m$^2$)<br>☐ 2 - Poor (1-5m$^2$)<br>☐ 3 - Fair (0.5-1m$^2$)<br>☐ 4 - Good (0-0.5m$^2$)<br>☐ 5 - Very Good (0m$^2$) | 3 |
| Cracking | Percent of pavement area affected by cracking, which is converted to the following rating scale:<br>☐ 1 - Very Poor (> 30%)<br>☐ 2 - Poor (21-30%)<br>☐ 3 - Fair (11-20%)<br>☐ 4 - Good (5-10%)<br>☐ 5 - Very Good (<5%) | 3 |
| Disintegration | Percent of pavement area affected by disintegration, which is converted to the following rating scale:<br>☐ 1 - Very Poor (>50%)<br>☐ 2 - Poor (20-50%)<br>☐ 3 - Fair (10-20%)<br>☐ 4 - Good (1-10%)<br>☐ 5 - Very Good (<1%) | 2 |

| Field | Description | Example |
|---|---|---|
| Depression | Percent of pavement area affected by depression, which is converted to the following rating scale:<br>☐ 1 - Very Poor (> 5%)<br>☐ 2 - Poor (3-5%)<br>☐ 3 - Fair (1-2%)<br>☐ 4 - Good (0-1%)<br>☐ 5 - Very Good (0) | 5 |
| Bleeding | Percent of pavement area affected by bleeding, which is converted to the following rating scale:<br>☐ 1 - Very Poor (> 50%)<br>☐ 2 - Poor (20-50%)<br>☐ 3 - Fair (10-20%)<br>☐ 4 - Good (1-10%)<br>☐ 5 - Very Good (<1%) | 3 |
| Patching | Percent of pavement area affected by patching, which is converted to the following rating scale:<br>☐ 1 - Very Poor (> 30%)<br>☐ 2 - Poor (16-30%)<br>☐ 3 - Fair (6-15%)<br>☐ 4 - Good (2-5%)<br>☐ 5 - Very Good (<2%) | 4 |
| Drain Condition | Condition of the drain, which is converted to the following rating scale:<br>☐ 1 - Poor<br>☐ 2 - Fair<br>☐ 3 - Good | 2 |
| Shoulder Condition | Condition of the shoulder, which is converted to the following rating scale:<br>☐ 1 - Poor<br>☐ 2 - Fair<br>☐ 3 - Good | Fair |
| Survey Date | Date of survey in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NHNumber | Section | Start Chainage | End Chainage | Direction | Lane Number | Ravelling | PotHoles | EdgeBreak | Cracking |
|---|---|---|---|---|---|---|---|---|---|
| NH00xx | ABC-DEF | 0.000 | 0.500 | Increasing | L1 | 4 | 4 | 4 | 4 |
| NH00xx | ABC-DEF | 0.500 | 1.000 | Increasing | L1 | 4 | 4 | 4 | 5 |
| NH00xx | ABC-DEF | 1.000 | 1.500 | Increasing | L1 | 5 | 5 | 4 | 5 |
| NH00xx | ABC-DEF | 1.500 | 2.000 | Increasing | L1 | 5 | 5 | 5 | 5 |
| NH00xx | ABC-DEF | 2.000 | 2.500 | Increasing | L1 | 5 | 5 | 5 | 5 |
| NH00xx | ABC-DEF | 2.500 | 3.000 | Increasing | L1 | 5 | 5 | 4 | 5 |
| NH00xx | ABC-DEF | 3.000 | 3.500 | Increasing | L1 | 5 | 5 | 4 | 5 |
| NH00xx | ABC-DEF | 3.500 | 4.000 | Increasing | L1 | 5 | 4 | 3 | 5 |

| NHNumber | Section | Start Chainage | End Chainage | Direction | Lane Number | Ravelling | PotHoles | EdgeBreak | Cracking |
|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 5 | 5 | 5 | 5 | 1 | 2 | 06-05-17 | 9.83386 | 77.97729 |
| 5 | 5 | 5 | 5 | 2 | 2 | 06-05-17 | 9.81804 | 77.97875 |
| 5 | 5 | 5 | 5 | 2 | 2 | 06-05-17 | 9.77426 | 77.98129 |
| 5 | 4 | 4 | 4 | 2 | 2 | 06-05-17 | 9.73071 | 77.97999 |
| 5 | 5 | 5 | 3 | 2 | 2 | 06-05-17 | 9.68686 | 77.97017 |

## 2.2 Roughness

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad- Vijayawada) |

| Field | Description | Example |
|---|---|---|
| Start Chainage | Chainage of the start point (in km) | 0.500 |
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| LwpIri | International roughness index (IRI) of left wheel path measured from laser profilometer | 2.33 |
| RwpIri | International roughness index (IRI) of right wheel path measured from laserprofilometer | 1.97 |
| LaneIri | Average of the International roughness index (IRI) of left and right wheel paths | 2.15 |
| Speed | Speed of vehicle in km/h | 42 |
| Survey Date | Date of survey in the format <DD-MM-YYYY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

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

## 2.3 Rutting

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

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

| Field | Description | Example |
|---|---|---|
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Lane Number | Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on | L1 |
| Rutting Left | Rut depth in mm, measured from left wheel path | 20 |
| Rutting Right | Rut depth in mm, measured from left wheel path | 18 |
| Rutting Avg | Average rut depth measured from left and right wheel paths | 19 |
| Speed | Speed of vehicle in km/h | 42 |
| Survey Date | Date of survey in the format <DD-MM-YYYY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

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

## 2.4 Texture Depth

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

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

| Field | Description | Example |
|---|---|---|
| End Chainage | Chainage of the end point (in km) | 1.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Lane Number | Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on | L1 |
| Texture Left | Texture depth of pavement in mm, measured from left wheel path | 0.40 |
| Texture Right | Texture depth of pavement in mm, measured from left wheel path | 0.30 |
| Texture Average | Average texture depth measured from left and right wheel paths | 0.35 |
| Speed | Speed of vehicle in km/h | 42 |
| Survey Date | Date of survey in the format <DD-MM-YYYY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

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

## 2.5 Skid Resistance

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad-Vijayawada) |

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

A sample output is shown below for reference:

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

## 2.6 Falling Weight Deflectometer (FWD)

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

| Field | Description | Example |
|---|---|---|
| NH Number | New National Highway number | NH0065 |

| Field | Description | Example |
|---|---|---|
| Section Code | Code indicating starting and ending locations of section | HYD-VIJ (Hyderabad-Vijayawada) |
| Chainage | Chainage of survey point (in km) | 0.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Lane Number | Number of the lane: L1, L2, R1, R2, etc., L1 being 1st lane on the left from centreline of carriageway, L2 being 2nd lane on the left from centerline and so on | L1 |
| Air Temperature | Air temperature recorded in °C | 33 |
| Surface Temperature | Temperature of the pavement surface, recorded in °C | 39.3 |
| Peak Load | Peak impulse load, measured in kN | 45.7 |
| Deflection0 | Surface deflection at the test load center, measured in micron | 246 |
| Deflection1 | Surface deflection at location 1 from the test load center, measured in micron | 110 |
| Distance1 | Distance of location 1 from the test load center | 300 |
| Deflection2 | Surface deflection at location 2 from the test load center, measured in micron | 153 |
| Distance2 | Distance of location 2 from the test load center | 600 |
| Deflection3 | Surface deflection at location 3 from the test load center, measured in micron | 110 |
| Distance3 | Distance of location 3 from the test load center | 900 |
| Deflection4 | Surface deflection at location 4 from the test load center, measured in micron | 76 |
| Distance4 | Distance of location 4 from the test load center | 1200 |
| Deflection5 | Surface deflection at location 5 from the test load center, measured in micron | 59 |
| Distance5 | Distance of location 5 from the test load center | 1500 |
| Deflection6 | Surface deflection at location 6 from the test load center, measured in micron | 44 |
| Distance6 | Distance of location 6 from the test load center | 1800 |
| Deflection7 | Surface deflection at location 7 from the test load center, measured in micron | 35 |
| Distance7 | Distance of location 7 from the test load center | 2100 |
| Deflection8 | Surface deflection at location 8 from the test load center, measured in micron | 28 |
| Distance8 | Distance of location 8 from the test load center | 2400 |
| Elastic Modulus BituminousE1 | Elastic modulus of bituminous layer, back calculated in MPa | 3359 |
| Elastic Modulus GranularE2 | Elastic modulus of granular layer, backcalculated in MPa | 396 |
| Elastic Modulus SubGradeE3 | Elastic modulus of subgrade, back calculated in MPa | 90 |

| Field | Description | Example |
|---|---|---|
| Corrected Elastic Modulus BituminousE1 | Corrected elastic modulus of bituminous layer in MPa | 3424 |
| Corrected Elastic Modulus GranularE2 | Corrected elastic modulus of granular layer in MPa | 300 |
| CorrectedElasticModulusSubGradeE3 | Corrected elastic modulus of subgrade in MPa | 69 |
| Bituminous Layer | Thickness of bituminous layer in mm | 105 |
| Base Layer | Thickness of base layer in mm | 230 |
| GSB Layer | Thickness of GSB layer in mm | 200 |
| Subgrade CBR | CBR of subgrade | 0.08 |
| BituminousLayerCoefficientA1 | Layer coefficient of the bituminous layer | 0.36 |
| BaseLayerCoefficientA 2 | 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 | ElasticModulusBituminousE1 | ElasticModulusGranularE2 | ElasticModulusSubGradeE3 | CorrectedElasticModulusBituminousE1 | CorrectedElasticModulusGranularE2 | CorrectedElasticModulusSubGradeE3 | BituminousLayer | BaseLayer | GSBLayer | 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 (Hyderabad-Vijayawada) |
| Chainage | Chainage of the point (in km) | 0.500 |
| Direction | Direction of survey<br>☐ Increasing (chainage)<br>☐ Decreasing (chainage) | Increasing |
| Lane Number | Number of the lane: L1, L2, R1, R2, etc. | L2 |
| Air Temperature | Air temperature recorded in °C | 30.1 |
| Surface Temperature | Temperature of the pavement surface, recorded in °C | 39.4 |
| Peak Load | Peak impulse load, measured in kN | 103.7 |
| Deflection1 | Surface deflection at the test load center, measured in micron | 140 |
| Deflection2 | Surface deflection at 300 mm from the test load center, measured in micron | 121 |
| Deflection3 | Surface deflection at 600 mm from the test load center, measured in micron | 108 |
| Deflection4 | Surface deflection at 900 mm from the test load center, measured in micron | 101 |
| Concrete Slab Thicknessh | Thickness of concrete slab, measured in mm | 300 |
| Area of Deflection Basin | Area of deflection basin, calculated from measured deflections, in $cm^2$ | 761 |
| Radius of Relative Stiffness | Radius of relative stiffness, calculated in mm | 823 |
| NormalizedDeflectiond 1 | Normalized deflection at location 1, in mm | 3.1 |
| NormalizedDeflectiond 2 | Normalized deflection at location 2, in mm | 2.9 |
| NormalizedDeflectiond 3 | Normalized deflection at location 3, in mm | 2.4 |
| NormalizedDeflectiond 4 | Normalized deflection at location 4, in mm | 1.9 |
| Modulus of Subgrade Reaction k | Modulus of subgrade reaction, measured in MPa/m | 131 |
| Elastic Modulus of Concrete Ec | Elastic modulus of concrete, calculated in MPa | 26118 |
| Cube Strength of Concrete fck | Cube strength of concrete, calculated inMPa | 27 |
| Flexural strength of concrete fmr | Flexural strength of concrete, calculated in MPa | 3.7 |
| Date Of Testing | Date of testing in the format <DD-MM-YY> | 06-05-17 |
| Latitude | Latitude of survey point | 9.98897 |
| Longitude | Longitude of survey point | 78.02671 |

A sample output is shown below for reference:

| NH No | Section Code | Chain--age | Direction | Lane No. | Air Temperature | Surface Temperature | Peak Load | Deflection 1 | Deflection 2 | Deflection 3 | Deflection 4 | Concrete Slab Thickness h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 particularof the Project.

**CONTRACT FOR CONSULTANT'S SERVICES**

Between

_____

(Name of Client)

And

_____

(Name of Consultant)

Dated:

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# 1. FORM OF CONTRACT

## COMPLEX TIME BASED ASSIGNMENTS

This CONTRACT (hereinafter called the "Contract") is made the_____day of the Month of _____, 201__, 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 processional 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 ].

**Appendix A : Description of the Services**

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**Appendix-M : Memorandum of Understanding (in case of JV)**

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 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)

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 ]

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

[Name of the Member]

By

(Authorized Representative)

*[Name of the Member]*

By

(Authorized Representative)

# GENERALCONDITIONS 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) "ApplicableLaw"meansthelawsandanyotherinstrumentshavingtheforceof 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 "Authority Engineer (AE)" and includes 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 Authority Engineer may be modified depending on the site requirements and work programme of the EPC Contract or after mutual discussions with Employer, the EPC Contractor and the Authority 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. Goods &Service tax as applicable shall be paid to the Authority’s Engineer while making payment for services rendered. The consultants shall then deposit the same with the tax authorities and provide a proof of having done so within next 90 days in line with policy circulars issued by Employer.

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

### 2.1 Effectiveness of Contract

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

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

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

### 2.3 Commencement of Services

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

## 2.4 Expiration of Contract

Unless terminated earlier pursuant to Clause GC2.9 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 negligenceorintentionalactionofapartyorsuchParty'sSub-consultantsor agents or employees, nor (ii) any event which a diligent Party could reasonably have been expected to both(A) take in to 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.

Extension of Time for providing services of the Authority's Engineer shall be extended concurrently with the Extension of Time granted, if any, to the EPC Contractor for the project, subject to satisfactory performance of the Authority's Engineer.

### 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 herein above, 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) in solvent 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 EPC Contractor represents to Employer that the Consultant is not discharging his duties in a fair, efficient and diligent manner and if the dispute remains unresolved, Employer may terminate this contract.

### 2.9.2 By the Consultants

The Consultants may, by not less than thirty (30) 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 GC2.9.2, 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 GC2.4 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 GC2.9.1 or GC2.9.2 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 GC2.9.1 hereof, reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract including the cost of there turn 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 2.9.1or in Clause GC2.9.2 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 GC8 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.

### 3.2 Conflict of Interests

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

The Remuneration of the Consultants pursuant to Clause GC6 hereof shall constitute the Consultants' sole remuneration in connection with this Contract or the Services and, subject to ClauseGC3.2.2 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 (Employer)and or Associates Bank or of the Association, as the case maybe, and other funding agencies and shall at all times exercise such responsibility in the best interest of the Client. Any discounts or commissions obtained by the Consultants in the exercise of such procurement responsibility shall be for the account of the Client.

#### 3.2.3 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 upto 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 here to, 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 for thin 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 here to 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 been titled 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. 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.

**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.

**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 **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 NHIDCL/MoRTH projects.

## 2.6 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:

(c) 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;

(d) 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;

(e) Facilitate prompt clearance through customs of any property required for the Services and of the personal effects of the Personnel and their -eligible dependents;

(f) 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;

(g) 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;

(h) 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

(i) 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.l(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 is 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 is set forth in Appendix G.

(b) Except as may be otherwise agreed under ClauseGC2.6 and subject to Clause GC 6.1(c), payments under this Contract shall not exceed the ceilings specified in the SC. The Consultants shall notify the Client as soon as cumulative charges incurred for the Services have reached 80% of these ceilings.

(c) Notwithstanding ClauseGC6.l (b) hereof, if pursuant to clauses GC5.3, 5.4 or 5.6 hereof, the Parties shall agree that additional payments shall be made to the Consultants in order to cover any necessary additional expenditures not envisaged in the cost estimates referred to in Clause GC6.1(a) above, the ceiling or ceilings, as the case maybe, set forth in ClauseGC6.1(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 GC6.1(b)hereof, the Client shall pay to the Consultants (i) remuneration asset for thin Clause GC6.2(b),and(ii) reimbursable expenditures asset forth in Clause GC6.2(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 GC2.3 and Clause SC2.3 (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 SC.

(d) 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 atleast 90% 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 Highway Engineer | 20% |
| 2 | Resident Engineer cum Highway Engineer | 25% |
| 3 | Bridge/Structural Engineer | 20% |
| 4 | Other Key Personnel | 20% |
| 5 | Sub- Professional Staff | 15% |

For avoidance of doubt, in case the Team Leader cum Senior Highway Engineer 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. 4)" and "Sub – Professional Staff (Sr. No. 5)", the average availability across the group shall be considered for calculation.

### 6.3 Currency of Payment

All payments shall be made in Indian Rupees and shall be subjected to applicable Indian laws withholding taxes if any.

### 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 for thin 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 (15days)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 GC6.3 and 6.4 for such month. Each 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. 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.

(d) 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 there upon 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.

(e) All payments under this Contract shall be made to the account of the Consultants specified in the SC.

## 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 Contractor 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 MD, 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 ammended. The venue of such**

**arbitration shall be ***** 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 there from, 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 8.2.1 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 biding 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

| Sr. No. | Particulars of Fees and Expenses | Maximum amount payable per case |
|---|---|---|
| 1 | Fee | (i) Rs. 25,000/- per day; |
| | | (ii) 25% extra on fee at (i) above in case of fast-track procedure as per Section -29 (B) of A&C Act;<br>Or<br>10% extra on fee at (i) above if award is published within 6 months from date of entering the reference by AT; |
| | | 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 etc.) | 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 celling given below | |
| (i) | Travelling expenses | Economy class (by air), First class AC (by train) and AC Car (by road) |
| (ii) | Lodging and Boarding | Rs. 15,000/-per day (in metro cities); or<br>Rs. 8000 per day (in other cities); or<br>Rs. 5,000/- per day, if any Arbitrator makes their own arrangements. |
| 6. | Local travel | Rs. 2,000 /- per day |
| 7 | Extra charges for days other than meeting days (maximum for 2 X ½ days) | Rs. 5000 /- per ½ day for outstation Arbitrator |
| Note | 1. Lodging boarding and travelling expenses shall be allowed only for the arbitrator who is are residing 100 kms. away from the venue of meeting, | |
| | 2. Delhi, Mumbai, Chennai, Kolkata, Bengaluru 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 <Agency> 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 NHIDCL. This would also apply even when the consulting firm is not successful in getting the assignment. *In case CV of a person is turned out to be fake/incorrect/inflated during the assignment, the consultancy firms will have to refund the salary and perks drawnincluding interest @12% per annumin respect of the person apart from other consequences.* In addition to above, 10% of the salary and perks to be refunded shall be recovered from the Firm as penalty.

## II. 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: Address of Employer

Attention:

Telex : _____

Facsimile : _____

Consultant: Address of Consultant

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: Member (P) Sh._____

*(Note: If the Consultants consist of a joint venture of more than one entity, the name of the entity whose address is specified in SC1.6.1shouldbeinsertedhere. If the Consultants consist of one entity, this Clause 1.8 should be deleted from the SC)*

1.9 The Authorised Representative 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 performsuchdutiesinregardto 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 84 months (24 month for construction period and 60 months for Maintenance period)

**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 Employer in a joint venture or 'in association', the policy must be procured and provided to Employer 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 thereby the Consultant does not cancel the policy midterm without the consent of the Employer. 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 "Authority's 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 Highway Engineer **in** Appendix C shall serve in that capacity, as specified in Clause GC 4.6."

6.1(b) The amount payable Indian Rupee is : _____

6.2(a) "Payments for remuneration and reimbursable items made in accordance with Clause GC 6:2(a) :

(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 13th months from the last date of submission of bid, 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 last date of submission of bid) shall be multiplied by the total time input for each position on this contract, i.e. without considering the increase in the billing rates. 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 13thcalendar month after the last date of submission of bid) 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 Authority 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 back stopping 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 foreign and local Personnel are set forth in Appendix G 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 along with interest will be set off by the Client in equal installments against the statements for the first 12 months of the Service until the advance payment has been fully set off. The advance payment shall be in Indian Rupee.

2) The bank guarantee shall be in the amount and in the currency of the advance payment.

3) Interest rateshallbe10% per annum (on outstanding amount).

6.4(c) The interest rate is10% per annum. 6.4(e)

The accounts are:

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

8.2 Disputes shall be settled by arbitration in accordance with the following provisions:

# 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-l* *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-l for Key local Personnel.*

*C-3* *Same as C-l 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-l through C-4)*

**Please refer TOR**

## 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.* "]

**The form of Medical Certificate as required under the rules of Govt. of India**

## 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 EPC Contractor. 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 respect of foreign personnel, one day per trip as travel time from and to the country of the Government shall be allowed.

## Appendix F: Duties of the Client

[List here under:

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

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

**Please refer TOR**

## Appendix G: Cost Estimates

*List hereunder cost estimate in INR:*

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-13 of TOR)

To

Address of Employer:

WHEREAS_____[Name and address of Consultants][1] (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 there in as security for compliance with his obligations in accordance with the Contract;

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

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

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

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

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

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

This guarantee shall be valid for a period of 80 months i.e. upto 2 months beyond the expiry of Contract of 78 months.

This guarantee shall also be operatable at our…….. Branch at New Delhi (Complete Address of bank branch is mandatory), 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.

The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL,

details of which is as under:

| Sl. No | Particulars | Details |
|---|---|---|
| 1 | Name of the Beneficiary | National Highways and Infrastructure Development Corporation Limited |
| 2 | Beneficiary Bank Account No. | 90621010002659 |
| 3 | Beneficiary Bank Branch | IFSC SYNB0009062 |
| 4 | Beneficiary Bank Branch Name | Transport Bhawan, New Delhi |
| 5 | Beneficiary Bank Address | Syndicate Bank, Transport Bhawan, 1st Parliament street, New Delhi-110001 |

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_____

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

## 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._____*(herein after referred as the "Client", which expression shall, unless repugnant to the context or meaning there of include it successors, administrators and assigns) having awarded to M/s._(herein after 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_____(herein after referred to as the Bank), which expressions hall, unless repugnant to the context or meaning thereof, include it 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 *other course or remedy or security available to the Client. The bankshall 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.*

This guarantee shall also be operatable at our…….. Branch at New Delhi (Complete Address of bank branch is mandatory), 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.

The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL, details of which is as under:

| Sl. No | Particulars | Details |
|---|---|---|
| 1 | Name of the Beneficiary | National Highways and Infrastructure Development Corporation Limited |
| 2 | Beneficiary Bank Account No. | 90621010002659 |
| 3 | Beneficiary Bank Branch | IFSC SYNB0009062 |
| 4 | Beneficiary Bank Branch Name | Transport Bhawan, New Delhi |
| 5 | Beneficiary Bank Address | Syndicate Bank, Transport Bhawan, 1st Parliament street, New Delhi-110001 |

Dated this_____day of_____200_____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. _____

*Note1: 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**
**_____**

Whereas the NHIDCL/ Ministry of Road Transport & Highways (MoRT&H)/. ..... State PWD (the '**Employer**') has invited proposal for appointment of Authority's 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 the Employer as Authority's Engineer; and

Now, therefore, it is hereby agreed by and on behalf of the partners as follows:

(i) _____ will be the lead partner and_____will be the other JV partner/s.

(ii) _____ (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 Employer/EPC Contractor if Consultancy work is awarded to JV.

(iii) 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.

(iv) 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 the Employer (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

For_____(Name of Associate Partner/s)

**DISCLAIMER**

The Applicant must read all the instructions in the RFP and submit the same accordingly.