

Government of Jammu & Kashmir State
e-NIT No. 38 of 2017 Dated: 21.08.2017

Executive Engineer PWD (R&B) Division, Basohli invites online bids for the following work:

Name of work	Bid security in Rs.
Executive Engineer PWD(R&B) Division, Kathua (J&K) invites proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala.	2,00,000/-

RFP document is available online on portal <https://eprocure.gov.in> from **23-08-2017 to 25-09-2017 (up to 1500 Hrs)**. The RFP must be accompanied with a non-refundable fee of Rs. 10,000 (Rupees ten thousand only) as RFP document fee in the form of demand draft or banker's cheque drawn on any Nationalized / Scheduled Bank in India in favour of **Chief Accounts Officer, PW(R&B) Deptt Jammu** payable at **Jammu**.

The Applicant shall furnish as part of its Proposal, a bid security of Rs. 2,00,000/- (Rupees two lakh only) in the form of Demand Draft issued by one of the Nationalized / Scheduled Banks in India in favour of the **Chief Accounts Officer, PW (R&B) Deptt.** payable at **Jammu** (the "**Bid Security**"), returnable not later than 90 (ninety) days from Proposal Due Date (PDD).

RFP must be submitted online only at <https://eprocure.gov.in> on or before **25-09-2017 (up to 1500 hrs IST)**. RFP transmitted through any other mode shall not be entertained.

Instructions to applicants regarding e-tendering process:

- (a) **The RFP has also been uploaded on "INFRACON" (www.infracon.nic.in). As such before submitting the proposal the Consultants shall mandatorily register and enlist themselves (the firm and all key personnel) on the MORT & H portal of INFRACON and furnish registration details along with its RFP.**
- (b) **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.**
- (c) The applicants have to submit their bids including scanned copy of Bid Security online in electronic format with Digital Signature.
- (d) No proposal will be accepted in physical form except RFP document fee and Bid Security. The applicants have to submit their RFP document fee and Bid Security in hard copy (original) also on or before **1500 hours** on **27-09-2017** at the office of Chief Engineer, PW (R&B) Deptt., Lok Nirman Bhawan, Rail Head Complex, Jammu . If the office happens to be closed on the last date of submission of RFP document fee and Bid Security in hard copy as specified, the same will be received on the next working day at the Office mentioned above. In case the RFP document fee and Bid security is not received within specified time, the Bid shall be considered non responsive and shall not be downloaded / evaluated. Bids shall be strictly treated as non-responsive if bid is not accompanied by an acceptable bid security (with validity for a period of not less than 90 days from PDD).
- (e) Before submission of online bids, applicants must ensure that scanned copy of all the necessary documents have been attached with bid.

- (f) State PWD shall not be responsible for delay in online submission due to any reason whatsoever. All documents/papers uploaded/submitted by the bidder must be legible.

The following are the important dates for award of above consultancy work:

Sl. No.	Event Description	Date
1.	Last date for receiving queries / clarifications	05-09-2017 (1500 Hrs)
2.	Pre-Proposal Conference (Pre-bid meet)	08-09-2017 (1200 Hrs)
3.	Authority response to queries	Chief Engineer, PW (R&B) Department, Lok Nirman Bhawan Rail Head Complex, Jammu.
4	Proposal Due Date (PDD)	25-09-2017 (1500 Hrs)
5.	Opening of Proposals	28-09-2017 (1200 Hrs)

Communications:-All communications excluding the submission of **Fee and bid security** should be addressed to:

**Executive Engineer
PWD (R&B) Division
Basohli (J&K)
Pin- 184201
Tele fax- 01922-251017**

No:-1026-1052

Dt:-21-08-2017 Basohli (J&K)

Copy to the:-

- 1) *Secretary to Government PWD (R&B) Civil Sectt. Jammu*
- 2) *Development Commissioner Works Civil Sectt, Jammu*
- 3) *Chief Engineer P1 MoRT&H Parliamentary Street, New Delhi.*
- 4) *Chief Engineer PW(R&B) Department Jammu.*
- 5-6 *Vice Chairman, JDA Jammu/Srinagar*
- 7-8 *Managing Director Housing Board Jammu*
- 9-10 *Chief Executive Officer J&K Economic Re-Construction Agency Jammu Srinagar*
- 11-12 *Chief Engineer PMGSY Jammu/Kashmir*
- 13-19 *Chief Engineer Irrigation and Flood Control Jammu/Kashmir/UEED J&K Srinagar /PHE Jammu / Kashmir/BRO Jammu/Kashmir*
- 20 *Regional Officer, MoRT&H, Chandigarh*
- 21-2 *Superintending Engineer PWD(R&B) Jammu /Doda Circle.*
- 23-24 *Executive Engineer PWD(R&B) Division Doda/ Bhaderwah*
- 25-26 *H.A/HD for information*

Annexure-I

Detail of work proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of **Basohli – Bhaderwah – Doda including Tunnel at Chattergala.**

Annexure-I

State	Sr. No.	NH. No.	Package	Length (in Kms.)	Proposed development	Period of assignment (months)
J & K	1	To be declared as NH	Basohli – Bhaderwah – Doda including Tunnel at Chattergala.	170	2-lane with paved shoulder	12
	Total Length			170.00		

Letter of Invitation (LOI)
e-NIT No. 38 of 2017 Dated: 21.08.2017

Sub: Invitation of proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala.

Introduction

Executive Engineer PWD (R&B) Division, Basohli (J&K) invites proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala.

1.1

1.2A brief description of the assignment and its objectives are given in the enclosed *Terms of Reference*. Wherever required the re-alignment of National Highway stretch be done by incorporating the provision of bridges, viaducts etc.

1.3 The most preferred bidder for each project would be determined on the basis of Quality and Cost.

1.4 Deleted

1.5 To obtain first hand information on the assignment and on the local conditions, consultants are encouraged to pay a visit to the client, MoRT&H, and J&K State PWD the project site before submitting a proposal. You must fully inform yourself of local and site conditions and take them into account in preparing your proposal.

1.6 Financial Proposals will be opened for all technically qualified consultants in accordance with clause 5.1 hereof. The consultancy services will be awarded to the consultants on the basis of Quality and Cost.

1.7 Please note that (i) costs of preparing the proposal and of negotiating the contract, including visits to the Client etc., are not reimbursable as a direct cost of the assignment; and (ii) Client is not bound to accept any of the proposals submitted and reserve the right to reject any or all proposals without assigning any reasons.

1.8 The proposals must be properly signed as detailed below:

1.8.1 i. by the proprietor in case of a proprietary firm ii. by the partner holding the Power of Attorney (on the stamp paper) in case of a firm in partnership (A certified copy of the Power of Attorney shall accompany the Proposal).

iii. by a duly authorized person holding the Power of Attorney in case of a Limited Company or a corporation (A certified copy of the Power of Attorney shall accompany the proposal).

iv. by the authorized representative in case of Joint Venture.

v. Joint Venture shall not have more than two firms and one associate.

1.8.2 **The RFP has also been uploaded on "INFRACON" (www.infracon.nic.in).** As such before submitting the proposal the Consultants shall mandatorily register and enlist themselves (the firm and all key personnel), on the MORT & H portal of INFRACON and furnish registration details along with its RFP.

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.

1.8.3 Deleted

1.8.4 Deleted

2 Documents

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

2.2 Consultants requiring a clarification of the Documents must notify the Client, in writing, by **05-09-2017 (1500 Hrs)**. Any request for clarification in writing or by tele-fax must be sent to the Client's address indicated in the Data Sheet. The Client will respond by cable, tele-fax to such requests and copies of the response will be sent to all Consultants who have purchased the RFP document.

2.3 At any time before the submission of proposals, the Client may, for any reason, whether at its own initiative or in response to a clarification requested by a Consulting firm, modify the Documents by amendment. The amendment will be uploaded on the portal <https://eprocure.gov.in> and will be binding on them. The Client may at its discretion extend the deadline for the submission of proposals.

3. Preparation of Proposal

You are requested to submit your proposal in following 2 parts:

- (i) Documents in support of Proof of Eligibility & Technical Proposal
- (ii) Financial Proposal

The proposal is required to be submitted in accordance with clause 1.3 hereof.

3.1 Experience

3.1.2 The experience certificate from clients in support of having completed detailed project report of highway projects and bridges of minimum length as specified in data sheet for the project size preferably in terrain of similar nature as that of proposed project. Certificate should indicate clearly the firm's Design/DPR experience, in **2-/4 laning of highway in different terrains**, tunneling, structures like bridges, Viaducts, hill slope stabilization, rock bolting, ground improvement etc. Scope of services rendered by the firm should be clearly indicated in the certificate obtained from the client.

3.1.3 The minimum essential requirement in respect of eligibility has been indicated in the data sheet, the proposal found deficient in any respect of these requirements will not be considered for further evaluation.

3.1.4 Deleted

3.2 Technical Proposal

3.2.1 Under the technical proposal, only the CVs of the key personnel in the prescribed format as per Appendix-II is to be furnished. 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.

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

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

- i. Total assignment period is as indicated in the enclosed TOR. A **manning schedule in respect of requirement of key personnel is also furnished in the TOR which shall be the basis of the Financial proposal.** You shall make your own assessment of support personnel both technical and administrative to undertake the assignment. Additional support and administrative staff need to be provided for timely completion of the project within the total estimated cost. **It is stressed that the time period for the assignment indicated in the TOR should be strictly adhered to.***
- ii. No alternative to key personnel may be proposed and only one CV may be submitted for each position **in the format given at Appendix-II.** The minimum requirements of **Qualification and Experience of all key personnel are listed in Enclosure-II.** The proposal not meeting the minimum requirement specified shall not be evaluated further. However, the client reserves the right to lower the minimum requirements in the interest of work without giving any notice.*
- iii. All required key personnel should be available from beginning of the project.*
- iv. The availability of key personnel must be ensured at site during the period shown in the manning schedule;*
- v. **Age limit for key personnel is 65 years (except Sr Survey Engineer, whose age limit is 62 years) as on the date of bid submission. The proof of age and***

qualification of the key personnel must be furnished in the technical proposal. An undertaking from the key personnel must be furnished that he/she will be available for entire duration of the project assignment and will not engage himself/herself in any other assignment during the currency of his/her assignment on the project. After the award of work, in case of non availability of key personnel in spite of his/her declaration, he/she shall be debarred for an appropriate period decided by J&KState PWD/MORTH.

- vii. *Age limit for supporting staff to be deployed on project is 60 years as on the date of bid submission.*
 - viii. *A good working knowledge of English Language is essential for key professional staff on this assignment. Study reports must be in ENGLISH Language.*
 - ix. *Photo, contact address and phone/mobile number of key personnel should be furnished in the CV.*
 - x. *Availability of few key personnel engaged for preparation of Detailed Project Report for the envisaged project may be ensured during first 3 to 4 months after start of the civil work at site during the period of survey and review of DPR. For this purpose, payment shall be made as per actual site deployment of the key personnel at the man month rates quoted by the firm in their financial proposal.*
 - xi. *Deleted*
 - xii. *It may please be noted that in case the requirement of the ‘Experience’ of the firm/consortium as mentioned in the “Proof of Eligibility” is met by any foreign company, their real involvement for the intended project shall be mandatory. This can be achieved either by including certain man-months input of key experts belonging to the parent foreign company, or by submitting at least the draft feasibility report and draft DPR duly reviewed by the parent firm and their paying visit to the site and interacting with **J&KState PWD /MORTH**. In case of key personnel proposed by the foreign company, they should be on its pay roll for at least last six months (from the date of submission).*
 - xiii. *In case a firm is proposing key personnel from educational/research institutions, a ‘No Objection Certificate’ from the concerned institution should be closed with the CV of the proposed key personnel committing his services for the instant project.*
 - xiv. *Deleted.*
 - xv. *Deleted.*
- 3.3 Your technical proposal must include the following information using but not limited to the formats attached in **Appendix – II**.
- i. *The composition of the proposed Team and Task Assignment to individual personnel.*
 - ii. *Original Curriculum Vitae (CV) for each package need to be recently signed in blue ink by the proposed key professional staff and also by an authorized official of the Firm and each page of the CV must be signed. The key information shall be as per the format. Photocopy of the CVs will not be accepted. Unsigned copies of CVs shall be rejected.*

- iii. *Proposed work programme and methodology for the execution of the services illustrated with bar charts of activities, including survey equipment and procedure, any change proposed in the methodology of services indicated in the TOR, and procedure for quality assurance. Estimates of the total time effort (person x months) to be provided for the services, supported by bar diagrams showing the time proposed (person x months) for each Key Professional staff.*
- iv. *The proposal should clearly identify and mention the details of Material Testing LAB FACILITIES to be used by the Consultants for the project. In this connection, the proposals of the Consultants to use in-house LAB FACILITIES upto a distance of maximum 400 km. from the project site being feasible would be accepted. For all other cases suitable nearby material Testing Laboratory shall be proposed before Contract Agreement is executed.*
- v. ***In case the consultant envisages to out source certain specialized services (e.g. geo-technical investigation, topographical survey etc.) to the expert agencies, the details of the same indicating the arrangement made with the agencies need to be furnished. .***
- vi. ***Comments or suggestions on the TOR, if any***

The data obtained from the topographic surveys should be handed over to **J&KState PWD /MORTH** after the completion of services. The data should be in a form amenable to digital terrain model (DTM) commonly used by highway design software (MOSS/MX or equivalent as is being used in MoRTH/NHAI).

3.4 The technical proposal must not include any financial information.

3.5 Financial Proposal

3.5.1 The Financial proposal should include the costs associated with the assignment. These shall normally cover: remuneration for staff (foreign and local, in the field, office etc), accommodation, transportation, equipment, printing of documents, surveys, geotechnical investigations etc. This cost should be in INR ONLY. Your financial proposal should be prepared strictly using, the formats attached in **Appendix – III**. Your financial proposal should clearly indicate the amount asked for by you without any assumptions of conditions attached to such amounts. **Conditional offer or the proposal not furnished in the format attached in Appendix-III shall be considered non-responsive and is liable to be rejected.**

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

3.5.3 Costs shall be expressed in Indian National Rupees (INR) ONLY.

3.5.4 Consultants are required to charge only rental of equipments/ software(s) use so as to economize in their financial bid.

4 Submission of Proposals

The bid document is available online on portal <https://eprocure.gov.in> from **23-08-2017 to 25-09-2017 (up to 1500 hrs)**. Bid must be submitted online only at <https://eprocure.gov.in> on or before **25-09-2017 (up to 1500 Hrs IST)**

Instructions to applicants regarding e-tendering process:

- (a) The interested applicant can download the RFP from portal <https://eprocure.gov.in>. The detailed procedure regarding e-tendering may please be seen at Annexure-II of this NIT.
- (b) The applicants have to submit their bids including scanned copy of Bid Security online in electronic format with Digital Signature.
- (c) No proposal will be accepted in physical form except Bid Security. The applicants have to submit their fee & Bid Security in hard copy (original) also on or before **1500 hours on 27-09-2017** at the office of **Chief Engineer PW(R&B) Deptt LokNirman Bhawan Rail Head Complex Jammu**. If the office happens to be closed on the last date of submission of Bid Security in hard copy as specified, the Bid Security will be received on the next working day at the Office mentioned above. In case the Bid security is not received within specified time, the Bid shall be considered non responsive and shall not be downloaded/evaluated. Bids shall be strictly treated as non-responsive if bid is not accompanied by an acceptable bid security.
- (d) Before submission of online bids, applicants must ensure that scanned copy of all the necessary documents have been attached with bid.
- (e) Jammu & Kashmir State PWD shall not be responsible for delay in online submission due to any reason whatsoever.
- (f) All documents/papers uploaded/submitted by the bidder must be legible.

The following are the important dates for award of above consultancy work:

Sl. No.	Event Description	Date
1.	Last date for receiving queries / clarifications	05-09-2017 (1500 Hrs)
2.	Pre-Proposal Conference (Pre-bid meet)	08-09-2017 (1200 Hrs)
3.	Authority response to queries	Chief Engineer, PW (R&B) Department, LokNirman Bhawan Rail Head Complex, Jammu.
4	Proposal Due Date (PDD)	25-09-2017 (1500 Hrs)
5.	Opening of Proposals	28-09-2017 (1200 Hrs)

5 Proposal Evaluation

- 5.1 A three-stage procedure will be adopted in evaluating the proposal. In the first stage, eligibility of the firm will be ascertained on the basis of experience certificates from client and equipments available with the firm as indicated in datasheet. In the second stage, a technical evaluation will be carried out prior to opening of financial proposal. The technical proposal should score at least 75 points out of 100 to be considered for financial evaluation. In the third stage, financial proposal of all eligible firms who pass in technical evaluation shall be

opened and evaluation will be carried out. Firms will be ranked using a combined Technical/Financial score, as indicated in the Data Sheet.

5.2 Evaluation of Proof of Eligibility & Technical Proposal

The evaluation committee appointed by the Client will carry out its evaluation applying the evaluation criteria specified in the Data Sheet. Each responsive proposal will be attributed a technical score.

5.3 Evaluation of Financial Proposal

5.3.1 For financial evaluation, total cost of financial proposal will be considered. This however does not include GST which is separately reimbursable. All other taxes and duties (like income tax, import duties, value added tax, customs duties etc) would be included for financial evaluation.

5.3.2 The evaluation committee will determine whether the financial proposals are complete i.e. whether they have included cost of all items of the corresponding proposals ; if not, then their cost will be considered as NIL but the consultant shall however be required to carry out such obligations without any compensation. In case, if client feels that the work cannot be carried out within overall cost of financial proposal, the proposal can be rejected, correct any computational errors and correct prices in various currencies to the single currency specified in Data Sheet. The evaluation shall exclude those taxes, duties, fees, levies and other charges imposed under the applicable law & applied to foreign components/resident consultants. The lowest financial proposal (FM) will be given a financial score (SF) of 100 points. The financial scores of other proposals will be computed as follows:

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

(F = amount of financial proposal converted in the common currency)

5.4 Combined Evaluation of Technical and Financial Proposals

Proposals will finally be ranked according to their combined technical (ST) and financial (SF) scores using the weights indicated in the Data Sheet: $S = ST \times T + SF \times F$

Where, T and F are values of weightage for technical and financial Proposals respectively as given in the Data Sheet.

6 Negotiations

6.1 Prior to the expiration period of proposal validity, the Client will notify the most preferred Consultant in writing by registered letter, cable, telex or facsimile and invite him to negotiate the Contract.

- 6.2 Each key personnel of the preferred consultant shall be called for interview at the time of negotiation at the cost of consultant before the award of work.
- 6.3 Negotiations normally take two to three days. The aim is to reach agreement on all points and initial a draft contract by the conclusion of Negotiations.
- 6.4 Negotiations will commence with discussion on technical proposal, the proposed methodology (work plan), staffing and any suggestions made to improve the TOR, the staffing and bar charts, which will indicate activities, staff, periods in the field and in the home office, staff months, logistics and reporting. The financial proposal is subject to rationalization. Special attention will be paid to optimize the required outputs from the Consultants within the available budget and to define clearly the inputs required from the Client to ensure satisfactory implementation of the Assignment.
- 6.5 Changes agreed upon will then be reflected in the financial proposal using proposed unit rates.
- 6.6 Having selected Consultants, among other things, on the basis of an evaluation of proposed key professional staff, the Client expects to negotiate, within the proposal validity period, a contract on the basis of the staff named in the proposal and, prior to contract negotiations, will require assurances that the staff will be actually available. The Client will not consider substitutions during contract negotiations except in cases of incapacity of key personnel for reasons of health. Similarly, after award of contract the Client expects all of the proposed key personnel to be available during implementation of the contract. The client will not consider substitutions during contract implementation except under exceptional circumstances. For the reason other than death/ extreme medical ground (i) for replacement upto 33% of key personnel, remuneration shall be reduced by 5% (ii) for replacement between 33% to 50%, remuneration shall be reduced by 10% (iii) for replacement between 50 % and 66 % remuneration shall be reduced by 15 % (iv) for replacement beyond 66% of the total key personnel, the Client may initiate debarment proceedings so as to debar such consultant for future projects of J&KState PWD/MORTH for a period of 6 months to 24 months. If, for any reason beyond the reasonable control of the consultants, it becomes necessary to replace any of the personnel, the consultants shall forthwith provide as a replacement a person of equivalent or better qualification and experience.
- 6.7 The details related to para 3.3 (vi) would also be finalized during negotiation.
- 6.8 The negotiations will be concluded with a review of the draft form of Contract. The Client and the Consultants will finalize the contract to conclude negotiations.

7 Performance Security

The consultant will furnish within 15 days of the issue of Letter of Acceptance (LOA), an unconditional Bank Guarantee from the Bank (Generally, by SBI or its subsidiaries or any Indian nationalized bank or IDBI or ICICI or ICICI Bank or by a foreign bank through a correspondent bank in India) for an amount equivalent to **10 %** of the total

contract value to be received by him towards Performance Security valid for a period of *three years* beyond the date of completion of services. **The Bank Guarantee will be released by J&K State PWD upon expiry of 3 years beyond the date of completion of services provided, rectification of errors, if any, found during implementation of the contract for civil work and satisfactory report by MORTH/ J&K State PWD in this regard is issued.**

8. Penalty

The consultant will indemnify for any direct loss or damage that accrue due to deficiency in services in carrying out Detailed Project Report. Penalty shall be imposed on the consultants for poor performance/deficiency in service as expected from the consultant and as stated in Data Sheet.

9. Award of Contract

- 9.1 The Contract will be awarded after successful Negotiations with the successful Consultants. If negotiations (as per para 6 above) fail, the Client may invite the 2nd most preferred Consultant for Contract negotiations.
- 9.2 The selected Consultant is expected to commence the Assignment on the date and at the location specified in the Data Sheet.

10. Confirmation

We would appreciate you informing us by telex/facsimile:

- i. Your receipt of the letter of invitation*
- ii. Whether or not you will submit a proposal.*

Thanking you.

Yours sincerely,

Executive Engineer

**PWD (R&B) Division
Basohli (J&K)**

Pin-184201

Tele-Fax No: 01922-251017

e-mail: xendivisionbasohli@yahoo.com

Invitation of proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala.

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DISCLAIMER

The information contained in this Request for Proposal document (öRFPö) or subsequently provided to Applicants, whether verbally or in documentary or any other form by or on behalf of the J&KState PWD or any of its employees or advisers, is provided to Applicants on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

This RFP is not an agreement and is neither an offer nor invitation by the State PWD 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, which reflect various assumptions and assessments arrived at by the State PWD in relation to the Consultancy. Such assumptions, assessments and statements do not purport to contain all the information that each Applicant may require. This RFP may not be appropriate for all persons, and it is not possible for the State PWD its employees or advisers to consider the objectives, technical expertise and particular needs of each party who reads or uses this RFP. The assumptions, assessments, statements and information contained in this RFP, may not be complete, accurate, adequate or correct. Each Applicant should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments and information contained in this RFP and obtain independent advice from appropriate sources.

Information provided in this RFP to the Applicants is on a wide range of matters, some of which depends upon interpretation of law. The information given is not an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The State PWD accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on the law expressed herein.

The State PWD, its employees and advisers make no representation or warranty and shall have no liability to any person including any Applicant under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, reliability or completeness of the RFP and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way in this Selection Process.

The **State PWD** also accepts no liability of any nature whether resulting from negligence or otherwise however caused arising from reliance of any Applicant upon the statements contained in this RFP.

The **State PWD** may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this RFP.

The issue of this RFP does not imply that the **State PWD** is bound to select an Applicant or to appoint the Selected Applicant, as the case may be, for the Consultancy and the **State PWD** reserves the right to reject all or any of the Proposals without assigning any reasons whatsoever.

The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the or any other costs incurred in connection with or relating to its Proposal. All such costs and

expenses will remain with the Applicant and the **State PWD** shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Proposal, regardless of the conduct or outcome of the Selection Process.

DATA SHEET

(References to corresponding paragraphs of LOI are mentioned along side)

1. Invitation of Proposals for Consultancy Services

The Name of the Assignment is proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala.

- 2. The Name of the Client is: Chief Engineer PW(R&B) Deptt Jammu (J&K)**
- 3. The Description of the Project:.** Description of the project is given in **Annexure-I.**
- 4. Date and Time for submitting queries 05-09-2017 (1500 hours)**

Address:

Executive Engineer
PWD(R&B) Division, Basohli(J&K)
Pin-184201
Tele-Fax No. 01922-251017
e-mail:- xendivisionbasohli@yahoo.com

(Ref. Para 2.2)

5. The Documents are:

Appendix-I:	Terms of Reference (TOR)	i.
Appendix-II:	Formats for Technical Proposal	ii.
Appendix-III:	Formats for Financial Proposal	iii.
Appendix -IV	Draft Contract Agreement	iv

(Ref. Para 2.1)

6 Deleted

7. Tax and Insurance

(Ref. Para 3.5.2)

1. The Consultants and their personnel shall pay all taxes (including GST), custom duties, fees, levies and other impositions levied under the laws prevailing seven days before the last date of submission of the bids. The effects of any increase / decrease of any type of taxes levied by the Government shall be borne by the Client / Consultant, as appropriate. The Consultant will remit GST monthly or as applicable under the law and seek reimbursement from State PWD
2. Limitations of the Consultant's Liability towards the Client (Ref. para 8)
 - a) Except in case of negligence or willful misconduct on the part of the Consultants or on the part of any person or firm acting on behalf of the Consultants in carrying

out the Services, the Consultants, with respect to the damage caused by the Consultants to the Client's property, shall not be liable to the Client

- (i) for any indirect or consequential loss or damage; and,
 - (ii). for any direct loss or damage that exceeds; (A) the total payments for Professional Fees and Reimbursable 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.
- b) The Limitation of liability shall not affect the Consultants' liability, if any, for damage to Third Parties caused by the Consultants or any person or firm acting on behalf of the Consultants in carrying out the Services.
3. The risks and the coverages shall be as follows:
- a) Third Party motor vehicle liability insurance as required under Motor Vehicles Act, 1988 in respect of motor vehicles operated in India by the Consultants or their Personnel or any Sub consultants or their Personnel for the period of consultancy.
 - b) Third Party liability insurance with a minimum coverage, for Rs. 1.00 million for the period of consultancy.
 - c)
 - (i) The Consultant shall provide to *State PWD* Professional Liability Insurance (PLI) for a period of five years beyond completion of Consultancy services or as per Applicable Law, whichever is higher.
 - (ii) The Consultant will maintain at its expense PLI including coverage for errors and omissions caused by Consultant's negligence in the performance of its duties under this agreement, **(A)** For the amount not exceeding total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder **OR (B)** the proceeds, the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of **(A) or (B) is higher**.
 - (iii) The policy should be issued only from an Insurance Company operating in India.
 - (iv) The policy must clearly indicate the limit of indemnity in terms of "Any One Accident" (AOA) and "Aggregate limit on the policy" (AOP) and in no case should be for an amount less than stated in the contract.
 - (v) If the Consultant enters into an agreement with *State PWD* in a joint venture or "in association", the policy must be procured and provided to *State PWD* by the joint venture/in association entity and not by the individual partners of the joint venture/ association.
 - (vi) The contract may include a provision whereby the Consultant does not cancel the policy midterm without the consent of *State PWD*. The insurance company may provide an undertaking in this regard.
 - d) Employer's liability and workers' compensation insurance in respect of the Personnel of the Consultants and of any Sub consultant, in accordance with the relevant provisions of the Applicable Law, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate; and all insurances and policies should start from the date of

commencement of services and remain effective as per relevant requirements of contract agreement.

8. DELETED

9. DELETED

10. The date and time of proposal submission are: **25-09-2017 (upto 1500 hrs)**
(Ref. Para 4.4)

11. Proposal Validity period (days, date): 120 days (Ref. Para 4.5)

12. Evaluation criteria: (Ref. Para 3 & 5)

12.1 **First stage evaluation – eligibility requirement.** (Ref. Para 3.1 & 5.1)

(i) Data sheet for furnishing information on Firm's Experience

S.No.	Name of the Project	Name & address of Client with tel.no. & e-mail id	Total length	Cost of consultancy (inRs.)	Date of Start and Completion	Brief scope of work*	Name of the key persons Deployed

*The details of Tunnel of length more than 100 m length & bridges having length more than 100m must be given.

(ii) **Eligibility criteria for sole applicant firm or lead partner in case of JV**

<u>S.No.</u>	Minimum experience of preparation of DPR of Highways/Bridges/tunnels in the last 7 years (NH/SH/Equivalent).	<i>Annual average turnover</i>

<u>a.</u>	<p>Firm should have experience of preparation of detailed Project Report of Two/Four/Six lane/Feasibility of Two/Four/Six lane Projects of aggregate length equal to the indicative length of the package (ie. 100 km. if the indicative length of the package is 100 km). Firm should have also prepared DPR for at least one project of 2/4/6 laning of minimum 40% of the indicative length of the package (i.e 40km if the indicative length of the package is 100Km) or feasibility study of two/four/six laning of minimum 60% of the indicative length of package (i.e 60km if the indicative length of package is 100km) The experience of hill road DPR will be given due weightage. Note: The experience of a firm in preparation for private concessionaire/ contractor shall not be considered.</p>	<p><i>Annual average turnover for last three years of the firm should be equal to or more than Rs 5.00 Crore.</i></p>
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(iii) The sole applicant shall fulfill all the requirements given in clause 12.1(ii)

In case of JV, the Lead Partner should fulfill at least 75% of all eligibility requirements and the other partner shall fulfill at least 50% of all eligibility requirements. The experience of associate will not be considered.

If the applicant firm has/have prepared the DPR/FS projects solely on its own, 100% weightage shall be given. If the applicant firm have prepared the DPR/FS projects as a lead partner in a JV, 75% weightage shall be given. If the applicant firm have prepared the DPR projects as the others partner (not lead partner) in a JV 50% weightage shall be given. If the applicant firm have prepared the DPR/ FS projects as an associate, 25% weightage shall be given.

The length mentioned are indicative in nature with assumption that in each stretch/package 100% of road stretch included in the proposal shall be upgraded as mentioned above and any variation in the length/configuration shall be dealt as change of scope. For this purpose an enhancement factor of 1.25 shall be considered for 4/6/8 lane configurations for converting the same to equivalent length of 2 lane with paved shoulder configuration.

(iv) List of minimum essential equipment which the firm must possess for eligibility

1. Pavement condition survey equipment
Benkelman Beam
Roughometer or any other suitable equipment
2. Laboratory facility

Soil testing facility for atterberg limits, soil classifications, moisture content, density, CBR value, etc.
3. Survey equipment
Total station with appropriate softwares
4. Office equipment
Computer
Plotter
5. Software
MX/ MOSS or equivalent
AutoCAD
STAD or equivalent

(v) **Additional essential equipment**

1. GPS Survey	The firm can either own this necessary equipment for this specialized services or furnish an undertaking indicating the arrangement for carrying out such services.
2. Survey Preferably using modern technique.	The firm can either own this necessary equipment for this specialized services or furnish an undertaking indicating the arrangement for carrying out such services by the firm agreed by State PWD
3. Geotechnical investigation	The firm can either own necessary equipment for these specialized services or furnish an undertaking indicating the arrangement for carrying out such services through empanelled consultant with the State PWD
4. Condition survey and testing of existing bridge structures	

(vi) **Details regarding work in hand of the *similar type* must be furnished in the format given below:**

S.No.	Name of the Project	Name & address of Client with tel.no.	Total length	Cost of consultancy (in Rs.)	Date of Start and Completion	scope of work DPR/	Name & position of the key persons deployed and their total man months & remaining man months

12.2 Second stage technical evaluation(Indicative)

The points given to evaluation criteria are:

Evaluation Criteria for Technical Proposal

SL NR.	Description	Points	Break up details in Para 12.2.1
1	Firms Relevant Experience in last 7 years	20	
2	Adequacy of Approach and Methodology	5	
3	Survey & Investigation Equipment and Software proposed to be used	15	
4	Qualification and Relevant Experience of the Proposed Key Personnel	60	
	Total	100	

The weightage points given to evaluation sub-criteria for qualifications and competence of key staff are

Weightage Points for Key Professionals

Description	Weight (%)	Break up details in para 12.2.1
General Qualification	25	
Employment with firm	5	
Relevant Experience and Adequacy for the Project	70	
Total	100	

12.2.1 The number of points to be given under each of the evaluation criteria are:

- (i) Firms relevant experience in last 7 years (2010 onwards)

	Points
(a) Specific experience of the DPR consultancy related to the Assignment for eligibility	10

(b)DPR of Bridge having length more than 100 m	5	5(c) DPR of	
Tunnel having length more than 100 m			
	í í í í í í í í í í ...		
	Total	20	

(ii) Adequacy of the proposed work plan and methodology in responding to the TOR
Sub criteria:

(a) Understanding TOR	2
(b) Quality methodology	2
(c) Work Programme and Manning Schedule	1
	í í í í í í í í í í ...
	Total
	5

(iii) Modern Survey and investigation equipment and software proposed to be used 15

(iv) Qualification and competence of the key staff for adequacy of the
Assignment 60

The weight-age for various key staffs are as under:

SL No.	Key Personnel	Points for Hilly region
1	Team Leader -cum-Sr. Highway Engineer	16
2	Highway Engineer -cum-Pavement Specialist	12
3	Bridge Engineer	10
4	Resettlement & Rehabilitation specialist	3
5	Road Safety Engineer	3
6	Traffic Engineer	5
7	Geologist	10
8	Senior Survey Engineer	7
9	Financial Analyst	5
10	Environment Specialist	5
11	Quantity Surveyor/Documentation Expert	7
12	Tunnel Engineer	12
13	Material Engineer	5
	Total	100
	Total Points	100

12.2.2 The number of points to be given for qualification and competence of the key staff for the assignment are:

(i) General Qualification 25

Sub-Criteria

(a) Educational Qualification 10

(b) Professional Experience 10

(c) Training, Publication etc 5

Total 25

Note: 75% points will be given for personnel having minimum qualification; for any higher qualification points shall be increased suitably.

(ii) Adequacy for the project 70

Sub-Criteria:

(a) Experience in specific positions in similar project in Developed/Developing countries etc 30

(b) Experience relevant to particular assignment as mentioned in

TOR 40

Total 70

(iii) Employment with firm 5

Total 5

Total Points 100

The minimum technical score required to pass is: 75 Points

The technical proposal should score at least 75 points out of 100 to be considered for financial evaluation.

12.3 Third stage – Evaluation of Financial proposal (Ref. para 5.1 & 5.3)

Financial Proposals will be opened of all qualified consultants in accordance with clause 5.1 hereof. The consultancy services will be awarded to the consultant scoring highest marks in combined evaluation of Technical and Financial proposals in accordance with clause 1.3 and 5.4 hereof.

12.4 The weight (T) given to the Technical Proposal 80 per cent. (Ref. Para 5.4)

The weight (F) given to the Financial Proposal 20 per cent.

13. The common currency is Indian National Rupee, INR. (Ref. Para 3.5.3)

14. Commencement of Assignment (Date, Location): The Consultants shall commence the services within fifteen days of the date of effectiveness of the contract at locations as required for the project stretch stated in TOR. (Ref. Para 9.2)

Annexure-I

State	Sr. No.	NH. No.	Package	Length (in Kms.)	Proposed development	Period of assignment (months)
J & K	1	To be declared as NH	Basohli – Bhaderwah – Doda including Tunnel at Chattergala.	170	2-lane with paved shoulder	12
	Total Length			170.00		

TOR

Consultancy proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala.

Terms of Reference for Consultancy Services (TOR)

1. Background:

1. General

Ministry of Road Transport & Highways (MORTH), Government of India has decided for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala.

2. Objective

2.1 Comprehensive review of existing and feasible alternate alignments for construction of all weather connectivity roads leading to such adverse climatic regions. Improvement of safety and sustainability of NH network by incorporating Tunnels, Bypasses, Viaducts and long bridges, shelters and rest areas, operation & maintenance system. Correction of geometrics of existing highway and inclusion of alternate feasible alignments to the extent possible. This study intends to have special emphasis on inclusion of safety features in NH network for safety of road users.

2.2 The Detailed Project Report would inter-alia include detailed highway design, design of pavement and overlay with options for flexible or rigid pavements, design of bridges, tunnels and cross drainage structures, quantities of various items, detailed working drawings, detailed cost estimates, EPC schedules, economic and financial viability analyses, environmental feasibility, environmental action plans as appropriate and documents required for tendering the project on commercial basis for international / local competitive bidding.

2.3 The DPR consultant should ensure detailed project preparation incorporating aspects of value engineering, quality audit and safety audit requirement in design and implementation.

3. Scope of Services

- 3.1 As far as possible, proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders. The Consultant shall furnish land acquisition details (i.e. all necessary schedules as per L.A. act) as per revenue records/maps.
- 3.2 Wayside amenities required shall also be planned.
- 3.3 The general scope of services is given in the sections that follow. However, the entire scope of services would, inter-alia, include the items mentioned in the TOR (Terms of reference). The Consultant will also make suitable proposals for widening/improvement of the existing road to 2 lane/2 lane with paved shoulder /4 laning etc. and strengthening of the carriageways, as required at the appropriate time to maintain the level of service over the design period.

- 3.4 All ready to implement good for construction drawings shall be prepared.
- 3.5 Environmental Impact Assessment, Environmental Management Plan shall be carried out by the Consultant meeting the requirements of the State/ Central Environment Authorities/Ministries.
- 3.6 *Wherever required, consultant will liaise with concerned authorities and arrange all clarifications. Consultant will also obtain 'NO Objection Certificate' from Ministry of Environment and Forest and also incorporate the estimates for shifting of utilities of all types involved from concerned local authorities in the DPR. Consultant is also required to prepare all Land Acquisition papers (i.e. all necessary schedules as per L.A. act) for acquisition of land either under NH Act or State Act.*
- 3.7 Deleted.
- 3.8 Consultant shall obtain all types of necessary clearances required for implementation of the project on the ground from the concerned agencies. The client shall provide the necessary supporting letters and any official fees as per the demand note issued by such concerned agencies from whom the clearances are being sought to enable implementation. In case Consultant does not obtain all the necessary clearances upto the completion of the assignment, deduction upto 5% amount will be made from the final payment. The amount thus deducted will be released after all necessary clearances have been obtained.

4. General

4.1 Primary Tasks

General Scope of Services shall cover but be not limited to the following major tasks (additional requirements for Feasibility Studies and preparation of Detailed Project Report for Hill Roads and Major Bridges are given in **Supplement I and II**

respectively):

- i. review of all available reports and published information about the project road and the project influence area;*
- ii. Environmental impact assessment.*
- ii(a).** Public consultation, including consultation with Communities located along the road, NGOs working in the area, other stake-holders and relevant Govt. depts at all the different stages of assignment (such as inception stage, feasibility stage, and once final designs are concretized). Consultation with defence establishments etc in the region.
- iii. detailed reconnaissance;*
- iv. identification of possible improvements in the existing alignment and bypassing*

- congested locations with alternatives, evaluation of different alternatives comparison on techno-economic and other considerations and recommendations regarding most appropriate option;*
- v. *traffic studies including traffic surveys and Axle load survey and demand forecasting for next thirty years;*
 - vi. *inventory and condition surveys for road;*
 - vii. *inventory and condition surveys for bridges, cross-drainage structures and drainage provisions;*
 - viii. *detailed topographic surveys using LIDAR/similar technology, Total Stations and GPS; ix. pavement investigations;*
 - x. *sub-grade characteristics and strength: investigation of required sub-grade and sub-soil characteristics and strength for road and embankment design and sub soil investigation;*
 - xi. *identification of sources of construction materials;*
 - xii. *detailed design of road, its x-sections, horizontal and vertical alignment and design of embankment of height more than 6m and also in poor soil conditions and where density consideration require, even lesser height embankment. Detailed design of structures preparation of GAD and construction drawings and cross-drainage structures and underpasses etc.*
 - xiii. *identification of the type and the design of intersections;*
 - xiv. *design of complete drainage system and disposal point for storm water*
 - xv. *value analysis / value engineering and project costing; xvi. economic and financial analyses;*
 - xvii. *contract packaging and implementation schedule.*
 - xviii *strip plan indicating the scheme for carriageway widening, location of all existing utility services (both over- and underground) and the scheme for their relocation, trees to be felled and planted and land acquisition requirements including schedule for LA: reports documents and drawings arrangement of estimates for cutting of trees and shifting of utilities from the concerned department;*
 - xix *River training works and catchments area treatment plans.*
 - xx. *preparation of detailed project report, cost estimate, EPC schedules, Sub-estimation, approved for construction drawings, rate analysis, detailed bill of quantities, bid documents for execution of civil works through budgeting resources.*
 - xxi. *Design of weighing stations, parking areas and rest areas. xxii. Any other user oriented facility enroute.*
 - xxiii *Tie-in of on-going/sanctioned works of MORT&H/ BRO/ other agencies.*

- 4.2 While carrying out the field studies, investigations and design, the development plans being implemented or proposed for future implementation by the local bodies, should be taken into account. Such aspect should be clearly brought out in the reports and drawings.
- 4.3 The consultant shall study the possible locations, wayside amenities required and arboriculture along the highway shall also be planned.
- 4.4 Consultation and incorporation of measures suggested by State & Central disaster management bodies. Special emphasis shall be given for incorporation of mitigation measures in case of any disaster resulting due to adverse climatic condition, earth quake etc.

4.5 Standards and Codes of Practices

1. All activities related to field studies, design and documentation shall be done as per the latest guidelines/ circulars of MORT&H and relevant publications of the Indian Roads Congress (IRC) and Bureau of Indian Standards (BIS). For aspects not covered by IRC and BIS, international standard practices, such as, British and American Standards may be adopted. The Consultants, upon award of the Contract, may finalise this in consultation with MORTH and reflect the same in the inception report. Consultant should also look at international best practices and try to adopt them wherever there is scope for value addition.
2. All notations, abbreviations and symbols used in the reports, documents and drawings shall be as per IRC:71-1977.

4.6 Quality Assurance Plan (QAP)

1. The Consultants should have detailed Quality Assurance Plan (QAP) for all field studies including topographic surveys, traffic surveys, engineering surveys and investigations, design and documentation activities. The quality assurance plans/procedures for different field studies, engineering surveys and investigation, design and documentation activities should be presented as separate sections like engineering surveys and investigations, traffic surveys, material geo-technical and sub-soil investigations, road and pavement investigations, investigation and design of bridges & structures, environment and R&R assessment, economic

&financial analysis, drawings and documentation, preparation, checking, approval and filing of calculations, identification and tractability of project documents etc. Further, additional information as per format shall be furnished regarding the details of personal who shall be responsible for carrying out/preparing and checking/verifying various activities forming part of feasibility study and project preparation, since inception to the completion of work. The detailed Draft QAP Document must be discussed and finalised with the concerned J&KState PWD officers immediately upon the award of the Contract and submitted as part of the inception report.

2. It is imperative that the QAP is approved by J&K State PWD before the Consultants start the field work.

4.7 Review of Data and Documents

1. The Consultants shall collect the available data and information relevant for the Study. The data and documents of major interest shall include, but not be limited to, the following:

- i. *Climate;*
- ii. *road inventory*
- iii *road condition, year of original construction, year and type of major maintenance/rehabilitation works;*
- iv. *condition of bridges and cross-drainage structures;*
- v. *sub-surface and geo-technical data for existing bridges;*
- vi. vi. *hydraulic data, drawings and details of existing bridges;*
- vii. *detailed of sanctioned / on-going works on the stretch sanctioned by MoRT&H/ other agencies for Tie-in purposes*
- viii. *survey and evaluation of locally available construction materials;*
 - ix. *historical data on classified traffic volume (preferably for 5 years or more);*
- x. *origin-destination and commodity movement characteristics; if available;*
- xi. *speed and delay characteristics; if available;*
- xii. *commodity-wise traffic volume; if available;*
- xiii. *accident statistics; and,*
- xiv. *vehicle loading behaviour (axle load spectrum), if available.*
- xv) *Type and location of existing utility services (e.g. Optical Cable, O/H and U/G Electric, Telephone line, Water mains, Sewer, Trees etc.)*

- xvi) *Environmental setting of the project.*
- xvii) *Active landslide locations*
- xviii) *Location of reserve forest, National Parks, Sanctuaries etc* *Location of strategically sensitive regions in consultation of Defense establishments.*

4.8 Deleted

4.9 Traffic Surveys

All traffic surveys and studies will be completed in feasibility studies.

4.9.1 Number and Location of Survey Stations

1. The type of traffic surveys and the minimum number of survey stations shall normally be as under, unless otherwise specifically mentioned.

Sl.NR.	Description	Number of Survey Stations per 100 km
1.	Classified Traffic Volume Count	3
2.	Origin-Destination and Commodity Movement Characteristics	Minimum 2
3.	Axle Loading Characteristics	2
4.	Intersection Volume Count	All Major Intersection
5.	Speed-Delay Characteristics	Project Road Section
6.	Pedestrian/animal cross traffic count	All major inhabitations along the highway

2. The number of survey locations indicated in the table above are indicative only. The Consultants shall, immediately upon award of the work, submit to State PWD proposals regarding the total number as well as the locations of the traffic survey stations as put of inception report. Suitable maps and charts should accompany the proposals clearly indicating the rationale for selecting the location of survey stations.
3. The methodology of collection and analysis of data, number and location of traffic survey stations shall be finalised in consultation with *State PWD*.

4.9.2 Classified Traffic Volume Count Survey

- The classified traffic volume count surveys shall be carried out for 7 days (continuous, direction-wise) at the selected survey stations. The vehicle classification system as given in relevant IRC code may be followed. However, the following generalised classification system is suggested in view of the requirements of traffic demand estimates and economic analysis:

Motorised Traffic		Non-Motorised Traffic
2-Wheeler		Bi-Cycle
3-Wheeler		Cycle-Rickshaw
Passenger Car		Animal Drawn Vehicle (ADV)
Utility Vehicle (Jeep, Van etc.)		Hand Cart
		Other Non-Motorised Vehicle
Bus	Mini Bus Standard Bus	
LCV	LCV-Passenger LCV-Freight	
Truck	MCV : 2-Axle Rigid Chassis	
	HCV : 3-Axle Rigid Chassis	
	MAV	
	Semi Articulated	
	Articulated	

- All results shall be presented in tabular and graphical form. The survey data shall be analysed to bring out the hourly and daily variations. The traffic volume count per day shall be averaged to show a weekly Average Daily Traffic (ADT) by vehicle type. The Annual Average Daily Traffic (AADT) shall be worked out by applying seasonal factors.
- The consultants shall compile the relevant traffic volume data from secondary sources also. The salient features of traffic volume characteristics shall be brought out and variations if any, from the traffic census carried out by the State PWD shall be suitably explained.

4.9.3 Origin-Destination and Commodity Movements Surveys

1. The Consultants shall carry out 1-day (24 hour, both directions) O-D and Commodity Movement Surveys at locations finalised in consultation with *State PWD*. These will be essentially required around congested towns to delineate through traffic. The road side interviews shall be on random sample basis and cover all four-wheeled vehicles. The locations of the O-D survey and Commodity Movement surveys shall normally be same as for the classified traffic count stations.
2. The location of origin and destination zones shall be determined in relation to each individual station and the possibility of traffic diversion to the Project Road from/to other road routes including bypasses.
3. The trip matrices shall be worked out for each vehicle type information on weight for trucks should be summed up by commodity type and the results tabulated, giving total weight and average weight per truck for the various commodity types. The sample size for each vehicle type shall be indicated on the table and also in the graphical representations.
4. The data derived from surveys shall also be analysed to bring out the lead and load characteristics and desire line diagrams. The data analysis should also bring out the requirement for the construction of bypasses.
5. The distribution of lead and load obtained from the surveys should be compared with those derived from the axle load studies.
6. The commodity movement data should be duly taken into consideration while making the traffic demand estimates.

4.9.4 Turning Movement Surveys

1. The turning movement surveys for estimation of peak hour traffic for the design of major and minor intersections shall be carried out for the Study. The details regarding composition and directional movement of traffic shall be furnished by the Consultant.
2. The methodology for the surveys shall be as per IRC: SP: 41-1994. The details including location and duration of surveys shall be finalized in consultation with *State PWD* officials. The proposal in response to this TOR shall clearly indicate

the number of locations that the Consultants wish to conduct turning movement surveys and the rationale for the same.

3. The data derived from the survey should be analysed to identify requirements of suitable remedial measures, such as construction of underpasses, fly-overs, interchanges, grade-separated intersections along the project road alignment. Intersections with high traffic volume requiring special treatments either presently or in future shall be identified.

4.9.5 Axle Load Surveys

1. Axle load surveys in both directions shall be carried out at suitable location(s) in the project road stretch on a random sample basis normally for trucks only (both empty and loaded trucks) for 2 normal days - (24 hours) at special count stations to be finalised in consultation with *State PWD*. However, a few buses may be weighed in order to get an idea about their loading behaviour. While selecting the location(s) of axle load survey station(s), the locations of existing bridges with load restrictions, if any, should be taken into account and such sites should be avoided.
2. The axle load surveys shall normally be done using axle load pads or other sophisticated instruments. The location(s) of count station(s) and the survey methodology including the data formats and the instrument type to be used shall be finalised before taking up the axle load surveys.
3. The axle load data should be collected axle configuration-wise. The number of equivalent standard axles per truck shall be calculated on the basis of results obtained. The results of the survey should bring out the VDF for each truck type (axle configuration, if the calculated VDF is found to be below the national average, then national average shall be used. Furthermore, the data from axle load surveys should be analysed to bring out the Gross Vehicle Weight (GVW) and Single Axle Load (SAL) Distributions by truck type (axle configuration).
4. The Consultant shall ascertain from local enquiries about the exceptional live loads that have used the highway in the past in order to assess the suitability of existing bridges to carry such loads.

4.9.6 Speed-Delay Surveys

The Consultants shall carry out appropriate field studies such as moving car survey to determine running speed and journey speed. The data should be analysed to identify sections with typical traffic flow problems and congestion. The objective of the survey would be to recommend suitable measures for segregation of local traffic, smooth flow of through traffic and traffic safety. These measures would include the provision of bypasses, under-passes, fly-overs, interchanges, grade-separated intersections and service roads.

4.9.7 Pedestrian / animal cross traffic surveys:

These may be conducted to determine if provision of viaduct for pedestrians/animals is necessary to improve the traffic safety.

4.9.8 Truck Terminal Surveys

The data derived from the O-D, speed-delay, other surveys and also supplementary surveys should be analysed to assess requirements for present and future development of truck terminals at suitable locations enroute.

4.10 Traffic Demand Estimates

1. The consultants shall make traffic demand estimates and establish possible traffic growth rates in respect of all categories of vehicles, taking into account the past trends, annual population and real per capita growth rate, elasticity of transport demand in relation to income and estimated annual production increase. The other aspects including socio-economic development plans and the land use patterns of the region having impact on the traffic growth, the projections of vehicle manufacturing industry in the country, development plans for the other modes of transport, O-D and commodity movement behaviour should also be taken into account while working out the traffic demand estimates.
2. The values of elasticity of transport demand shall be based on the prevailing practices in the country. The Consultants shall give complete background including references for selecting the value of transport demand elasticity.
3. It is envisaged that the 2/4-laning of the project road sections covered under this TOR would be completed and opened to traffic after 3 years. The traffic demand estimates shall be done for a further period of 30 years from completion of two

lane. The demand estimates shall be done assuming three scenarios, namely, optimistic, pessimistic and most likely traffic growth. The growth factors shall be worked out for five-yearly intervals.

4. Traffic projections should be based on sound and proven forecasting techniques. In case traffic demand estimated is to be made on the basis of a model, the application of the model in the similar situation with the validation of the results should be established. The traffic projections should also bring out the possible impact of implementation of any competing facility in the near future. The demand estimates should also take into account the freight and passenger traffic along the major corridors that may interconnect with the project. Impact of toll charges on the traffic estimates should be estimated.
5. The methodology for traffic demand estimates described in the preceding paragraphs is for normal traffic only. In addition to the estimates for normal traffic, the Consultants shall also work out the estimates for generated, induced and diverted traffic.
6. The traffic forecasts shall also be made for both diverted and generated traffic.
7. Overall traffic forecast thus made shall form the basis for the design of each pavement type and other facilities/ancillary works.

4.11 Engineering Surveys and Investigations

4.11.1 Reconnaissance and Alignment

1. The Consultants should make an in-depth study of the available land width (ROW) topographic maps, satellite imageries and air photographs of the project area and other available relevant information collected by them concerning the existing alignment. Consultant himself has to arrange the required maps and the information needed by him from the potential sources. Consultant should make efforts for minimizing land acquisition. Modern survey techniques like LIDAR /similar techniques shall be used for timely and accurate survey.
2. The detailed ground reconnaissance may be taken up immediately after the study

of maps and other data. The primary tasks to be accomplished during the reconnaissance surveys include:

- i topographical features of the area;*
- ii. typical physical features along the existing alignment within and outside ROW i.e. land use pattern;*
- iii. possible alignment alternatives, vis-a-vis, scheme for the construction of additional lanes parallel to the existing road;*
- iv. realignment requirements including the provision of bypasses, ROBs / Flyovers and viaduct for pedestrian crossings with possible alignment alternatives;*
- v. preliminary identification of improvement requirements including treatments and measures needed for the cross-roads;*
- vi. traffic pattern and preliminary identification of traffic homogenous links; vii. sections through congested areas;*
- viii. inventory of major aspects including land width, terrain, pavement type, carriageway type, bridges and structures (type, size and location), intersections (type, cross-road category, location) urban areas (location, extent), geologically sensitive areas, environmental features:*
- ix. critical areas requiring detailed investigations; and,*
- x. requirements for carrying out supplementary investigations.*
- xi. soil (textural classifications) and drainage conditions xii. type and extent of existing utility services along the alignment (within ROW).*

3. The data derived from the reconnaissance surveys are normally utilised for planning and programming the detailed surveys and investigations. All field studies including the traffic surveys should be taken up on the basis of information derived from the reconnaissance surveys.

4. The data and information obtained from the reconnaissance surveys should be documented. The data analysis and the recommendations concerning alignment and the field studies should be included in the Inception Report. The data obtained from the reconnaissance surveys should form the core of the database which would be supplemented and augmented using the data obtained from detailed field studies and investigations.

5. The data obtained from the reconnaissance surveys should be compiled in the tabular as well as graphical (chart) form indicating the major physical features and the proposed widening scheme for State PWD's comments. The data and the

charts should also accompany the rationale for the selection of traffic survey stations.

4.11.2 Topographic Surveys

1. The basic objective of the topographic survey would be to capture the essential

ground features along the alignment in order to consider improvements and for working out improvements, rehabilitation and upgrading costs. The detailed topographic surveys should normally be taken up after the completion of reconnaissance surveys.

2. The carrying out of topographic surveys will be one of the most important and

crucial field tasks under the project. The detailed field surveys shall be carried out using high precision instruments i.e. LIDAR or Total stations. The data from the topographic surveys shall be available in (x, y, z) format for use in a sophisticated digital terrain model (DTM). The Consultants would be fully responsive for any inaccuracy in surveys.

3. The detailed field surveys would essentially include the following activities:

- i. *Topographic Surveys along the Existing Right of Way (ROW): Running a continuous open Traverse along the existing road and realignments, wherever required, and fixation of all cardinal points such as horizontal intersection points (HIP's), centre points and transit points etc. and properly referencing the same with a pair of reference pillars fixed on either side of the centre-line at safe places within the ROW.*
- ii. *Collection of details for all features such as structures (bridges, cross-drainage works, retaining walls, breast walls, crash barriers etc.) utilities, existing roads, electric and telephone installations (both O/H as well as underground), huts, buildings, fencing and trees (with girth greater than 0.3 metre) oil and gas lines etc. falling within the extent of survey.*

4. The width of survey corridor will generally be as given under:

- i. *The width of the survey corridor should taken into account the layout of the existing alignment including the extent of embankment and cut slopes and the general ground profile. While carrying out the field surveys, the widening scheme (i.e. right, left or symmetrical to the centre line of the existing carriageway) should be taken into consideration so that the topographic surveys cover sufficient width beyond the centre line of the proposed carriageway. Normally the surveys should extend a minimum of 30*

m beyond either side of the centre line of the proposed divided carriageway or land boundary whichever is more. In cases of land slide locations, entire land slide zone shall be covered irrespective of NH boundary.

- ii. In case the reconnaissance survey reveals the need for bypassing the congested locations, the traverse lines would be run along the possible alignments in order to identify and select the most suitable alignment for the bypass. The detailed topographic surveys should be carried out along the bypass alignment approved by MORTH. At locations where grade separated intersections could be the obvious choice, the survey area will be suitably increased. Field notes of the survey should be maintained which would also provide information about traffic, soil, drainage etc.*
- iii. The width of the surveyed corridor will be widened appropriately where developments and / or encroachments have resulted in a requirement for adjustment in the alignment, or where it is felt that the existing alignment can be improved upon through minor adjustments.*
- iv. Where existing roads cross the alignments, the survey will extend a minimum of 100 m either side of the road centre line and will be of sufficient width to allow improvements, including at grade intersection to be designed.*

5. The surveyed alignment shall be transferred on to the ground as under:

- i. Reference Pillar and Bench Mark / Reference pillar of size 15 cm X 15 cm X 45 cm shall be cast in RCC of grade M 15 with a nail fixed in the centre of the top surface. The reference pillar shall be embedded in concrete upto a depth of 30 cm with CC M10 (5 cm wide all around). The balance 15 cm above ground shall be painted yellow. The spacing shall be 100m apart, incase Bench Mark Pillar coincides with Reference Pillar, only one of the two need be provided.*
- ii. Establishing Bench marks at site connected to GTS Bench marks at a interval of 250 metres on Bench mark pillar made of RCC as mentioned above with RL and BM No. marked on it with red paint.*

4.11.2.1 Longitudinal and Cross-Sections

The topographic surveys for longitudinal and cross-sections shall cover the following:

- i. Longitudinal section levels along final centre line at every 25 m interval, at the locations of curve points, small streams, intersections and at the locations of change in elevation.*
- ii. Cross sections at every 50 m interval in full extent of survey covering sufficient number of spot levels on existing carriageway and adjacent ground for profile correction course and earth work calculations. Cross sections shall be taken at closer interval at curves.*
- iii. Longitudinal section for cross roads for length adequate for design and quantity*

estimation purposes.

- iv. *Longitudinal and cross sections for major and minor streams as per recommendations contained in IRC Special Publication No. 13 (Guidelines for the Design of Small Bridges and Culverts) and IRC:5-1998 (“Standard Specifications & Code of Practice for Road Bridges, Section 1 - General Features of Design”).*

At feasibility study stage cross sections at 200m interval may be taken.

4.11.2.2 Details of utility Services and Other Physical Features

1. The Consultants shall collect details of all important physical features along the alignment. These features affect the project proposals and should normally include buildings and structures, monuments, burial grounds, cremation grounds, places of worship, railway lines, stream / river / canal, water mains, sewers, gas/oil pipes, crossings, trees, plantations, utility services such as electric, and telephone lines (O/H & U/G) and poles, optical fibre cables (OFC) etc. The survey would cover the entire right-of-way of the road on the adequate allowance for possible shifting of the central lines at some of the intersections locations.
2. The information collected during reconnaissance and field surveys shall be shown on a strip plan so that the proposed improvements can be appreciated and the extent of land acquisition with L.A schedule, utility removals of each type etc. assessed and suitable actions can be initiated. Separate strip plan for each of the services involved shall be prepared for submission/coordination with the concerned agency.

4.11.3. Road and Pavement Investigations

The Consultants shall carry out detailed field studies in respect of road and pavement. The data collected through road inventory and pavement investigations should be sufficient to meet the input requirements of HDM-IV.

4.11.3.1 Road Inventory Surveys

1. Detailed road inventory surveys shall be carried out to collect details of all existing road and pavement features along the existing road sections. The inventory data shall include but not limited to the following:

- i. *terrain (flat, rolling, mountainous);*

- ii. *land-use (agricultural, commercial, forest, residential etc) @ every kilometer; iii. carriageway width, surfacing type @ every 500m and every change of feature whichever is earlier;*
- iv. *shoulder surfacing type and width @ every 500m and every change of feature whichever is earlier;*
- v. *sub-grade / local soil type (textural classification) @ every 500m and every change of feature whichever is earlier;*
- vi. *horizontal curve; vertical curve*
- vii. *road intersection type and details, at every occurrence; viii. retaining structures and details, at every occurrence;*
- ix. *location of water bodies (lakes and reservoirs), at every occurrence; and,*
- x. *height of embankment or depth of cut @ every 200m and every change of feature whichever is earlier.*
- xi. *land width i.e. ROW*
- xii. *culverts, bridges and other structures (type, size, span arrangement and location) xiii. Roadside arboriculture xiv. Existing utility services on either side within ROW.*
- xv. *General drainage conditions xvi. Design speed of existing road xvii. Inventory of all road sides facilities for the public including educational, health, communication facilities and road user based facilities such as tea shops, dhaba, vehicle service shops etc*

2. The data should be collected in sufficient detail. The data should be compiled and presented in tabular as well as graphical form. The inventory data would be stored in computer files using simple utility packages, such as EXCEL.

Pavement Investigation

1. Pavement Composition

- i. *The data concerning the pavement composition may be already available with the PWD. However, the consultants shall make trial pits to ascertain the pavement composition. The test pit interval will be as per Para 4 below.*
- ii. *For each test pit, the following information shall be recorded:
" test pit reference (Identification number, location):*

- " pavement composition (material type and thickness); and
- " subgrade type (textural classification) and condition (dry, wet)

2. Road and Pavement Condition Surveys

i. Detailed field studies shall be carried out to collect road and pavement surface

conditions. The data should generally cover:

- " pavement condition (surface distress type and extent);
- " shoulder condition;
- " embankment condition; and
- " drainage condition

Pavement

cracking (narrow and wide cracking), % of pavement area affected;
 ravelling, % of pavement area affected; potholing, % of
 pavement area affected; edge break, length (m); and,
 rut depth, mm

Shoulder

Paved: Same as for pavement

Unpaved: material loss, rut depth and corrugation, Edge
 drop, mm.

Embankment

general condition; and extent
 of slope erosion. The
 objective of the road and
 pavement condition surveys
 shall be to identify defects and

sections with similar characteristics. All defects shall be systematically referenced,
 recorded and quantified for the purpose of determining the mode of rehabilitation.

- iii. The pavement condition surveys shall be carried out using visual means. Supplemented
 by actual measurements and in accordance with the widely accepted methodology
 (AASHTO, IRC, OECD, TRL and World Bank Publications) adapted to meet the study
 requirements. The measurement of rut depth would be made using standard straight
 edges.
- iv. The shoulder and embankment conditions shall be evaluated by visual means and the
 existence of distress modes (cuts, erosion marks, failure, drops) and extent (none,
 moderate, frequent and very frequent) of such distress manifestations would be recorded.
- v. For sections with severe distresses, additional investigations as appropriate shall be
 carried out to determine the cause of such distresses.
- vi. Middle 200m could be considered as representative sample for each one km. of road and

incase all other things are considered similar.

Drainage

General condition

Connectivity of drainage turnouts into the natural topography

Condition in cut sections

Condition at high embankments

Local(village/local area level)drainage and flooding problem

The data obtained from the condition surveys should be analysed and the road segments of more or less equal performance may be identified using the criteria given in IRC: 81-1997.

3. Pavement Roughness

- i. The roughness surveys shall be carried out using Bump Integrator or similar instrument. The methodology for the surveys shall be as per the widely used standard practices. The calibration of the instrument shall be done as per the procedure given in IRC and duly got authenticated by established laboratory/institution acceptable to the client.*
- ii. The surveys shall be carried out along the outer wheel paths. The surveys shall cover a minimum of two runs along the wheel paths for each directions.*
- iii. The results of the survey shall be expressed in terms of BI and IRI and shall be presented in tabular and graphical forms. The processed data shall be analysed using the cumulative difference approach to identify road segments homogenous with respect to surface roughness.*

4. Pavement Structural Strength

- i. The Consultants shall carry out structural strength surveys for existing two-lane pavements using Benkelman Beam Deflection technique in accordance with the CGRA procedure given in IRC:81-1997 (“Guidelines for Strengthening of Flexible Road Pavements Using Benkelman Beam Deflection Technique”).*
- ii. It is suggested that the deflection surveys may be carried out as per the scheme given below:

mainline testing; and, control section testing.*
- iii. The deflection tests for the mainline shall be carried out at every 500 m along the road sections covered under the study. The control section testing shall involve carrying out deflection testing for each 100 m long homogenous road segment along the road sections. The selection of homogenous segment shall be based on the data derived from pavement condition surveys. The total length of such homogenous segments shall not be*

less than 100 m per kilometre. The deflection measurements for the control section testing should be at an interval of not more than 10 m.

- iv. *Test pits shall be dug at every 500 m and also along each homogeneous road segment to obtain pavement composition details (pavement course, material type and thickness) so as to be able to study if a correlation exists between deflection and composition. If so, the relationship may be used while working out the overlay thickness for the existing pavement.*
- v. *Benkelman Beam Deflection surveys may not be carried out for severely distressed sections of the road warranting reconstruction. The Consultants, immediately upon the award of the contract, shall submit to MORTH the scheme describing the testing schedule including the interval. The testing scheme shall be supported by data from detailed reconnaissance surveys.*
- vi. *In case, the Consultants wish to use any acceptable method(s) other than Benkelman Beam deflection technique for the evaluation of pavement strength, details of such methods or innovative features for deflection testing using Benkelman Beam technique along with the methodology for data analysis, interpretation and the use of such data for pavement overlay design purposes using IRC or any other widely used practices, such as AASHTO guidelines, should be got approved by MORTH. The sources of such methods should be properly referenced.*

4.11.3.3 Subgrade Characteristics and Strength

1. Based on the data derived from condition (surface condition, roughness) and structural strength surveys, the project road section should be divided into segments homogenous with respect to pavement condition and strength. The delineation of segments homogenous with respect to roughness and strength should be done using the cumulative difference approach (AASHTO, 1993).
2. The data on soil classification and mechanical characteristics for soils along the existing alignments may already be available with the PWD. The testing scheme is, therefore, proposed as given under:
 - i. *For the widening (2- Laning) of existing road within the ROW, the Consultants shall test at least three sub-grade soil samples for each homogenous road segment or three samples for each soil type encountered, whichever is more.*
 - ii. *For the roads along new alignments, the test pits for subgrade soil shall be @5 km or for each soil type, whichever is more. A minimum of three samples should be tested corresponding to each homogenous segment.*
3. The testing for subgrade soil shall include:

- i. *in-situ density and moisture content at each test pit* ii. *field CBR using DCP at each test pit*
 - iii. *characterisation (grain size and Atterberg limits) at each test pit and, iv. laboratory moisture-density characteristics (modified AASHTO compaction);*
 - v. *laboratory CBR (unsoaked and 4-day soak compacted at three energy levels) and swell.*
- 4. For problematic soils, the testing shall be more rigorous. The characteristics with regard to permeability and consolidation shall also be determined for these soils. The frequency of sampling and testing of these soils shall be finalised in consultation with the State PWD/MORTH officers after the problematic soil types are identified along the road sections.
- 5. The laboratory for testing of material should be got approved from State PWD before start of work.

4.11.4 Investigations for Bridges and Structure

4.11.4.1 Inventory of Bridges, Culverts and Structures

The Consultants shall make an inventory of all the structures (bridges, viaducts, ROBs, culverts, etc.) along the road under the project. The inventory for the bridges, viaducts and ROBs shall include the parameters required as per the guidelines of IRC-SP:35-1990. The inventory of culverts shall be presented in a tabular form covering relevant physical and hydraulic parameters.

4.11.4.2 Hydraulic and Hydrological Investigations

1. The hydrological and hydraulic studies shall be carried out in accordance with IRC Special Publication No. 13 (öGuidelines for the Design of Small Bridges and Culvertsö) and IRC:5-1998 (öStandard Specifications & Code of Practice for Road Bridges, Section I General Feature of Designö). These investigations shall be carried out for all existing drainage structures along the road sections under the study.
2. The Consultants shall make a desk study of available data on topography (topographic maps, stereoscopic aerial photography), storm duration, rainfall statistics, top soil characteristics, vegetation cover etc. so as to assess the catchment areas and hydraulic parameters for all existing and proposed drainage provisions. The findings of the desk study would be further supplemented and augmented by a reconnaissance along the area. All important hydrological features shall be noted during this field reconnaissance.

3. The Consultants shall collect information on high flood level (HFL), low water levels (LWL), discharge velocity etc. from available past records, local inquiries and visible signs, if any, on the structural components and embankments. Local inquiries shall also be made with regard to the road sections getting overtopped during heavy rains.

4.11.4.3 Condition Surveys for Bridges, Culverts and Structures

1. The Consultants shall thoroughly inspect the existing structures and shall prepare a report about their condition including all the parameters given in the Inspection pro-forma of IRC-SP; 35-1990. The condition and structural assessment survey of the bridges / culverts / structures shall be carried out by senior experts of the Consultants.
2. For the bridges identified to be in a distressed condition based upon the visual condition survey, supplementary testing shall be carried out as per IRC-SP:35 and IRC-SP:40. Selection of tests may be made based on the specific requirement of the structure.
3. The assessment of the load carrying capacity or rating of existing bridges shall be carried out under one or more of the following scenarios:
 - i. *when the design live load is less than that of the statutory commercial vehicle plying or likely to ply on bridge;*
 - ii. *if during the condition assessment survey and supplementary testing the bridge is found to indicate distress of serious nature leading to doubt about structural and / or functional adequacy, and*
 - iii. *design live load is not known nor are the records and drawings available.*
4. The evaluation of the load carrying capacity of the bridge shall be carried out as per IRC-SP:37 (öGuidelines for Evaluation of Load Carrying Capacity of Bridgesö). The analytical and correlation method shall be used for the evaluation of the load carrying capacity as far as possible. When it is not possible to determine the load carrying capacity of the bridge using analytical and correlation method, the same shall be carried out using load testing. The consultant has to exhaust all other methods of evaluation of strength of bridges before recommending to take up load testing of bridges. Road closure for testing if unavoidable shall be arranged by State PWD for limited duration say 12 hrs. or so.

5. Consultant shall carryout necessary surveys and investigations to establish the remaining service life of each retainable bridge or structure with and without the proposed strengthening and rehabilitation according to acceptable international practice in this regard.

4.11.4.4 Geo-technical Investigations and Sub-Soil Exploration

1. The Consultants shall carry out geo-technical investigations and sub-surface explorations for the proposed Bridges / Road over bridges/tunnels/viaducts/interchanges etc., along high embankments and any other location as necessary for proper design of the works and conduct all relevant laboratory and field tests on soil and rock samples. The minimum scope of geo-technical investigations for bridge and structures shall be as under:

S.N.	Description	Location of Boring
1.	Over all length = 6 ó 30 m	One abutment location
2.	Over all length = 30 – 60 m	One abutment location and at least one intermediate location between abutments for structures having more than one span.
3.	Over all length >60 m	Each abutment and each pier locations.

2. The deviation(s), if any, by the Consultants from the scheme presented above should be got approved by State PWD.
3. However, where a study of geo-technical reports and information available from adjacent crossings over the same waterway (existing highway and railway bridges) indicates that subsurface variability is such that boring at the suggested spacing will be insufficient to adequately define the conditions for design purposes, the Consultants shall review and finalise the bore hole locations in consultation with the State PWD officers.
4. Sub-soil investigations will be done as per IRC 78.
5. The scheme for the borings locations and the depth of boring shall be prepared by the Consultants and submitted to State PWD for approval. These may be finalized in consultation with State PWD
6. The sub-soil exploration and testing should be carried out through the Geo-technical Consultants who have done Geo-technical investigation work in similar

project. In case of outsourcing Geo-Technical Investigation, the firm selected by the Consultant for this purpose should also be got approved from State PWD before start of such works. The soil testing reports shall be in the format prescribed in relevant IRC Codes.

7. For the road pavement, bore holes at each major change in pavement condition or in deflection readings or at 2 km intervals whichever is less shall be carried out to a depth of at least 2 m below embankment base or to rock level and are to be fully logged. Appropriate tests to be carried out on samples collected from these bore holes to determine the suitability of various materials for use in widening of embankments or in parts of new pavement structure.

4.11.5. Material Investigations

1. The Consultants shall identify sources (including use of fly-ash/ slag), quarry sites and borrow areas, undertake field and laboratory testing of the materials to determine their suitability for various components of the work and establish quality and quantity of various construction materials and recommend their use on the basis of techno-economic principles. The Consultants shall prepare mass haul diagram for haulage purposes giving quarry charts indicating the location of selected borrow areas, quarries and the respective estimated quantities.
2. It is to be ensured that no material shall be used from the right-of-way except by way of leveling the ground as required from the construction point of view, or for landscaping and planting of trees etc. or from the cutting of existing ground for obtaining the required formation levels.
3. Environmental restrictions, if any, and feasibility of availability of these sites to prospective civil works contractors, should be duly taken into account while selecting new quarry locations.
4. The Consultants shall make suitable recommendations regarding making good the borrow and quarry areas after the exploitation of materials for construction of works.
5. The Material Investigation aspect shall include preparation and testing of bituminous mixes for various layers and concrete mixes of different design mix grades using suitable materials (binders, aggregates, sand filler etc.) as identified during Material Investigation to conform to latest MoRT&H specification.

4.12 Detailed Design of Road and Pavements, Bridges, Structures and Tunnels

4.12.1. General

1. The Consultants are to carryout detailed designs and prepare working drawings for the following:

- i. design speed highway with detailed carriageway configuration complete in all respects with;*
- ii. design of pavement for the additional lanes and overlay for the existing road, paved shoulders, medians, verges;*
- iii. bridges, viaduct/subways and structures etc.;*
- iv. at-grade and grade-separated intersections, interchanges (if required);*
- v. prepare alignment plans, longitudinal sections and cross-sections @ 50m intervals; vi. designs for road furniture and road safety/traffic control features;*
- vii. designs and drawings for service road/under passes/overpass / cattle passes tree planting/fencing at locations where necessary / required*
- viii.. design of structures/measures in land slide zones ix short bypasses at congested locations*
- x. drainage design showing location of turnouts, out falling structures, separate drawings sheet for each 5 km. stretch.*
- xi. bridges and structures rehabilitation plan with design and drawings xii. traffic amenities (Parking Areas, Weighing Station and Rest Areas, etc.).*

Innovative type of structures with minimum joints, aesthetically, pleasing and appropriate to the topography of the region shall be designed wherever feasible.

4.12.2. Design Standards

1. The Consultants shall evolve Design Standards and material specifications for the Study primarily based on IRC publications, MoRT&H Circulars and relevant recommendations of the international standards (American, Australian, British, Canadian, Japanese) for approval by State PWD /MORTH.

2. The Design Standards evolved for the project shall cover all aspects of detailed design including the design of geometric elements, pavement design, bridges and structures, traffic safety and materials.

4.12.3. Geometric Design

1. The design of geometric elements shall, therefore, take into account the essential requirements of such facilities.
2. Based on the data collected from reconnaissance and topographic surveys, the sections with geometric deficiencies, if any, should be identified and suitable measures for improvement should be suggested for implementation.
3. The data on accident statistics should be compiled and reported showing accident type and frequency so that black spots are identified along the project road section. The possible causes (such as poor geometric features, pavement condition etc.) of accidents should be investigated into and suitable cost-effective remedial measures suggested for implementation.
4. The detailed design for geometric elements shall cover, but not be limited to the following major aspects:
 - i. *horizontal alignment;*
 - ii. *longitudinal profile;*
 - iii. *cross-sectional elements.*
 - iv. *junctions, intersections and interchanges;*
 - v. *bypasses; and,*
 - vi. *service roads as and when require i.e built up area..*
5. The alignment design shall be verified for available sight distances as per the standard norms. The provision of appropriate markings and signs shall be made wherever the existing site conditions do not permit the adherence to the sight distance requirements as per the standard norms.
6. The consultants shall make detailed analysis of traffic flow and level of service for the existing road and workout the traffic flow capacity for the improved project road. The analysis should clearly establish the widening (2-laning) requirements with respect to the different horizon periods taking into account special problems such as road segments with isolated steep gradients.
7. In the case of closely spaced cross roads the Consultant shall examine different options such as, providing grade separated structure for some of them with a view to reduce number of at-grade crossings, services roads connecting the cross-roads

and closing access from some of the intersections and prepare and furnish appropriate proposals for this purpose keeping in view the cost of improvement, impact on traffic movement and accessibility to cross roads. The detailed drawings and cost estimate should include the provisions for realignments of the existing cross roads to allow such arrangements.

8. The Consultant shall also prepare design of grade separated pedestrian crossings (viaducts) for large cross traffic of pedestrians and / or animals.
9. The Consultant shall also prepare details for at-grade junctions, which may be adopted as alternative to the grade separated structures. The geometric design of interchanges shall take into account the site conditions, turning movement characteristics, level of service, overall economy and operational safety.
10. The consultant shall prepare complete road and pavement design including drainage for new bypass option identified around congested town enroute.

4.12.4. Pavement Design

1. The detailed design of pavement shall involve:
 - i. *strengthening of existing 2-lane road pavement and design of the new pavement if any, if the findings of the traffic studies and life-cycle costing analysis confirm the requirement for widening of the road beyond 2lane undivided carriageway standard;;*
 - ii. *pavement design for bypasses; and, iii. design of shoulders.*
2. The design of pavement shall primarily be based on IRC publications.
3. The design of pavement shall be rigorous and shall make use of the latest Indian and International practices. The design alternatives shall include both rigid and flexible design options. The most appropriate design, option shall be established on life-cycle costing and techno-economic consideration.
4. For the design of pavement, each set of design input shall be decided on the basis of rigorous testing and evaluation of its suitability and relevance in respect of inservice performance of the pavement. The design methodology shall accompany the design proposals and shall clearly bring out the basic assumptions, values of the various design inputs, rationale behind the selection of the design inputs and the criteria for checking and control during the implementation of works. In other words, the design of pavement structure should take due account of the type, characteristics of materials used in the respective courses., variability

of their properties and also the reliability of traffic predictions. Furthermore, the methodology adopted for the design of pavement shall be complete with flow charts indicating the various steps in the design process, their interaction with one another and the input parameter required at each step.

5. For the design of overlays for the existing 2-lane pavement, the strengthening requirement shall duly take into account the strength of the existing pavement vis-à-vis the remaining life. The overlay thickness requirements shall be worked out for each road segment homogenous with respect to condition, strength and sub-grade characteristics. The rehabilitation provisions should also include the provision of regulating layer. For existing pavement with acceptable levels of cracking, provision of a crack inhibiting layer should also be included.
6. Latest techniques of pavement strengthening like provision of geo-synthetics and cold/hot pavement recycling should be duly considered by the consultant for achieving economy.
7. The paved shoulders, wherever applicable, shall be designed as integral part of the pavement for the main carriageway. The design requirements for the carriageway pavement shall, therefore, be applicable for the design of shoulder pavements. The design of granular shoulder should take into account the drainage considerations besides the structural requirements.
8. The pavement design task shall also cover working out the maintenance and strengthening requirements and periodicity and timing of such treatments.

4.12.5. Design of Embankments

1. The embankments design should provide for maximum utilization of locally available materials consistent with economy. Use of fly ash wherever available with in economical leads must be considered. In accordance with Government instructions, use of fly ash within 100 km from Thermal Power Stations is mandatory.
2. The Consultants shall carry out detailed analysis and design for all embankments of height greater than 6 m based on relevant IRC publications.
3. The design of embankments should include the requirements for protection works and traffic safety features.

4.12.6. Design of Bridges and Structures

1. The Consultant shall prepare General Arrangement Drawing (GAD) and Alignment Plan showing the salient features of the bridges and structures proposed to be constructed / reconstructed along the road sections covered under the Study. These salient features such as alignment, overall length, span arrangement, cross section, deck level, founding level, type of bridge components (superstructure, substructure, foundations, bearings, expansion joint, return walls etc.) shall be finalized based upon hydraulic and geo-technical studies, cost effectiveness and ease of construction. The GAD shall be supplemented by Preliminary designs. In respect of span arrangement and type of bridge a few alternatives with cost-benefit implications should be submitted to enable MORTH to approve the best alternative. In respect of tunnels also cost benefit implications with comparison of alternate alignment Vs tunnel should be submitted to State PWD to approve best alternative.
2. The location of all at-grade level crossings shall be identified falling across the existing level crossings for providing ROB at these locations. The Consultants shall prepare preliminary GAD for necessary construction separately to the Client. The Consultant shall pursue the Indian Railways Authorities or/and any statutory authority of State/Central Government for approval of the GAD from concerned Authorities.
3. Subsequent to the approval of the GAD and Alignment Plan by J&KState PWD .the Consultant shall prepare detailed design as per IRC guidelines and working drawings for all components of the bridges and structures. The Consultant shall furnish the design and working drawings for suitable protection works and/or river training works wherever required.
4. Dismantling/ reconstruction of existing structures shall be avoided as far as possible except where considered essential in view of their poor structural conditions/ inadequacy of the provisions etc. The existing structures having inadequate carriageway width shall be widened / reconstructed in part or fully as per the latest MoRT&H guidelines. The Consultant shall furnish the detailed design and working drawings for carrying out the above improvements.
5. The existing structures having inadequate carriageway width shall be widened/ reconstructed in part or fully as per the latest MoRT&H guidelines. The Consultant shall furnish the detailed design and working drawings for carrying out the above improvements.

6. Suitable repair / rehabilitation measures shall be suggested in respect of the existing structures as per IRC-SP:40 along with their specifications, drawings and cost estimate in the form of a report. The rehabilitation or reconstruction of the structures shall be suggested based on broad guidelines for rehabilitation and strengthening of existing bridges contained in IRC-SP:35 and IRC-SP:40.
7. Subsequent to the approval of the GAD and the alignment plan by J&KState PWD, detailed design shall also be carried out for the proposed tunnels, underpasses, overpasses and interchanges.
8. The Consultants shall also carry out the design and make suitable recommendations for protection works for bridges and drainage structures.
9. In case land available is not adequate for embankment slope, suitable design for RCC retaining wall shall be furnished. However, RES wall may also be considered depending upon techno-economic suitability to be approved by J&KState PWD
10. Design of structures using modern technology required for protection of hill slopes shall be done by consultants to the satisfaction of J&KState PWD
11. design of valley side protection measures like crash barriers, parapets, retaining walls and furnishing of locations for installation of crash barriers, studs, delineators etc shall be done by consultant.

4.12.7. Drainage System

1. The requirement of roadside drainage system and the integration of the same with proposed cross-drainage system shall be worked out for the entire length of the project road section.
2. In addition to the roadside drainage system, the Consultants shall design the special drainage provisions for sections with super-elevated carriageways, high embankments and for road segments passing through cuts. The drainage provisions shall also be worked out for road segments passing through urban areas.
3. The designed drainage system should show locations of turnouts/outfall points with details of outfall structures fitting into natural contours. A separate drawing sheet covering every 5 km. stretch of road shall be prepared.

4.12.8. Traffic Safety Designs, Road Furniture and Road Markings

The Consultants shall design suitable traffic safety features and road furniture including traffic signals, signs, markings, overhead sign boards, crash barriers, delineators etc. The locations of these features shall be given in the reports and also shown in the drawings.

4.12.9. Arboriculture and Landscaping

The Consultants shall work out appropriate plan for planting of trees (specifying type of plantation), horticulture, floriculture on the surplus land of the right-of-way with a view to beautify the highway and making the environment along the highway pleasing. The existing trees / plants shall be retained to the extent possible.

4.12.10. Deleted

4.12.11. Weighing Station, Parking Areas and Rest Areas

The consultant shall select suitable sites for weighing stations, parking areas and rest areas and prepare suitable separate designs in this regard. The common facilities like petrol pump, first-aid medical facilities, police office, restaurant, vehicle parking etc. should be included in the general layout for planning. For petrol pump, the guidelines issued by OISD of Ministry of Petroleum shall be followed. The facilities should be planned to be at approximately 50 km interval. At least each facility (1 no.) is foreseen to be provided for this project stretch. Weighing stations can be located near toll plazas so that overloaded vehicles can be easily identified and suitably penalized / unloaded before being allowed to proceed further. The type of weighing system suitable for the project shall be brought out in the report giving merits of each type of the state-of-the art and basis of recommendations for the chosen system. While finalizing the location of rest areas, the perspective from disaster management shall also be kept in mind.

4.12.12. Deleted

4.12.13 Miscellaneous Works

1. The Consultants shall make suitable designs and layout for miscellaneous works including rest areas, bus bays, vehicle parking areas, telecommunication facilities etc. wherever appropriate.
2. The Consultants shall prepare the detailed scheme and lay out plan for the works mentioned in Para 1.
3. The Consultants shall prepare detailed plan for the traffic management and safety during the construction period.

4.13 Environment Impact Assessment

4.13.1 Environment Impact Assessment and Management Plan

Objectives

The objectives of Environmental Impact Assessment are to improve decision making by identifying and assessing the potential environmental impacts, evaluating alternatives and designing appropriate mitigation, enhancement, management and monitoring measures to ensure that highway improvement options are environmentally sound and sustainable. The main objectives of the Environmental Management Plan are to detail cost effective measures for the protection and enhancement of environmental assets during construction and operation according to an agreed implementation schedule. The Environment Impact Assessment is to be carried out to ensure compliance with State (as relevant), GOI environmental guidelines and regulations. The analysis, studies and reporting requirements to be undertaken under these TOR must conform to these guidelines and regulations.

Scope of Work

1. The scope of work includes the following main tasks:

A : Environmental Screening and Scoping – Feasibility Stage

This process helps to define boundaries (spatial and temporal) of the EA, limitations and constraints, stakeholders consultations, determine significant, “hotspots”. Screening is to be carried out in parallel with the initial Economic, Engineering Analysis and includes:

- a) Assessment of potential impacts to ensure that environmental considerations are given adequate weight in the selection and design of proposed highway improvements;
- b) Information on existing environmental baseline conditions (based on desk review and field visits) such as congested and densely populated areas, sensitive /critical natural habitats i.e., national parks, wildlife reserves, sanctuaries, sacred groves, protected areas, forests, wetlands, tree cover, major rivers and waterways; cultural heritage sites of importance to people
- c) Valued environmental components and a screening criteria to help in the analysis of alternatives.
- d) Assessment of positive and negative impacts and proposals of cost-effective measures to enhance positive impacts and to avoid and / or mitigate negative impacts;

- e) Coordination of the environmental screening with the feasibility study, by integration of the environmental considerations and their associated costs, in the economic analysis. This should include identification and analysis of alternatives in-built into the recommendations for engineering improvements and sensitivity analysis.
- f) Application of National and State framework and relevant guidelines and policies.
- g) Plans of proposed road alignments, showing all attributes within the corridor of impact.

Output : Environment Screening Report – Identified :hotspots” and proposals for mitigation, nature of major conflicts with proposed road improvements, with preliminary solutions, including those for exclusion, analysis of alternative alignments.

B: Environmental Impact Assessment (EIA) – Draft DPR Stage

The EIA work will be carried out in coordination with the technical team.

“ The EIA will be carried out in compliance with various prevailing laws and regulations in the country and the reporting will be in conformity to the various guidelines and regulations of the GoI relevant to the project including; The Environmental Impact Assessment Notification, MOEF, 1994; and Environmental Guidelines for Rail/Road/Highway Projects, MOEF, 1989.

“ In the case of the lending agencies, the operational policies, and guidelines of the World Bank and the Asian Development Bank.

The consultant will furnish any relevant information required for obtaining clearance from various state and central government agencies such as:

- “ Assisting the client in the submission of application for the Clearance of Reserved Forests to the Forest Departments.
- “ Completion of forms and submission of No-objection Certificate (NoC) under the Water and Air Acts from the State Pollution Control Boards.
- “ Completion and submission of the MoEF questionnaire for Environmental Appraisal for the project.

- Assistance in presentation to the Wildlife Board of the MoEF in obtaining clearance for the section of the corridor passing through the Wildlife Reserves or Sanctuaries, etc., if any.
- “ Assistance in submission for any other clearance requirements with respect to the environmental components relevant to the project.

The Consultant will carry out the following as part of the EIA process:

(a) Assess *Baseline conditions* to define characteristics of the existing natural environment including soil, water, air, noise, land use, cultural properties, flora, fauna, regional landscape, geology, seismicity, quarries; social environment including, tribals, and other vulnerable social groups, title holders and non-titleholders, land estimates, ownership patterns. Establish benchmarks from which project impact comparisons will be made. Assess the dimensions of the study area and relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Assess proposed development activities within the project area which may or may not be directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigatory and enhancement measures. The baseline environmental conditions will be based on primary and secondary data sources and surveys will cover information on :

- “ Physical environment : geology; topography, soils; climate and meteorology; ambient air quality; noise quality; surface and ground-water hydrology; existing sources of air emissions; existing receiving water quality, etc.
- “ Biological environment : flora; fauna; rare or endangered species; sensitive habitats, including reserved forests, wildlife reserves and sanctuaries etc.
- “ Socio-cultural environment: population: land use: planned development activities, community structure; employment; distribution of income, goods and services; recreation; public health; cultural properties; and tribal people and their usufruct rights, common property resources, etc.

- - “ Additional specialized surveys: such as bio-diversity assessment survey, or hydrological surveys, if required depending upon the context and complexity of the project setting.
Strip Mapping (as described in section 10.4/5), which include detailed inventory of all trees on the existing and proposed RoW; common property resources along the road, facilities for public (including health, education, communication facilities, etc.)
 - “ Inventory of valued eco-sensitive locations: Site visits and investigations shall be made and all the eco-sensitive locations shall be marked on the base maps to identify conflict points with preliminary designs. These shall be verified from authentic sources of information, such as from the revenue records, forest records, etc.
 - “ Baseline Environmental Monitoring for adequate number of samples, as established on a sampling network, so as to provide a representative sample of the entire project corridor, and the different characteristics (Such as land use, or presence of sensitive receptors existing along the road)
 - “ Additional samples should be collected for sensitive environmental/ecological receptors, if any, such as to analyze and predict the possible impacts to a degree and precision of acceptable professional standards.
- (b) ***Assessment of the policy, regulatory and administrative framework*** at the National and State level, applicable World Bank or other lending agency requirements within which the EA is to be carried out. Assess the environmental requirements of any financiers; Identify relevant international environmental agreements to which the country is a party Legislative and Regulatory Considerations; Assess the pertinent regulations and standards governing environmental quality; health and safety, protection of sensitive areas, protection of endangered species, land uses control, etc at national, regional and local levels.
- (c) ***Assess potential impacts*** on physical, natural environment, as per baseline identification; Predict and assess the project's likely positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts in quantitative terms; identify mitigation measures, and any residual negative impacts that cannot be mitigated; identify locations for environmental enhancement.

- - ” Determine impacts as per survey on sensitive receptors: For each of the sensitive environmental/ecological receptors, identified during environmental screening (or during the baseline environmental surveys), carry out detailed investigations for the impacts likely from the project.
Determine impacts as per survey on urban settlements and villages: noise, vibration, vehicle emissions and dust; safety, non-motorized transport, encroachments, severance and access, etc.;
 - ” Determine impacts as per survey on agricultural areas: loss of top soil, embankment erosion, disturbance to surface water flows and to rice-fields and farms during construction; etc.;
 - ” Determine impacts as per survey on natural habitats and other sensitive areas: critical natural habitats (such as conservation areas, sanctuaries, sacred groves, etc.) and migration routes; induced development; historic, cultural and religious buildings and sites; archaeological sites and tourism areas, etc;
 - ” Determine impacts as per survey on areas of environmental degradation: measures such as landscaping, planting, tree-planting earthworks to re-establish and/or enhance the environmental quality of areas within the right-of-way (ROW) which have suffered degradation.
- (d) ***Analysis of Alternatives*** – Systematically analyze criteria to include environment; technical/design, economic options; alignment alternatives within the existing ROW; bypasses; road configuration alternatives; other engineering alternatives; including the with and without project situation; and suitability under local conditions. For each of the alternatives, quantify the environmental impacts, and coordinate with the economic analysis.
- (e) ***Mitigation measures*** – Identify feasible and cost effective measures to minimize negative and enhance positive environmental impacts through integration in the engineering design and construction practices (including labor welfare measures) for all stages of the project. Develop a mitigation plan, to form the basis for the Environmental Management Plan, including costs, institutional, training and monitoring requirements. Identify any additional actions taken to protect the biophysical and social environment,

- as well as individuals impacted adversely by a project through continued public involvement.
- (f) ***Institutional Strengthening*** – Carry out a capacity Assessment to identify training needs and propose a training plan. Identify institutional needs to implement environmental assessment recommendations. Review the authority and capability of institutions at local, provincial/regional, and national levels and recommend steps to strengthen or expand them so that the management and monitoring plans in the environmental

assessment can be implemented. The recommendations may extend to new agency functions, inter-sectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

- (g) **Public Consultation** :Carry out Public consultation and ensure participation as an integral part of the assignment. Document processes and outcomes, views of the people, issues raised and how they will or will not be addressed by the project. Consultation sessions will be carried out with different stakeholders groups at the local, regional and district levels, to incorporate the various environmental concerns and felt needs of the community in the project preparation and implementation.
- (h) **Environmental Management Plan** – Coordinate with engineering design; construction management; incorporate IRC and MORTH specifications; develop proposals for mitigation and enhancement such as for road side landscaping / tree planting, cultural properties, ponds etc.; cost estimates; institutional arrangements for implementation; Monitoring & Evaluation plans. (see part C below for details)
- (i) **Recommendations for further studies** on environmental issues which should be undertaken during project implementation.

The EIA Report will follow the structure suggested ahead:

“ *Executive summary.* Concisely discuss significant findings and recommended actions.

“ *Project Description:* Provide a brief description of the relevant components of the project and associated activities. Concisely describe the proposed project and its geographic, ecological, social, and temporal context. Indicate the need for any resettlement plan or indigenous peoples development plan. Includes a map showing the project site and the project’s area of influence.

- *Policy, legal, and administrative framework.*
- *Baseline data*
- *Potential Environmental Impacts:*
- *Analysis of alternatives.*
- *Mitigation measures*
- *Institutional strengthening and training*
- *Appendices:*
 - ° *List of EA report prepares 6 individuals and organizations.*
 - ° *References – written materials both published and unpublished, used in study preparation.*
 - ° *Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs.*
 - ° *Tables presenting the relevant data referred to or summarized in the main text.*
 - ° *List of associated reports (e.g. resettlement plan or indigenous peoples development plan).*

Output :Environment Impact Assessment Report (to be completed before final design and draft EMP (to be finalized along with final designs).

C :Environnemental Management Plan – DPR

The environmental management plan focuses on mitigation measures, enhancement plans, institutional strengthening / training, and monitoring. The emphasis on each of these areas depends on the needs in the specific project context, as identified by the EIA itself. This will be prepared as a self sufficient document, for the Contractor and is part of the Contractor's contract documents. The Consultant will

identify and summarize all anticipated impacts (including those involving indigenous people or involuntary resettlement); provide technical details for each mitigation measure, together with designs, equipment descriptions, and operating procedures; estimate any potential environmental impacts of these measures and provide linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project.

“ *Mitigation measures* : Define appropriate mitigation and remediation measures; the specification and the bills of quantities of the various environmental design measures to enable the incorporation of the environmental provisions in the Contract Documents.

“ *Enhancement plans* : Include detailed designs/ drawings including specifications and bills of quantities for identified enhancement of specific locations. These cases will also require a plan for maintenance of the assets created / enhanced, in consultation with the community.

“ Develop an implementation schedule and supervision program with associated costs and contracting procedures for the execution of environmental mitigation and design works;

“ *Environmental Monitoring Plan* : Prepare detailed arrangements for monitoring implementation of mitigating measures and the impacts of the project during construction and operation and for the evaluation of environmental measures financed under the project. Include an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to carry it out. The plan will specify monitoring parameters, associated responsibilities, costs, and other necessary inputs (for example, training). In addition, the plan will specify what action should be taken and by whom in the event that the proposed mitigation measures fail, either partially or totally, to achieve the level of environmental protection expected. The plan will also include a list of environmental monitoring and evaluation parameters, and detailed specifications (methods, schedule, etc) for performance/compliance monitoring during construction, and evaluation of the effectiveness of the environmental management measures during operation stage of the project.

The EMP will be structured as follows:

“ Brief project description, summary of critical issues and impacts.

- “ Identified impacts and corresponding mitigation measures proposed ó pre-construction; construction and operation stages.
- “ Environmental Monitoring and Reporting Plan ó performance indicators, air, water, and noise levels, tree survival rate, soil contamination or any other as identified.
- “ Specifications for environment enhancements works.
- “ Trees, shrubs for plantation or other landscape measures.
- “ Engineering details and appropriate reference to engineering drawings where necessary for : wells and hand pumps identified for re-location or enhancement; cultural properties relocation; water bodies for enhancement; proposed truck parking lay byes; major and minor junctions identified for enhancements; landscape plans.
- “ Identified borrow areas, recommended quarry areas and proposed rehabilitation plans.
- “ Noise mitigation plans.
- “ Costs of mitigation
- “ Institutional responsibility for implementation and duration /time frame.
- “ Reference to contract documents. Coordination with Engineering in preparation of bids, contract documents.
- “ Bills of quantities to include EMP specifications.
- “ Budget.

D. Follow on Public Consultations

- “ The Consultant will carry out follow on public consultations at sensitive areas to disseminate the project design, EA and SA process followed, EMP, and RAPs with the people in the project districts.

Output :

- “ **Documents** – EA, EMP, and the report on Follow on Consultations
- “ **Disclosure** ó Disclosure of EA, EMP in the project districts and Bank's PICs

5. Estimation of Quantities and Project Costs

1. The Consultants shall prepare detailed estimates for quantities (considering designs and mass haul diagram) and project cost for the entire project (civil packages wise), including the cost of environmental safeguards proposed based on MoRT&H's Standard Data Book and market rate for the inputs. The estimation of quantities shall be based on detailed design of various components of the projects. The estimation of quantities and costs would have to be worked out for each civil work separately for each section.(Section 1-Basohli to Bani, Section 2 - Bani to Chattergalla tunnel portal 1, section 3 - Chattergalla tunnel, Section 4-Chattergalla tunnel portal 2 to Doda via Bhaderwah).
2. The Consultants shall make detailed analysis for computing the unit rates for the different items of works. The unit rate analysis shall duly take into account the various inputs and their basic rates, suggested location of plants and respective lead distances for mechanized construction. The unit rate for each item of works shall be worked out in terms of manpower, machinery and materials.
3. The project cost estimates so prepared for MORTH/ADB/WB projects are to be checked against rates for similar on-going works in India under MORTH/ World Bank and ADB financed road sector projects.
4. The consultant shall prepare sub-estimates as per instruction given by J&KState PWD. The different EPC schedules shall also be prepared by consultant.

6. Viability and Financing Options

1. The Project Road should be divided into the traffic homogenous links based on the findings of the traffic studies. The homogenous links of the Project Road should be further subdivided into sections based on physical features of road and pavement, sub-grade and drainage characteristics etc. The economic and commercial analysis shall be carried out separately for each traffic homogenous link as well as for the Project Road.
2. The values of input parameters and the rationale for their selection for the economic and commercial analyses shall be clearly brought out and got approved by MORTH.
3. For models to be used for the economic and the commercial analyses, the calibration methodology and the basic parameters adapted to the local conditions shall be clearly brought out and got approved by J&KState PWD /MORTH.

4. The economic and commercial analyses should bring out the priority of the different homogenous links in terms of project implementation.

6.1. Economic Analysis

1. The Consultants shall carry out economic analysis for the project. The analysis should be for each of the sections covered under this TOR. The benefit and cost streams should be worked out for the project using HDM-IV or other internationally recognized life-cycle costing model.

2. The economic analysis shall cover but be not limited to be following aspects:

- i. *assess the capacity of existing roads and the effects of capacity constraints on vehicle operating costs (VOC);*
- ii. *calculate VOCs for the existing road situation and those for the project;*
- iii. *quantify all economic benefits, including those from reduced congestion, travel distance, road maintenance cost savings and reduced incidence of road accidents; and,*
- iv. *estimate the economic internal rate of return (EIRR) for the project over a 30-year period. In calculating the EIRRs, identify the tradable and non-tradable components of projects costs and the border price value of the tradable components.*
- v. *Saving in time value.*
- vi. *Environment costs and benefits to project*
- vii. *Distribution of road user benefits (especially savings in VOC and travel time value) among different road user(vehicle) groups*

3. Economic Internal Rate of Return (EIRR) and Net Present Value (NPV), with and without time and accident savings should be worked out based on these cost-benefit stream. Furthermore, sensitivity of EIRR and NPV worked out for the different scenarios as given under:

<i>Scenario - I</i>	<i>Base Costs and Base Benefits</i>
<i>Scenario - II</i>	<i>Base Costs plus 15% and Base Benefits</i>
<i>Scenario - III</i>	<i>Base Costs and Base Benefits minus 15%</i>
<i>Scenario - IV</i>	<i>Base Costs plus 15% and Base Benefits minus 15%</i>

The sensitivity scenarios given above are only indicative. The Consultants shall select the sensitivity scenarios taking into account possible construction delays, construction costs overrun, traffic volume, revenue shortfalls, operating costs, exchange rate variations,

convertibility of foreign exchange, interest rate volatility, non-compliance or default by contractors, political risks and force majeure.

4. The economic analysis shall take into account all on-going and future road and transport infrastructure projects and future development plans in the project area.

6.2. Financial Analysis

1. The Consultant shall study the financial viability of the project under a commercial format and under different user fee scenarios and funding options. The Consultants shall submit and finalize in consultation with the MORTH officers the format for the analysis and the primary parameters and scenarios that should be taken into account while carrying out the commercial analysis. The financial model so developed shall be the property of J&KState PWD /MORTH.
2. The Financial analysis for the project should cover financial internal rate of return, projected income statements, balance sheets and fund flow statements and should bring out all relevant assumptions. The sensitivity analysis should be carried out for a number of probabilistic scenarios. It shall cover the financial cost of environmental mitigation, compensation and enhancement if any.
3. The financial analysis should cover identification, assessment, and mitigating measures for all risks associated with the project. The analysis shall cover, but be not limited to, risks related to construction delays, construction costs overrun, traffic volume, revenue shortfalls, operating costs, exchange rate variations, convertibility of foreign exchange, interest rate volatility, non-compliance or default by contractors, political risks and force majeure.

7. Time period for the service

1. Time period envisaged for the study of each of the projects is indicated in **Enclosure-III**. The final reports, drawings and documentation shall be completed within this time schedule.
2. MORTH/J&KState PWD shall arrange to give approval on all sketches,

drawings, reports and recommendations and other matters and proposals submitted for decision by the Consultant in such reasonable time so as not to delay or disrupt the performance of the Consultant's services.

8. Project Team and Project Office of the Consultant

1. The Consultants shall be required to form a multi-disciplinary team for this assignment. The consultants Team shall be manned by adequate number of experts with relevant experience in the execution of similar detailed design assignments.
2. L
List of suggested key personnel to be fielded by the consultant with appropriate man-month of each consultancy services is given in **Enclosure I** as per clients assessment.
3. A Manning Schedule for key personnel mentioned above is enclosed as **Enclosure I** along with broad job- description and qualification as **Enclosure II**. **The information furnished in Enclosures I & II are to assist the Consultants to understand the client's perception about these requirements and shall be taken by the Consultants for the purpose of Financial Proposal and deployment schedule etc. in technical proposal to be submitted by them.** Any deviation proposed may be recorded in the comments on TOR. All the key personnel mentioned will be evaluated at the time of evaluation of technical 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 as mentioned in Data sheet. 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 of the Consultants.
4. The Consultants shall establish an office at the project site manned by senior personnel during the course of the surveys and investigations. All the project related office work shall be carried out by the consultant in their site office unless there are special reasons for carrying out part

of the office work elsewhere for which prior approval of J&KState PWD /MORTH shall be obtained. The address of the site office including the personnel manning it including their Telephone and FAX numbers will be intimated by the Consultant to J&KState PWD /MORTH before commencement of the services.

5. The Consultant shall maintain an Attendance Register to be signed by each individual key personnel at site as well as at Head Office. The Consultant shall furnish certificate that all the key personnel as envisaged in the Contract Agreement have been actually deployed in the Projects at the time of submission of their bills to the *J&KState PWD /MORTH* from time to time.

9. Reports to be submitted by the Consultant to J&KState PWD /MORTH

- 9.1 All reports, documents and drawings are to be submitted separately for each of the traffic homogenous link of the Project Road. The analysis of data and the design proposals shall be based on the data derived from the primary surveys and investigations carried out during the period of assignment. The sources of data and model relationships used in the reports shall be indicated with complete details for easy reference.
- 9.2 Project preparation activities will be split into three stages as brought out below. Preliminary design work should commence without waiting for feasibility study to be completed.

Stage 1: Inception Report

Stage 2: Feasibility Report

Stage 3: Project related Clearances

Stage 4: Detailed Project Report (DPR)

- 9.3 Time schedule in respect of all such stages has been indicated in the next para. Consultant shall be required to complete, to the satisfaction of the client, all the different stages of study within the time frame indicated in the schedule of submission in para 10 pertaining to Reports and Documents for becoming eligible for payment for any part of the next stage.

10 Reports and Documents to be submitted by the Consultant to J&KState PWD

/MORTH

1. The Consultant shall submit to the client the reports and documents in bound volumes (and not spiral binding form) after completion of each stage of work as per the schedule and in the number of copies as given in **Enclosure III**. Further, the reports shall also be submitted in floppy diskettes / CDø in addition to the hard copies as mentioned in **Enclosure-III**. Consultant shall submit all other reports mentioned specifically in the preceding paras of the TOR.
2. The time schedule for various submissions prescribed at sl.no.1 above shall be strictly adhered to. No time-over-run in respect of these submissions will normally be permitted. Consultant is advised to go through the entire terms of reference carefully and plan his work method in such a manner that various activities followed by respective submissions as brought out at Sl.No.1 above are completed as stipulated. Consultant is, therefore, advised to deploy sufficient number of supporting personnel, both technical and administrative, to undertake the project preparation activities in each construction package (Section) simultaneously. As far as possible, the proposal should include complete information such as number of such persons, name, position, period of engagement, remuneration rate etc. The Consultant is also advised to start necessary survey works from the beginning so as to gain time in respect of various other activities in that stage.

STAGE 1

10.1 Quality Assurance Plan (QAP) Document

1. Immediately upon the award, the Consultants shall submit four copies of the QAP document covering all aspects of field studies, investigations design and economic financial analysis. The quality assurance plans/procedures for different field studies, engineering surveys and investigation, design and documentation activities should be presented as separate sections like engineering surveys and investigations, traffic surveys, material geo-technical and sub-soil investigations, road and pavement investigations, investigation and design of bridges & structures, environment and R&R assessment, economic & financial

analysis, drawings and documentation; preparation, checking, approval and filing of calculations, identification and tracability of project documents etc. Further, additional information as per format shall be furnished regarding the details of personal who shall be responsible for carrying out/preparing and checking/verifying various activities forming part of feasibility study and project preparation, since inception to the completion of work. The field and design activities shall start after the QAP is approved by J&KState PWD /MORTH.

2. The data formats proposed by the Consultants for use in field studies and investigations shall be submitted within 14 days after the commencement of services and got approved by MORTH/ J&KState PWD.

10.2 Inception Report (IR)

1. The report shall cover the following major aspects:
 - i. *Project appreciation;*
 - ii. *Detailed methodology to meet the requirements of the TOR finalised in consultation with the J&KState PWD /MORTH officers; including scheduling of various sub-activities to be carried out for completion of various stages of the work;stating out clearly their approach & methodology for project preparation after due inspection of the entire project stretch and collection/ collation of necessary information;*
 - iii. *Task Assignment and Manning Schedule;*
 - iv. *Work programme;*
 - v. *Proforma for data collection;*
 - vi. *Design standards and proposed cross-sections; vii. Key plan and Linear Plan;*
 - viii. *Development plans being implemented and / or proposed for implementation in the near future by the local bodies and the possible impact of such development plans on the overall scheme for field work and design for the study;*
 - ix. *Quality Assurance Plan (QAP) finalised in consultation with J&KState PWD*

/MORTH;

- x. *Draft design standards; and*
2. The requirements, if any, for the construction of bypasses should be identified on the basis of data derived from reconnaissance and traffic studies. The available alignment options should be worked out on the basis of available maps. The most appropriate alignment option for bypasses should be identified on the basis of site conditions and techno-economic considerations. Inception Report should include the details regarding these aspects concerning the construction of bypasses for approval by J&K State PWD /MORTH.

STAGE 2:

10.3 Feasibility Report

1. The Consultant shall commence the Feasibility Study of the project in accordance with the accepted IR and the report shall contain the following:
- " Executive summary*
 - " Overview of MORTH's organization and activities, and project financing and cost recovery mechanisms*
 - " Project description including possible alternative alignments/bypasses and technical/engineering alternatives*
 - " Methodology adopted for the feasibility study*
 - " Socioeconomic profile of the project areas*
 - " Indicative design standards, methodologies and specifications*
 - " Traffic surveys and analysis*
 - " Environmental screening and preliminary environmental assessment*
 - " preliminary land acquisition plan*
 - " Suggested methods of procurement and packaging.*
 - " Cost estimates*
 - " Economic and financial analysis*
 - " Conclusions and recommendations*

2. The basic data obtained from the field studies and investigations shall be submitted in a separate volume as an Appendix to Feasibility Report. The inventory of Roads and Bridges should also be included in the Appendix.
3. The Final Feasibility Study Report incorporating comments, revisions and modifications suggested by J&KState PWD /MORTH shall be submitted within 15 days of receipt of comments from J&KState PWD /MORTH on draft feasibility study report.

10.4 Strip Plan

1. The Consultants shall submit the following documents:
 - i. *Details of the centre line of the proposed widened NH along with the existing and proposed right-of-way limits to appreciate the requirements of land acquisition;*
 - ii. *The information concerning the area including ownership of land to be acquired for the implementation of the project shall be collected from the revenue and other concerned authorities and presented along with the strip plans;*
 - iii. *Strip plans showing the position of existing utilities and services indicating clearly the position of their relocation;*
 - iv. *Details for various clearances such as environment and forest clearances;*
 - v. *Separate strip plan showing shifting / relocation of each utility services in consultation with the concerned local authorities;*
 - vi. *The utility relocation plans should clearly show existing right-of-way and pertinent topographic details including buildings, majortrees, fences and other installations such as water-mains, telephone, telegraph and electricity poles, and suggest relocation of the services along with their crossings the highway at designated locations as required and prepare necessary details for submission to the Service Departments;*
 - vii. *Detail schedules for acquisition of additional land and additional properties in consultation with the revenue authorities; and*
 - viii. *Land Acquisition Plan.*
2. The alignment shall be finalized after x-checking of proposed alignment and provisions at site. Any modification suggested by employer shall be incorporated for study by consultant. Cost-benefit study for different possible alternatives shall also be furnished by consultant. Thereafter strip plans and land acquisition plan shall be

prepared on the basis of data from reconnaissance and detailed topographic surveys as per finalized alignment.

3. The Report accompanying the strip plans should cover the essential aspects as given under:
 - i. *Kilometre-wise Land Acquisition Plan (LAP) and schedule of ownership thereof and Costs as per Revenue Authorities and also based on realistic rates.*
 - ii. *Details of properties, such as buildings and structures falling within the right-of-way and costs of acquisition based on realistic rates.*
 - iii. *Kilometre-wise Utility Relocation Plan (URP) and costs for relocation per civil construction package as per concerned authorities.*
 - iv. *Kilometre-wise account in regard to felling of trees of different type and girth and value estimate of such trees based on realistic rates obtainable from concerned District forest office.*
4. The strip plans shall clearly indicate the scheme for widening. The views and suggestions of the concerned State PWDs/BRO should be duly taken into account while working out the widening scheme (left, right or symmetrical). The widening scheme shall be finalised in consultation with J&KState PWD/ MORTH.
5. Kilometre-wise Strip Plans for each section (Package) shall be prepared separately for each concerned agency and as suggested by J&KState PWD /MORTH.

Stage 3: Project related Clearances

After preparation of all documents pertaining to different clearances required before execution of project, the consultant shall complete the entire procedure to obtain all clearances from different departments. The copy of the same shall be submitted by consultant to J&KState PWD /MoRT&H.

10.5 Deleted

10.6 Deleted

STAGE: 4

10.7 Draft Detailed Project Report (DPR)

1. The draft DPR Submission shall consist of construction package-wise Main Report, Design Report, Materials Report, Engineering Report, Drainage Design Report, Economic and Financial Analysis Report, Environmental Impact Assessment Report including Resettlement Action Plan (RAP), Packagewise/sectionwise bid Documents and Drawings.
2. The Report volumes shall be submitted as tabulated in para 10 above.
3. **Land Acquisition Report**

The Land acquisition report shall be prepared and submitted for each section (package) separately. The report shall include detail schedules about acquisition of land holdings as per revenue records and their locations in a strip plan and also the costs as per district authorities. Details shall be submitted in land acquisition proforma to be supplied by J&KState PWD /MORTH. The land acquisition report shall be submitted in both Hindi and English languages.

The land acquisition report should be prepared in consultation with affected persons, non-governmental organisations and concerned government agencies and should cover land acquisition and resettlement plan and costs of resettlement and rehabilitation of such affected persons. It should also include plan of compensating afforestation, its land requirement with specific locations and cost involved for undertaking all activities in this regard.

4. The Documents and Drawings shall be submitted for each section (Package) and shall be in the following format:

Reports

- i. ***Volume-I, Main Report:*** *This report will present the project background, details of surveys and investigations carried out, analysis and interpretation of survey and investigation data, traffic studies and demand forecasts, designs, cost estimation, environmental aspects, economic and commercial analyses and conclusions. The report shall include Executive Summary giving brief accounts of the findings of the study and recommendations.*

The Report shall also include maps, charts and diagrams showing locations and details of existing features and the essential features of improvement and upgrading.

The Report shall also include updated cost estimates and updated economic and financial analysis.

The Environmental Impact Assessment (EIA) Report for each contract package shall be submitted separately as a part of the main report.

The basic data (including its summary) obtained from the field studies and investigations and input data used for the preliminary design shall be submitted in a separate volume as an Appendix to Main Report.

- ii. **Volume - II, Design Report:** *This volume shall contain design calculations, supported by computer printout of calculations wherever applicable. The Report shall clearly bring out the various features of design standards adopted for the study. The design report will be in two parts. Part-I shall primarily deal with the design of road features and pavement composition while PartII shall deal with the design of structures like bridges, tunnels and cross-drainage structures. The sub-soil exploration report including the complete details of boring done, analyses and interpretation of data and the selection of design parameters shall be included as an Appendix to the Design Report.*

The detailed design for all features should be carried out as per the requirements of the Design Standards for the project. However, there may be situations wherein it has not been possible to strictly adhere to the design standards due to the existing site conditions, restrictions and other considerations. The report should clearly bring out the details of these aspect and the standards adopted.

- iii. **Volume - III, Materials Report:** *The Materials Report shall contain details concerning the proposed borrow areas and quarries for construction materials and possible sources of water for construction purposes. The report shall include details on locations of borrow areas and quarries shown on maps and charts and also the estimated quantities with mass haul diagram including possible end use with leads involved, the details of sampling and testing carried out and results in the form of important index values with possible end use thereof.*

The materials Report shall also include details of sampling, testing and test results obtained in respect physical properties of subgrade soils. The information shall be presented in tabular as well as in graphical representations and schematic diagrams. The Report shall present soil profiles along the alignment.

The material Report should also clearly indicate the locations of areas with problematic soils. Recommendations concerning the improvement of such soils for

use in the proposed construction works, such as stabilisation (cement, lime, mechanical) should be included in the Report.

- iv. *Volume - IV, Environmental Impact Assessment Report including Environmental Management Plan (EMP).: The Report shall be prepared conforming to the Guidelines of the Government of India and State.*
- v. **Volume - V, Technical Specifications:** *The MORT&H's Technical Specifications for Road and Bridge works shall be followed for this study.*
- vi. **Volume - VI, Rate Analysis:** *This volume will present the analysis of rates for all items of works. The details of unit rate of materials at source, carriage charges, any other applicable charges, labour rates, machine charges as considered in arriving at unit rates will be included in this volume.*
- vii. **Volume - VII, Cost Estimates :** *This volume will present the contract package wise cost of each item of work as well as a summary of total cost.*
- viii. **Volume - VIII, Bill of Quantities :** *This volume shall contain the package-wise detailed Bill of Quantities for all items of works*
- ix. **Volume - IX, Drawing Volume :** *All drawings forming part of this volume shall be 'good for construction' drawings. All plan and profile drawings will be prepared in scale 1:250V and 1"2500H scale to cover one km in one sheet. In addition this volume will contain 'good for construction' drawings for the following:*
 - a. *Location Map*
 - b. *Horizontal Alignment and Longitudinal Profile.*
 - c. *Cross-section @ 50m interval along the alignment within ROW*
 - d. *Typical Cross-Sections with details of pavement structure.*
 - e. *Detailed Working Drawings for individual Culverts and Cross-Drainage Structures.*
 - f. *Detailed Working Drawings for individual Bridges, tunnels and Structures.*
 - g. *Detailed Drawings for Improvement of At-Grade and Grade-Separated Intersections and Interchanges.*
 - h. *Drawings for Road Sign, Markings and other Facilities.*
 - i. *Schematic Diagrams (linear chart) indicating but be not limited to be following:*
 - " Widening scheme;

- " Locations of median openings, intersections, interchanges, underpasses, overpasses, bypasses;
- " Locations of service roads;
- " location of traffic signals, traffic signs, road markings, safety features; and,
- " locations parking areas, weighing stations, bus bays, rest areas, if any.

j. Drawings for toll plaza, Bus Bays, Parking areas, Rest areas, weighing stations etc. All drawings will be prepared in A2 size sheets. The format for plan, cross-section and profile drawings shall be finalised in consultation with the concerned MORTH officers. The drawings shall also include details of all BM and reference pillars, HIP and VIP. The co-ordinates of all points should be referenced to a common datum, preferably, GTS referencing system. The drawings shall also include the locations of all traffic safety features including traffic signals, signs, markings, crash barriers delineators and rest areas, bus bays, parking areas etc.

k The typical cross-section drawings should indicate the scheme for future widening of the carriageway. The proposed cross-sections of road segment passing through urban areas should indicate the provisions for pedestrian movements and suitable measures for surface and sub-surface drainage and lighting, as required.

x. **Volume - X, Civil Work Contract Agreement:** *civil works contract agreements based on item*

rate contract and EPC mode of contracts shall be submitted.

xi. **Volume-XI, Project Clearances** – *All the necessary(project related) clearances (such as from MOEF, defense establishments, Irrigation Deptt. and any other concerned agencies) shall be obtained by the consultant and submitted to MORTH so that project implementation can straight away proceed without any hold up.*

10.8. Final Detailed Project Report, Documents and Drawings(6 Sets)

The Final package-wise DPR consisting of Main Report, Design Report, Drainage Design Report and Materials Report, **incorporating** all revisions deemed relevant following receipt of the comments from J&KState PWD /MORTH on the draft DPR shall be submitted as per the schedule given in Enclosure-III.

10.9 The stage 3 and stage 4 may be carried out simultaneously to expedite the

procedure. However, in case of refusal by any department in according the clearance, the consultant shall provide alternate solution for that stretch in consultation with J&KState PWD /MoRT&H.

11. Interaction with J&KState PWD/ MORTH

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

12. Payment Schedule

1. The Consultant will be paid consultancy fee as a percentage of the contract value as per the schedule given below:

S. No.	Description	Payment
1	On submission of Inception Report	10%

2	On Submission of draft feasibility report including strip plan and utility relocation plan.	20%
3	On Submission of Draft Detailed Project Report, Bidding Documents and land acquisition report	25%
4	On submission of all required project clearances from the concerned agencies	25%
5	On approval of Final Detailed Project Report and Bidding Documents	20%
	Total	100%
<p><i>Note: Consultants have to provide a certificate that all the key personnel as envisaged in the Contract Agreement have been actually deployed in the projects. They have to furnish the certificate at the time of submission of their bills to RO'MORTH from time to time.</i></p>		

After completion of services the final contract amount shall be worked out on the basis of inputs and services actually carried out and the payment shall be adjusted accordingly.

2. The payments shall be released by RO, Chandigarh MoRTH.

13. Data and Software

1. The CD's containing all basic as well as the processed data from all field studies and investigations, report, appendices, annexure, documents and drawings shall be submitted to J&KState PWD /MORTH at the time of the submission of the Final Report. The data can be classified as follows:

- i. **Engineering Investigations and Traffic Studies** : Road Inventory, Condition, Roughness, Test Pit (Pavement composition), Benkelman Beam Deflection, Material Investigation including test results for subgrade soils, Traffic Studies (traffic surveys), axle load surveys, Sub-soil Exploration, Drainage Inventory, Inventory data for bridge and culverts indicating rehabilitation, new construction requirement etc. in MS EXCEL or any other format which could be imported to widely used utility packages.
- ii. **Topographic Surveys and Drawings** : All topographic data would be supplied in (x, y, z) format along with complete reference so that the data

could be imported into any standard highway design software. The drawing files would be submitted in dxf or dwg format.

iii. **Rate Analysis** : *The Consultant shall submit the rate analysis for various works items including the data developed on computer in this relation so that it could be used by the Authority later for the purpose of updating the cost of the project.*

iv. **Economic and Financial Analysis;**

2. **Software:** The Consultant shall also hand-over to J&KState PWD /MORTH floppies/CDs containing any general software including the financial model which has been specifically developed for the project.
3. The floppy diskettes/CDs should be properly indexed and a catalogue giving contents of all floppies/CDs and print-outs of the contents (data from field studies topographic data and drawings) should be handed over to J&KState PWD /MORTH at the time of submission of the Final Report.

SUPPLEMENT I

ADDITIONAL POINTS TO BE CONSIDERED FOR HILL ROADS IN ADDITION TO POINTS COVERED IN MAIN TOR

S.No.	Clause No. of TOR	<i>Additional points</i>
1.	2.3	a) Design of tunnels, if required b) Design of protective works, slope stabilization measures, erosion control measures, land slide control/protection measures snow drift control/snow clearance measures, avalanche protection measures, if required
2.	3	Feasibility study and preparation of detailed project report for hill roads shall be done in accordance with best international practices and wherever practicable/feasible steep gradients and hair pin bends may be avoided by realignments and by provision of structures.
3.	4.1	a) Inventory and condition survey for tunnels, if required. b) Identification of faults in rock strata and impact of faults in design of tunnels, if required c) Detailed design of road considering and incorporating specific aspects related to hill region like terrain, topographic conditions, extreme weather conditions, altitude effects etc. d) Design of protective works, slope stabilization measures, erosion control measures, land slide control/protection measures, snow drift control/snow clearance measures, avalanche protection measures, if required e) Design of scenic overlooks/watering points etc.
4.	4.5 (1)	All activities related to field studies, design and documentation shall be done as per the latest guidelines/circulars of MORT&H and relevant publications of the Indian Roads Congress (IRC)/Bureau of Indian Standards (BIS) for hill roads. For aspects not covered by IRC and BIS, international standard practices, such as, British and American Standards may be adopted.
5.	4.7	Review of data and documents pertaining to a) Terrain and soil condition b) Condition of tunnels, if required. c) Sub-surface and geo-technical data for existing tunnels, if required. d) Drawing and details of existing tunnels, if required. e) Existing protective works, erosion control and land slide control/protection works, slope stabilization measures, snow drift control measures, avalanche protection measures
		f) Existing land slide and snow clearance facilities g) Geological details of rock strata in the area in case of tunnels
6.	4.11(1)	The Consultant should make an indepth study of available geological and meteorological maps of the area.

7.	4.11 (2)	<p>The primary tasks to be accomplished during the reconnaissance survey shall also include:</p> <ul style="list-style-type: none"> a) details of terrain (steep or mountainous), cliffs and gorges, general elevation of the road including maximum heights negotiated by main ascents and descents, total number of ascents and descents, hair pin bends, vegetation etc. b) Climatic conditions i.e. temperature, rain fall data, snow fall data, fog conditions, unusual weather conditions etc. c) Realignment requirements including provision of tunnels, if required. d) Inventory of tunnels and geologically sensitive areas like slip prone areas, areas subject to land slides, rock fall, snow drifts, erosion, avalanche activity etc.
8.	4.11.2.1 (ii)	<p>Cross sections shall be taken at every 25 mtr. in case of hill roads and at points of appreciable changes in soil conditions. While taking cross sections, soil conditions shall also be recorded.</p>
9.	4.11.3.1 (1)	<p>The inventory data shall also include:</p> <ul style="list-style-type: none"> a) General elevation of road indicating maximum & minimum heights negotiated by main ascents & descents and total no. of ascents & descents. b) Details of road gradients, lengths of gentle & steep slopes, lengths & location of stretches in unstable areas, areas with cliffs, areas with loose rocks, land slide prone areas, snow drift prone areas, no. & location of hairpin bends etc. c) Details of tunnels d) Details & types of protective structures, erosion & land slide control/protection measures, snow drift control measures, avalanche protection/control measures etc.
10.	4.11.3.2 (2)	<p>Pavement:</p> <ul style="list-style-type: none"> a) Location of crust failures along with their causes b) Conditions of camber/cross falls/super elevations etc., whether affected by subsidence <p>Embankment:</p> <p>Extent of slope erosion on hill and valley side</p>
11.	--	<p>Condition Surveys & Investigation for Slope Stabilization, Erosion Control, Landslide Correction/Protection & Avalanche Protection Measures:</p>

		<p>a) Inventory & Condition Surveys of Existing Protective/Control Measures:</p> <p>The consultant shall make an inventory of all the structures related to Slope Stabilization, Erosion Control, Landslide Control/protection, Avalanche Protection etc. This shall include details of effectiveness of control measures already done and condition of protective/control structures.</p> <p>b) Landslide Investigation</p> <p>This shall be carried out to identify landslide prone areas, to suggest preventive measures or alternate routes that are less susceptible to landslide hazard. Further in existing slide areas this shall help to identify factors responsible for instability and to determine appropriate control measures needed to prevent or minimize recurring of instability problems.</p> <p>Initial preliminary studies shall be carried out using available contour maps, topographical maps, geological/geo-morphological maps, aerial photographs etc. for general understanding of existing slide area and to identify potential slide areas.</p> <p>This shall be followed by further investigations like geological/geo-technical/hydrological investigation to determine specific site conditions prevailing in the slide area as per relevant IRC specifications/publications, MORT&H circulars and relevant recommendations of the international standards for hill roads. The result of the investigations shall provide basis for engineering analysis and the design of protection/remedial measures.</p>
12.	4.12.1 (1)	<p>The Consultant shall also carry out detailed designs and prepare working designs for the following:</p> <p>a) cross sections at every 25 mtr intervals</p> <p>b) Slope stabilization and erosion control measures</p> <p>c) Design of protection/control structures in areas subject to subsidence, landslides, rock fall, rock slide, snow drifts, icing, scour, avalanche activity etc.</p> <p>d) Design of protective structures in slip prone and unstable areas</p> <p>e) Design of scenic overlooks, watering points etc.</p> <p>f) Safety features specific to hill roads</p> <p>g) Study and design for connecting villages/town/habitation through spur roads, if these locations are bypassed due to re-alignment.</p> <p>h) Study and design for provision of parking place/ temporary shelters/ space required for landing of helicopters for evacuation purposes in case of any</p>

		disaster such as cloud burst/ earthquake etc at an interval of 20-25 km.
13.	4.12.2 (1)	The Consultant shall evolve Design Standards and material specifications for the Study primarily based on IRC publications, MORT&H Circulars and relevant recommendations of the international standards (American, British etc) for hill roads.
14.	4.12.3	Wherever practicable/feasible hairpin bends and steep gradients shall be avoided by realignments, provision of structures or any other suitable provisions.
15.	4.12.4	While designing pavement for hill roads specific aspects relevant to hill regions like terrain & topographic conditions, weather conditions, altitude effects etc. shall be duly considered and suitably incorporated in design so that pavement is able to perform well for the design traffic and service life. Effects of factors like heavy rainfall, frost action, intensive snow and avalanche activity, thermal stresses due to temperature difference in day and night, damage by tracked vehicles during snow clearance operations etc. must also be considered along with traffic intensity, its growth, axle loads and design life.
16.	4.12.5(3)	The design of embankments should include the requirements for protection works and traffic safety features including features specific to hill roads.
17.	--	Design and Drawing of Tunnels: The Consultant shall prepare design and drawings for tunnels, if required as per the results of feasibility study, as per the relevant specifications of IRC/MORT&H and other international specifications.

18.	4.12.7	<p>a) Topography of hills generates numerous water courses and this coupled with continuous gradients of roads in hills and high intensity of rainfall calls for effective drainage of roads. The drainage system shall be designed to ensure that the water flowing towards the road surface may be diverted and guided to follow a definite path by suitable provision of road side drains, catch water drains, interceptors etc. and flow on valley side is controlled so that stability is not affected.</p> <p>b) Further, adequate provision shall be made for sub-surface/subgrade drainage to take care of seepage through the adjacent hill face of the road & underground water flows.</p>
19.	4.12.8	The Consultant shall design suitable traffic safety features and road furniture including traffic signals, signs, markings, overhead sign boards, crash barriers, delineators etc. including any feature specific to hill roads. The locations of these features shall be given in the reports and also shown in the drawings.
20.	4.12.3 (1)	The Consultant shall make suitable designs and layout for miscellaneous works including rest areas, bus bays, vehicle parking areas, telecommunication facilities, scenic overlooks, watering points etc. wherever appropriate.
21.	10.6 (1)	<p>Volume II: Design Report :</p> <p>a) Inventory of protection measures and other structures</p> <p>b) Inventory of tunnels, if required.</p> <p>c) Proposed preliminary designs for tunnels, if required.</p> <p>Volume III: Drawings</p>
		<p>a) Drawings for protection/control measures and other structures</p> <p>b) Drawings for tunnels, if required.</p>
22.	10.7 (3)	<p>Volume II: Design Report (Part II)</p> <p>Part II of Design Report shall also deal with design of tunnels, if required and design of other protection/control structures.</p> <p>Volume IX: Drawing Volume</p> <p>This shall also include :</p> <p>a) Detailed working drawings for tunnels, if required.</p> <p>b) Detailed working drawings for protection/control structures</p>

SUPPLEMENT II

ADDITIONAL POINTS TO BE CONSIDERED FOR BRIDGES IN ADDITION TO POINTS COVERED IN MAIN TOR

For bridge packages, the main objective of the consultancy services is to establish the aesthetic, technical, economical and financial viability of the Project and prepare Detailed Project Reports for construction of 2 - lane bridge along with approach roads, at least about 2 km. length on each side of the bridge.

Siting of bridges, feasibility studies and project preparation shall be primarily carried out in accordance with IRC : 5 and IRC Manual for Project Preparation of bridges and other Codes and Specification and in consultation with respective Irrigation / Waterways Authorities.

For bridges/TUNNEL requiring model study, the same shall be got done at a recognized Institution. The consultant will be responsible for identifying the Institution, supplying requisite data and coordinating the model study. The amount to be paid to the Institution shall be borne by the Employer.

S.No.	Clause No. of TOR	<i>Additional points</i>
1.	4.1	<p>Primary Tasks</p> <p>The scope of services shall also cover the following :</p> <ul style="list-style-type: none">i. Inventory and condition surveys for existing river bank training/ protection works.ii. Detailed Design of approach roads (extending at least up to approximately 2 km an each side of the bridge).iii. Detailed Design of Bridge, cross drainage structures, underpasses & other structures as required.iv. Preparation of GAD, construction drawings etc.v. Strip plan for bridge and approach road.vi. Design discharge and scour depth

2.	4.7	<p>Review of Data and Documents</p> <p>The data and documents of major interest shall also include the following:</p>
		<ul style="list-style-type: none"> a) Existing geological maps, catchment area maps, contour plans etc. for the project area b) Hydrological data, catchment area characteristics, river/channel characteristics, flood flow data and seismological data etc. c) Condition of existing river bank / protection works, if any. d) Sub surface and geotechnical data for existing near by bridges. e) Detailed drawings of nearby existing bridges.
3.	4.11.1	<p>Reconnaissance and Alignment</p> <ul style="list-style-type: none"> a) The consultant should make an in depth study of available geological maps, catchment area maps, contour plans, flood flow data and seismological data. b) The primary tasks to be accomplished during the reconnaissance surveys also include: <ul style="list-style-type: none"> i. Typical physical features along the approach roads ii. Possible bridge locations, land acquisition problems, nature of crossings, likely length of approaches and bridge, firmness of banks, suitability of alignment of approach roads

4.	4.11.2	<p>Topographic surveys</p> <p>a) The detailed field surveys would essentially include the topographic surveys along the proposed location of bridge and alignment of approach road.</p> <p>b) The detailed topographic surveys should be carried out along the approach roads alignment and location of bridge approved by MORTH.</p>
5.	4.11.2.1	<p>Longitudinal and Cross sections</p> <p>The topographic surveys for longitudinal and cross sections shall cover the following:</p>
		<p>Cross section of the channel at the site of proposed crossing and few cross sections at suitable distance both upstream and downstream, bed level upto top of banks and ground levels to a sufficient distance beyond the edges of channel, nature of existing surface soil in bed, banks & approaches, longitudinal section of channel showing site of bridge etc.</p>

6.	4.11.4.2	<p>Hydraulic and Hydrological Investigations</p> <p>a) The consultant shall also collect information on observed maximum depth of scour.</p> <p>b) History of hydraulic functioning of existing bridge, if any, under flood situation, general direction of river course through structure, afflux, extent and magnitude of flood, effect of backwater, if any, aggradation/degradation of bed, evidence of scour etc. shall be used to augment the available hydrological data. The presence of flood control/irrigation structures, if affecting the hydraulic characteristics like causing obliquity, concentration of flow, scour, silting of bed, change in flow levels, bed levels etc. shall be studied and considered in design of bridges. The details of any future planned work that may affect the river hydraulics shall be studied and considered.</p>
7.	4.11.4.4	<p>Geotechnical Investigations and Sub soil Exploration</p> <p>Investigation shall be carried out to determine the nature and properties of existing soil in bed, banks and approaches with trial pits and bore hole sections showing the levels, nature and properties of various strata to a sufficient depth below the level suitable for foundations, safe intensity of pressure on the foundation soil, proneness of site to artesian conditions, seismic disturbance and other engineering properties of soil etc.</p>
8.	4.12.1	<p>General</p> <p>The consultants are also to carry out detailed designs and prepare working drawings for the followings ;</p> <p>a) Design of pavement for approach road</p> <p>b) Design of river bank protection / training works</p>

9.	4.12.6	<p>Design of Bridges and Structures</p> <p>The data collected and investigation results shall be analysed to determine the following :</p> <p>i.HFL ii.LWL iii.LBL</p> <p>iv. Erodibility of bed/scour level</p> <p>v. Design discharge</p> <p>vi. Linear waterway and effective linear waterway vii. Likely foundation depth viii. Safe bearing capacity</p> <p>ix. Engineering properties of sub soil</p> <p>x. Artesian conditions xi. Settlement characteristics xii. Vertical clearance xiii. Horizontal clearance xiv. Free board for approach road</p> <p>xv. Severity of environment with reference to corrosion xvi. Data pertaining to seismic and wind load xvii. Requirement of model study etc.</p>
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SUPPLEMENT-III

ADDITIONAL REQUIREMENT FOR SAFETY AUDIT

Checklists

The use of checklists is highly recommended as they provide a useful aide memoire for the audit team to check that no important safety aspects are being overlooked. They also give to the project manager and the design engineer a sense of understanding of the place of safety audit in the design process. The following lists have been drawn up based on the experience of undertaking systematic safety audit procedures overseas. This experience indicates that extensive lists of technical details has encouraged their use as tick sheets without sufficient thought being given to the processes behind the actions. Accordingly, the checklists provide guidelines on the principal issues that need to be examined during the course of the safety audits.

Stage F-During Feasibility Study

1. The audit team should review the proposed design from a road safety perspective and check the following aspects

CONTENTS	ITEMS
Aspects to be checked	<p>A. Safety and operational implications of proposed alignment and junction strategy with particular references to expected road users and vehicle types likely to use the road.</p> <p>B. Width options considered for various sections.</p> <p>C. Departures from standards and action taken.</p> <p>D. Provision of pedestrians, cyclists and intermediate transport</p> <p>E. Safety implications of the scheme beyond its physical limits i.e. how the scheme fits into its environs and road hierarchy</p>

A1 : General	Departures from standards Cross-sectional variation Drainage Climatic conditions Landscaping Services apparatus Lay-byes Footpaths Pedestrian crossings Access (minimize number of private accesses) Emergency vehicles Public Transport Future widening Staging of contracts Adjacent development
A2 : Local Alignment	Visibility
	New/Existing road interface Safety Aids on steep hills.
A3 : Junctions	Minimise potential conflicts Layout Visibility
A4 : Non-Motorised road users Provision	Adjacent land Pedestrians Cyclists Non-motorised vehicles
A5 : Signs and Lighting	Lighting Signs/Markings
A6 : Construction and Operation	Buildability Operational Network Management

Stage 1 – Completion of Preliminary Design

1. The audit team should review the proposed design from a road safety perspective and check the following aspects	
CONTENTS	ITEMS
Aspects to be checked	<p>A. Safety and operational implications of proposed alignment and junction strategy with particular references to expected road users and vehicle types likely to use the road. B. Width options considered for various sections.</p> <p>C. Departures from standards and action taken.</p> <p>D. Provision of pedestrians, cyclists and intermediate transport</p> <p>E. Safety implications of the scheme beyond its physical limits i.e. how the scheme fits into its environs and road hierarchy</p>
B1 : General	<p>Departures from standards</p> <p>Cross-sectional variation</p> <p>Drainage</p> <p>Climatic conditions</p> <p>Landscaping</p> <p>Services apparatus</p> <p>Lay-byes</p> <p>Footpaths</p> <p>Pedestrian crossings</p> <p>Access (minimize number of private accesses)</p> <p>Emergency vehicles</p> <p>Public Transport</p> <p>Future widening</p> <p>Staging of contracts</p> <p>Adjacent development</p>
B2 : Local Alignment	<p>Visibility</p> <p>New/Existing road interface Safety</p> <p>Aids on steep hills.</p>
B3 : Junctions	<p>Minimise potential conflicts</p> <p>Layout</p> <p>Visibility</p>
B4 : Non- road users Motorised Provision	<p>Adjacent land</p> <p>Pedestrians</p> <p>Cyclists</p> <p>Non-motorised vehicles</p>

B5 : Signs and Lighting	Lighting Signs/Markings
B6 : Construction and Operation	Buildability
	Operational Network Management

Stage 2 – Completion of Detailed Design

<p>1. The audit team should satisfy itself that all issues raised at Stage 1 have been resolved. Items may require further consideration where significant design changes have occurred.</p> <p>2. If a scheme has not been subject to a stage 1 audit, the items listed in Checklists B1 to B6 should be considered together with the items listed below.</p>	
CONTENTS	ITEMS
Aspects to be checked	<p>A. Any design changes since Stage 1.</p> <p>B. The detailed design from a road safety viewpoint, including the road safety implications of future maintenance (speed limits; road signs and markings; visibility; maintenance of street lighting and central reserves).</p>
C1 : General	<p>Departures from standards</p> <p>Drainage</p> <p>Climatic conditions</p> <p>Landscaping</p> <p>Services apparatus</p> <p>Lay-byes</p> <p>Access</p> <p>Skid-resistance</p> <p>Agriculture</p> <p>Safety Fences</p> <p>Adjacent development</p>
C2 : Local Alignment	<p>Visibility</p> <p>New/Existing road interface</p>
C3 : Junctions	<p>Layout</p> <p>Visibility Signing</p> <p>Lighting</p> <p>Road Markings</p> <p>T,X,Y-junctions</p> <p>All roundabouts</p> <p>Traffic signals</p>

C4 : Non-Motorised road users Provision	Adjacent land Pedestrians Cyclists Non-motorised vehicles
C5 : Signs and Lighting	Advanced direction signs
	Local traffic signs Variable message signs Other traffic signs Lighting
C6 : Construction and Operation	Buildability Operational Network Management

Enclosure-I

Manning Schedule (Indicative)

For the projects having time period of completion 6 /9/15months

SI.No	Key Personnel	Total Project Assignment (Twelve months)		
		At site (mm)	At design office (mm)	Total Time Period (mm)
1	Team Leader -cum-Sr. Highway Engineer	6	6	12
2	Highway Engineer ócum-Pavement Specialist	6	6	12
3	Bridge Engineer	3	3	6
4	Tunnel Engineer	6	6	12
5	Traffic Engineer	1	1	2
6	Geologist	6	4	10
7	Senior Survey Engineer	6	6	12
8	Financial Analyst	1	2	3
9	Environmental Specialist	3	3	6
10	Quantity Surveyor/ Documentation Expert	6	6	12
11	Resettlement & Rehabilitation specialist	4	1	5
12	Road Safety Engineer	2	1	3
13	Material Engineer	3	1	4
14	Various expert like legal, contract, social, procurement etc	4	4	8
	Total	57	50	107

Note: The employer may check deployment of above personals at any point of time.

Consultants have to provide a certificate that all the key personnel as envisaged in the Contract Agreement have been actually deployed in the projects. They have to furnish the certificate at the time of submission of their bills to **J&K State PWD / MORTH** from time to time.

Enclosure-II

Qualification and Experience Requirement of Key Personnel

Team Leader -cum-Senior Highway Engineer

i)	Educational Qualification	
	Essential	Graduate in Civil Engineering
ii)	Essential Experience	
	a) Total Professional Experience	Min. 20 years
	b) Experience in Highway projects	Min. 15 years in Planning, project preparation and design of Highway projects .
	c) Experience in similar capacity	At least 2 projects of Two/Four laning of major highway projects of roads NH/SH/ Expressways of length of minimum 50 km (2 lane equivalent)
iii)	Age Limit	65 years on the date of submission of proposal

Enclosure-II(contd.)

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Highway Engineer-cum-Pavement Engineer

i)	Educational Qualification	
	Essential	Post Graduate in Transportation Engineering
	----	----
ii)	Essential Experience	
	a) Total Professional Experience	Min. 15 years
	b) Experience in Highway Projects	Min. 15 years in Planning, project preparation, design of Highways and pavements
	c) Experience in Similar Capacity	At least two projects of Two/Four laning of major highway roads NH/SH/ Expressways of length of minimum 50 km (2 lane equivalent).
iii)	Age Limit	65 years on the date of submission of proposal

Enclosure-II(contd.)

QUALIFICIATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Bridge Engineer

i)	Educational Qualification	
	a) Essential	Post Graduate in Structural/ Bridge Engineering
ii)	Essential Experience	
	a) Total Professional Experience	Minimum 15 years
	b) Experience in Bridge projects	Min. 10 years in project preparation and design of bridge projects.
	c) Experience in Similar Capacity	Bridge Engineer in highway design consultancy projects (NH/SH/ Expressways) involving design of minimum two major bridges (length more than 100 m)
iii)	Age Limit	65 years on the date of submission of proposal

Enclosure-II(contd.)

QUALIFICIATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Resettlement & Rehabilitation Specialist

i)	Educational Qualification	
	a) Essential	Graduate in Civil Engineering or Post Graduate in Social Science
ii)	Essential Experience	
	a) Total Professional Experience	Min. 15 years

	b) Experience in highway Projects	Min. 5 years on similar project
	c) Experience in Similar Capacity	R&R Expert for at least 2 projects of Two/Four laning of major highway projects (NH/ SH / Expressways) of length of minimum 50 Km (2 lane equivalent)
iii)	Age Limit	65 years on the date of submission of proposal

Road Safety Engineer

i)	Educational Qualification	
	a) Essential	Graduate in Civil Engineering and with Post Graduate qualification in Highways/ Traffic/ Transportation Engineering
ii)	Essential Experience	
	a) Total Professional Experience	Min. 10 years
	b) Experience in highway Projects	Min. 5 years on similar project
	c) Experience in Similar Capacity	Road Safety Expert for at least two highway projects (NH/SH/ Expressways) involving 2/4 laning of length of minimum 50 km (2 lane equivalent)
iii)	Age Limit	65 years on the date of submission of proposal

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Traffic Engineer

i)	Educational Qualification	
	a) Essential	Graduate in Civil Engineering/ PG in Traffic & Transport Engineering
ii)	Essential Experience	
	a) Total Professional Experience	Min. 10 years
	b) Experience in Highway projects	Min. 5 years on similar projects.

	c) Experience in Similar Capacity	Traffic Engineer in highway Projects (NH/SH/Expressways) involving 2/4 laning of length of minimum 50 km of roads (2 lane equivalent) for at least 2 projects
iii)	Age Limit	65 years on the date of submission of proposal

Enclosure-II(contd.)

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Geologist

i)	Educational Qualification	
	Essential	M.Sc. in Geology
ii)	Essential Experience	
	a) Total Professional Experience	Min. 15 years
	b) Experience in Similar type of work in infrastructure projects	Min. 8 years on similar projects in design.
	c) Experience in Similar Capacity	Engineering Geologist/Geologist on at least projects two road projects NH/SH/Expressways of length of minimum 50 km (2 lane equivalent) and tunnel of minimum 200 m length.
iii)	Age Limit	65 years on the date of submission of proposal

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Senior Survey Engineer

i)	Educational Qualification	
	Essential	Graduate in Civil Engineering or Diploma in Civil Engg or Diploma in Surveying
	-----	-----
ii)	Essential Experience	
	a) Total Professional Experience	Min.15 years
	b) Experience in Highway projects	Min. 5 years on similar projects in project preparation and construction & thorough understanding of modern computer based methods of surveying
	c) Experience in Similar Capacity	Survey Engineer for projects preparation of at least two road Projects NH/SH/Expressways involving 2/4- laning of length of minimum 50 km (2 lane equivalent)
iii)	Age Limit	62 years on the date of submission of proposal

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Financial Analyst

i)	Educational Qualification	
	Essential	Post Graduate in Commerce/Chartered Accountant
	-----	-----
ii)	Essential Experience	
	a) Total Professional Experience	Min. 7years
	b) Experience in Financial Modeling	Min. 5 years on Financial Modeling in infrastructure projects
	c) Experience in Similar Capacity	Financial Analyst or equivalent in Highway project (NH/SH/Expressways) involving 2/4 laning of length of minimum 50 km (2 lane equivalent). The personnel should be involved in preparation of Financial Models for at least 2 Highway Projects.
iii)	Age Limit	65 years on the date of submission of proposal

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Environmental Specialist

i)	Educational Qualification	
	a) Essential	Graduate in Civil Engineering or Graduate in Environmental Engineering or Post Graduate in Environmental Sciences
ii)	Essential Experience	
	a) Total Professional Experience	Min. 10 years
	b) Experience in Highway Projects	Min. 5 years in environment impact assessment of infrastructure projects
	c) Experience in Similar Capacity	Environmental Specialist in at least two highway projects in plain region of minimum length of 50 km (2 lane equivalent)
iii)	Age Limit	65 years on the date of submission of proposal

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Quantity Surveyor/Documentation Expert

i)	Educational Qualification	
	Essential	Graduate in Civil Engineering / Certificate course from Institution of Quantity Surveying
ii)	Essential Experience	
	a) Total Professional Experience	Min. 15 years
	b) Experience in Highway Projects	Min. 5 years in Preparation of Bill of Quantities, Contract documents and documentation for major highway projects involving four laning
	c) Experience in Similar Capacity	Quantity Surveyor / Documentation Expert in at least two Road projects NH/SH/Expressways involving two/four laning of minimum length 50 km (2 lane equivalent)
iii)	Age Limit	65 years on the date of submission of proposal

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Tunnel Engineer

i)	Educational Qualification	
	Essential	Master Degree in Geo Technical Engineering/ Soil Mechanics/ Tunneling
	-----	-----
ii)	Essential Experience	
	a) Total Professional Experience	Min.15 years
	b) Experience in Highway projects/ tunnel	10(Ten) years in Geo technical studies/ Preparation of Detail feasible report for Tunnel Project.
	c) Experience in Similar Capacity	preparation of DPR at least two road Projects NH/SH/Expressways involving Tunneling in hilly terrain for 2/4- laning of length of minimum 1.50 KM
iii)	Age Limit	62 years on the date of submission of proposal

Enclosure-II (contd.)
Enclosure-II(contd.)

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL

Material Engineer

i)	Educational Qualification	
	Essential	Graduate in Civil Engineering /Diploma in Civil engineer
ii)	Essential Experience	
	a) Total Professional Experience	Min. 12 years
	b) Experience in Similar type of work in infrastructure projects	Min. 8 years on similar projects in design and/or construction
	c) Experience in Similar Capacity	Material Engineer on at least projects two road projects NH/SH/Expressways of length of minimum 50 km (2 lane equivalent).
iii)	Age Limit	65 years on the date of submission of proposal

Note: The study is concentrated in geologically sensitive area. The consultant shall submit proper geological report for finalization of feasibility report.

Enclosure-III

Schedule for Submission of Reports and Documents

Submission Time w.e.f Date of Commencement of Consultancy Services

(For projects having completion period of 12 months)

Stage No.	Activity	No. of copies	Time Period for assignment from date of commencement
1	Monthly Reports	3	Monthly
2	Inception Report (i) Inception Report including QAP Document	3	1.0
3	F.S. REPORT i) Draft Feasibility Report including Environmental impact screening Reports ii) Strip Plan iii) Final Feasibility Report (within 15 days of receiving comments of MORTH on draft feasibility report)	4 6	4.0 6.5
4	D.P. REPORT i) Draft DPR (including drawings and draft bidding (ICB) documents) EMP, RAP, LA reports and plans ii) Final DPR (including drawings and final bidding (ICB) documents) EMP, RAP	4 6	8.0 10.0
5	Project clearances from concerned agencies e.g. from MOEF; Irrigation Dept., Revenue Authorities for LA etc.	Original letters from the concerned agencies and 5 photocopies of each.	12.0

Note: The employer may direct the consultants to submit the report sub-section/stretch wise as per their implementation schedule in field.

II(Form-I)

Appendix

TECHNICAL PROPOSAL

FROM:

TO:

Sir:

Subject: Hiring of Consultancy Service for

Regarding Technical Proposal

I/We _____ Consultant/ Consultancy firm herewith enclose
Technical Proposal for selection of my/our firm/organization as
Consultant for _____.

Yours faithfully,

Signature _____

Full Name _____

Designation _____

Address _____

(Authorized Representative) **(Form-II)**

Details of projects for which Technical and Financial Proposals have been submitted

Name of Group: _____

Sl.No.	<i>Name of Project</i>	Consultancy Package No.	Names of Proposed Key Personnel
1			
2			
3			
4			

(Form-III)

FIRM'S REFERENCES

Relevant Services Carried out in the Last Seven Years
Which Best Illustrate Qualifications

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

Assignment Name:		Country:
Location within Country :		Professional Staff Provided by your firm:
Name of Client :		No. of Staff :
Address :		No. of Staff Months :
Start Date (Month / Year)	Completion Date (Month / Year)	Approx. Value of Services : (in current USD) :
Name of Association Firm(s) if any :		No. of Months of Professional Staff provided by Associated Firm(s)
Name of Senior Staff (Project Director / Coordinator, Team Leader) involved and functions performed:		
Narrative Description of Project :		
Description of Actual Services Provided by your Staff :		

Signature of Authorised Representative

(Certificate from Employer regarding experience should be furnished)

(Form-IV)

CONSULTANT NAME:

APPROACH PAPER ON METHODOLOGY
PROPOSED FOR PERFORMING THE ASSIGNMENT

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

- 1) Composition of the team [not more than ½ of a page]
 - 2) Methodology for services, surveying, data collection [not more than ½ of a page] and analysis
 - 3) Quality Assurance system for consultancy assignment [not more than ½ of a page]
-

(Form-V)

COMMENTS/ SUGGESTIONS OF CONSULTANT

On the Terms of Reference:

- 1.
- 2.
- 3.
- 4.
- 5.
- ..
- ..

On the Data, services and facilities to be provided by the Client indicated in the Terms of Reference.

- 1.
- 2.
- 3.
- 4.
- 5.
- ..
- ..

(Form-VI)

**Composition of the Team Personnel and the task
Which would be assigned to each Team Member**

I. Technical/Managerial Staff

S.No.	Name	Position	Task Assignment
1			
2			
3			
4	..		
..			
..			

II. Support Staff

S.No.	Name	Position	Task Assignment
1			
2			
3			
4	..		
..			
..			

(Form-VII)



Format of Curriculum Vitae (CV) For Proposed Key Staff

1. Proposed Position: _____
2. Name of Staff: _____
3. Date of Birth : _____(Please furnish proof of age)
4. Nationality: _____

5. Educational Qualification:

(Summarize college/university and other specialized education of staff member, giving names of schools, dates attended and degrees obtained). (Please furnish proof of qualification)

6. Membership of Professional Societies: _____

7. Publication:

(List of details of major technical reports/papers published in recognized national and international journals)

8. **Employment Record:**

(Starting with present position, list in reversed order, every employment held. List all positions held by staff member since graduation, giving dates, names of employing organization, title of positions held and location of assignments. For experience *period of specific assignment must be clearly mentioned*, also give client references, where appropriate).

9. Summary of the CV

(Furnish a summary of the above CV. The information in the summary shall be precise and accurate. The information in the summary will have bearing on the evaluation of the CV).

A) Education:

- i) Field of Graduation and year
- ii) Field of post graduation and year
- iii) Any other specific qualification

B) Experience

- i) Total experience in highways:
_____ Yrs
- ii) Responsibilities held :
 - i) _____ Yrs.
 - ii) _____ Yrs.
 - iii) _____ Yrs.
- iii) Relevant Experience : _____ Yrs.

C) Permanent Employment with the Firm (Yes/No):

If yes, how many years :
If no, what is the employment :
Arrangement with the firm ?

Certification :

1 I am willing to work on the project and I will be available for entire duration of the project assignment and I will not engage himself in any other assignment during the currency of his assignment on the project

2I, the undersigned, certify that to the best of my knowledge and belief, this biodata correctly describes myself my qualification and my experience.

Signature of the Candidate _____

Place _____

Date _____

Signature of the Authorized Representative of the firm _____

Place _____

Date _____

Note: Each page of the CV shall be signed in ink by both the staff member and the Authorized Representative of the firm. Photocopies will not be considered for evaluation.

UNDERTAKING FROM THE PROFESSIONAL

I, í í í í í í í í . (Name, Address and mobile no.) have not left any assignment with the consultants engaged by MORTH /NHAI for any continuing works of MORTH/NHAI without completing my assignment. I will be available for the entire duration of the current project (named í í í í ..). If I leave this assignment in the middle of the completion of the work, MORTH would be at liberty to debar me for an appropriate period to be decided by MORTH. I have also no objection if my services are extended by MORTH for this work in future.

(Signature of key personnel)

UNDERTAKING FROM CONSULTING FIRM

The undersigned on behalf of í í í í í í í í . (name of consulting firm) certify that Shri í í í í í í í í (name of the proposed personnel and address) to the best of our knowledge has not left his assignment with any other consulting firm engaged by MORTH /NHAI for the ongoing projects. We understand that if the information about leaving the past assignment with MORTH /NHAI without completing his assignment is known to MORTH, MORTH would be at liberty to remove the personnel from the present assignment and debar him for an appropriate period to be decided by MORTH.

(Signature of Authorized Representative of Firm)

(Form-VIII)

WORK PROGRAM AND TIME SCHEDULE FOR KEY PERSONNEL

MONTHS (in the Form of Bar Chart)

Sl. No.	Name	Position	Report Due/ Activities	Month s										Number of Months		
1																Sub Total (1)
2																Sub Total (2)
3																Sub Total (3)
4																Sub Total (4)

í													
í .													

Field Full :

Part Time :

Reports Due:

Activities :

Duration :

(Form-IX)

A. FIELD INVESTIGATION

(1st, 2nd etc. are months from the date of assignment)

S. N	Item of Work / Activities	Months							
1									
2									
3									
..									
..									

B. COMPLETION AND SUBMISSION OF REPORTS

S.No.	Reports	Programme
	(As per section 10 of TOR)	
1		
2		
3		
4		
..		
..		

(Form – X)

Format for furnishing additional information as per clause 10.1 (1) of TOR

S.No.	Details of activity	<i>To be Carried out / prepared by</i> (Name/Designation)	To be Checked/ Verified by (Name/Designation)
1	Fixation of all TBMø		
2	Physical surveys (give separate details for various studies)		
3	Traffic studies (give separate details for various studies)		
4	í í í í í .		
5	í í í í í		
6	í í í í ..		

(in column 2 all relevant activities since inception to the completion of feasibility study and project preparation work should be covered)

(Form-I)

FINANCIAL PROPOSALS

FROM:

TO:

Sir:

Subject: Hiring of Consultants Services for

Regarding Price Proposal

I/We _____ Consultant/consultancy firm herewith
enclose *Price Proposal for selection of my/our firm/organization as Consultant for

_____ (in INR).

Yours faithfully,

Signature _____

Full Name _____

Designation _____

Address _____

(Authorized

Representative)

***The Financial proposal is to be filled strictly as per the format given in RFP.**

(Form-II)

Format of Financial Proposal

Summary of Cost in INR

No.	Description	Amount (INR)	Amount (FC)*
	<u>Local Consultants</u>		
I	Remuneration for Local Staff (inclusive of per diem allowance)		DELETED
II	Supporting Staff (inclusive of per diem allowance)		
III	Per diem allowance of expatriate personnel		
IV	Transportation		
V	Duty Travel to Site		
VI	Office Rent		
VII	Office Supplies, Utilities and Communication		
VIII	Office Furniture and Equipment (Rental)		
IX	Reports and Document Printing		
X	Surveys & Investigations		
A	Topographical Survey		
B	Investigations		
	Subtotal Local Consultants :		
	<u>Foreign Consultants</u>		
F-I	Remuneration for Expatriate Staff		
F-II	Mobilization and Demobilization		
	Total Cost Net of Tax :		
Taxes and Duties	I. Income Tax (Expatriate) II. Import duties III. Value added tax		
	Total cost net of GST**		
	GST		
	TOTAL COSTS (Including GST)		

** Total Cost Net of GST shall be considered for financial evaluation

Note: No escalation will be payable during the services

Insurances shall not be allowed separately .These will be incidental to main items.
(Form-III)

Estimate of Local Currency Costs

1.Remuneration for Local Staff (including per diem allowance)

S.No.	Position	Name	Rate	SM	Amt.
	Professional Staff				
1	Team Leader ócum-Sr. Highway Engineer				
2	Highway Engineer cum Pavement Specialist				
3	Bridge Engineer				
4	Tunnel Engineer				
5	Traffic Engineer				
6	Material-cum- Geotechnical Engineer				
7	Senior Survey Engineer				
8	Financial Analyst				
9	Environmental Specialist				
10	Quantity Surveyor/ Documentation Expert				
11	Resettlement & Rehabilitation Specialist				
12	Road safety Engineer				
13	Various expert like legal contract, Geologist, Social, procurement etc.				
	Sub-Total:				
	Sub-Professional Staff	(To be assessed by Consultant as per requirement of assignment)			
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
	Sub-Total:				

	TOTAL				
--	-------	--	--	--	--

II. Support Staff

No.	Position	Name	Staff Months	Billing Rate()	Amount()
1	Office Manager				
2	Typist				
3	Office Boy				
4	Night Watchman				
				Total :	

III. Transportation (Fixed costs)

S.No	Description	Qty.	Nos. of months	Rate/ Month	Amount
1	The vehicles provided by the Consultants shall include the cost for rental, drivers, operation, maintenance, repairs, insurance, etc. A. For use of consultants				
	Total				

IV. Duty Travel to Site (Fixed Costs)

	NO	Rate	Amount
Trips			

V. Office Rent (Fixed Costs)

The rent cost includes maintenance, cleaning, repairs, etc.

___ months x

Total

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

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

TOTAL : -----

VII. Office Furniture and Equipment (Rental)

No.	Description	Unit	Quantity	Rate ()	Amount ()
1	Office Furniture and Equipment		LS		
				Total	

VIII. Reports and Document Printing

No.	Description	No. of Copies	Rate per Copy (Rs.)	Amount (Rs.)
1	Monthly Report	3 Per Month		
2	Inception Report & QAP	3		
3	Environment and Social Impact Screening Report	4		
4	Draft Feasibility Report	4		

5	Final Feasibility Report	6		
6	Strip Plan with L.A. Reports	6		
7	Draft Environmental Assessment report & RAP	4		
8	Final Environmental Assessment report & RAP	6		
9	Draft Detailed Design Report & Drawings etc. Draft EMP	4 4		
10	Draft Bidding Documents	4		
11	Final Detailed Project Report with Bill of Quantities, Cost Estimates, Updated Drawings etc. Final EMP	6 6		
12	Final Bidding Documents	6		
			Total	

IX. Survey and Investigation

A. Topographical Survey (Fixed Rate)

Item	Kms	Rate per Km (Rs.)	Amount (Rs.)
Topographic Survey including hire charges for equipment (GPS, Lidar, Total Station, Auto Level etc.,) and supply of survey Teams comprising of project survey filed staff etc. inclusive of cost of materials , labourer and construction of BM, (satellite imaginary, aerial photogrammetry if considered necessary) etc. complete			

B. Investigation (Fixed cost)

No.	Description	Quantity	Amount (Rs.)
1	Road and Bridge Inventory	L.S.	
2	BBD Test and Pavement Evaluation	L.S.	
3	Roughness Survey	L.S.	
4	Axle Load Survey	L.S.	
5	Material Survey and Investigation	L.S.	
6	Sub-grade Investigation	L.S.	

7	Traffic Survey		L.S.	
8.	Socio-economic & Census Survey/Studies		L.S.	
9.	Land Acquisition Studies		L.S.	
10.	Any other investigations/surveys		L.S	
11.	* Sub-Soil Investigation (Boring)	Rate	Qty(Mtr.)	Amount (Rs)
	a) Boring in all type of soils (other than hard rock) 50%		5000	
	b) Boring in hard rock 50%		3000	
	Total			

Note: * Quantities of borings shall be taken from Financial Proposal Form No.V. For financial evaluation, these quantities and rates quoted by the consultant will be considered. However, Payment shall be made on the actual quantity of boring at rates quoted above by the Consultant. which may be substantially more or less than the estimated quantities.

(Form-IV)

Estimate of Costs for Expatriate Consultants

I. Remuneration of Expatriate Staff including per diem allowances

No.	Positions	Name	Rate ()	SM	Amount ()
			Total :		

II. ***Mobilization and Demobilization***

1.International Airfares (Fixed costs)

Position	Round Trips	Rate	Amount

		Total	

II.2 Inland Travel in Home Country (Fixed Costs)

LumSum

2. Other Miscellaneous expenses (like DA, internal travel expenses other incidentals)(fixed cost)

Lum Sum

TENTATIVE QUANTITIES FOR SUBSOIL INVESTIGATION(BORING), INDICATIVE							
Form V							
Sl no	Name of the State	NH no	Chainage (from-to)	Approximate Length (km)	Package no	Cumulative tentative Quantities (in m)	
						In soils other than hard rock	In hard rock
					-		
					-		
					-		
					-		
					-		
					-		
			Total				

CONTRACT AGREEMENT

Between

CHIEF Engineer PW (R&B) DEPARTMENT, JAMMU

And

For

CONTENTS

Sl. No.	Description	Page No.
I.	CONTRACT FOR CONSULTANT'S SERVICES	
II.	GENERAL CONDITIONS OF CONTRACT	
1.	General Provisions	
1.1	Definitions	
1.2	Relation between the Parties	
1.3	Law Governing the Contract	
1.4	Language	
1.5	Headings	
1.6	Notices	
1.7	Location	
1.8	Authority of Member in Charge	
1.9	Authorized Representatives	
1.10	Taxes and Duties	
2.	Commencement, Completion, Modification and Termination of Contract	
2.1	Effectiveness of Contract	
2.2	Termination of Contract for Failure to Become Effective	
2.3	Commencement of Services	
2.4	Expiration of Contract	
2.5	Entire Agreement	
2.6	Modification	
2.7	Force Majeure	
2.7.1	Definition	
2.7.2	No Breach of Contract	
2.7.3	Measures to be Taken	
2.7.4	Extension of Time	
2.7.5	Payments	
2.7.6	Consultation	
2.8	Suspension	
2.9	Termination	
2.9.1	By the Client	
2.9.2	By the Consultants	
2.9.3	Cessation of Rights and Obligations	
2.9.4	Cessation of Services	
2.9.5	Payment upon Termination	
2.9.6	Disputes about Events of Termination	

- 3. **Obligations of the Consultants**
 - 3.1 General
 - 3.1.1 Standard of Performance
 - 3.1.2 Law Governing Services
 - 3.2 Conflict of Interests
 - 3.2.1 Consultants not to Benefit from Commissions, discounts etc.
 - 3.2.2 Consultants and Affiliates not to be otherwise interested in Project
 - 3.2.3 Prohibition of Conflicting Activities
 - 3.3 Confidentiality
 - 3.4 Liability of the Consultants
 - 3.5 Insurance to be taken out by the Consultants
 - 3.6 Accounting, Inspection and Auditing
 - 3.7 Consultants' Actions requiring Client's prior Approval
 - 3.8 Reporting Obligations
 - 3.9 Documents prepared by the Consultants to be the Property of the Client
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III. SPECIAL CONDITIONS OF CONTRACT IV. APPENDICES

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

Appendix B: ConsultantsøSub consultants, Key Personnel and Sub Professional Personnel,
Task assignment, work programme, manning schedule, qualification
requirements of key personnel, schedule for submission of various report.

Appendix C: Hours of work for ConsultantsøPersonnel

Appendix D: Duties of the Client

Appendix E: Cost Estimate

Appendix F: Minutes of Financial/ Contract Negotiations with the Consultant

Appendix G: Copy of letter of invitation

Appendix H: Copy of letter of acceptance

Appendix I: Format for Bank Guarantee for Performance Security

Appendix J : Reply to queries to the Applicants

CONTRACT FOR CONSULTANT'S SERVICES

INDIA

CONTRACT FOR CONSULTANTS' SERVICES

Invitation of proposal for carrying out feasibility study and detailed project report, survey, preparation of land plan for widening to two lane with paved shoulders of Basohli – Bhaderwah – Doda including Tunnel at Chattergala

Agreement No _____

This CONTRACT (hereinafter called the "Contract") is made on the ----- day of the month of -----2013, between, on the one hand, the _____ (hereinafter called the "Client") and, on the other hand,----- (hereinafter called the "Consultants" which expression shall include their respective successors and permitted assigns).

WHEREAS

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

NOW THEREFORE the parties hereto hereby agree as follows:

- 1. The following documents attached hereto shall be deemed to form an integral part of this Contract:
 - (a) The General Conditions of Contract (hereinafter called "GC");
 - (b) The Special Conditions of contract (hereinafter called "SC");
 - (c) The following Appendices:

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

Appendix B: Consultants, Sub consultants, Key Personnel and Sub Professional Personnel, Task assignment, work programme, manning schedule, qualification requirements of key personnel, schedule for submission of various report.

Appendix C: Hours of work for Consultants, Personnel

Appendix D: Duties of the Client

Appendix E: Cost Estimate

Appendix F: Minutes of Financial/ Contract Negotiations with the Consultant

Appendix G: Copy of letter of invitation

Appendix H: Copy of letter of acceptance

Appendix I: Copy of Bank Guarantee for Performance Security

Appendix-J: Reply to Queries of the Applicants

2. The mutual rights and obligations of the Client and the Consultants shall be as set forth in the Contract; in particular:
 - (a) The Consultants shall carry out the Services in accordance with the provisions of the Contract; and
 - (b) Client shall make payments to the Consultants in accordance with the provisions of the Contract.

IN WITNESS 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
(State PWD)

Witness

By
Authorised Representative

1. Signature
Name
Address

2. Signature
Name
Address

FOR AND ON BEHALF OF
(Consultant)

Witness

By
Authorised Representative

1. Signature
Name
Address

2. Signature
Name
Address

GENERAL CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

1. GENERAL PROVISIONS

1.1 Definitions

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

- (a) "Applicable Law" means the laws and any other instruments having the force of law in the Government's country 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 State Government
- (g) "local currency" means the currency of the Government;
- (h) "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;
- (i) "Personnel" means persons hired by the Consultants or by any Subconsultant 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 India; and "local Personnel" means such persons who at the time of being so hired had their domicile inside India;
- (j) "Party" means the Client or the Consultants, as the case may be, and Parties means both of them;
- (k) "Services" means the work to be performed by the Consultants pursuant to this Contract for the purposes of the Project, as described in Appendix A hereto;
- (l) "SC" means the Special Conditions of Contract by which these General Conditions of Contract may be amended or supplemented;
- (m) "Subconsultant" means any entity to which the Consultants subcontract any part of the Services in accordance with the provisions of Clause GC 3.7; and
- (n) "Third Party" means any person or entity other than the Government, the Client, the Consultants or a Subconsultant.

1.2 Relation between the Parties

Nothing contained herein shall be construed as establishing a relation of master and servant or of agent and principal as between the Client and the Consultants. The Consultants, subject to this Contract, have complete charge of Personnel performing the

Services and shall be fully responsible for the Services performed by them or on their behalf hereunder.

1.3 **Law Governing the 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 **Heading**

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, telex, 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.

1.6.3A 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 **Letter of Acceptance** to and, where the location of a particular task is not so specified, at such locations, whether in India or elsewhere, as the Client may approve.

1.8 **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 shall pay all such taxes, duties, fees and other impositions as may be levied under the Applicable Law.

2. **COMMENCEMENT, COMPLETION, MODIFICATION AND TERMINATION OF CONTRACT**

2.1 **Effectiveness of Contract**

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

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

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

2.3 **Commencement of Services**

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

2.4 **Expiration of Contract**

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

2.5 **Entire Agreement**

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

2.6 **Modification**

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

2.7 **Force Majeure**

2.7.1 **Definition**

- (a) For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party, and which makes a Party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.
- (b) Force Majeure shall not include (i) any event which is caused by the negligence or intentional action of a Party or such Party's Subconsultants or agents or employees, nor (ii) any event which a diligent Party could reasonably have been expected to both (A) take into account at the time of the conclusion of this

Contract and (B) avoid or overcome in the carrying out of its obligations hereunder.

- (c) Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

2.7.2 No Breach of Contract

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

2.7.3 Measures to be Taken

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

2.7.4 Extension of Time

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

2.7.5 Payments

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

2.7.6 Consultation

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

2.8 Suspension

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

2.9 Termination

2.9.1 By the Client

The Client may, by not less than thirty (30) days' written notice of termination to the Consultants (except in the event listed in paragraph (f) below, for which there shall be a written notice of not less than sixty (60) days), such notice to be given after the

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

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 2.9.2, terminate this Contract:

- (a) if the Client fails to pay any money due to the Consultants pursuant to this Contract and not subject to dispute pursuant to Clause 9 hereof within forty-five (45) days after receiving written notice from the Consultants that such payment is overdue;
- (b) if the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Consultants may have subsequently approved in writing) following the receipt by the Client of the Consultants' notice specifying such breach;
- (c) if, as the result of Force Majeure, the Consultant are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or
- (d) if the Client fails to comply with any final decision reached as a result of arbitration pursuant to Clause 8 hereof.

2.9.3 Cessation of Rights and Obligations

Upon termination of this Contract pursuant to Clauses 2.2 or 2.9 hereof, or upon expiration of this Contract pursuant to Clause 2.4 hereof, all rights and obligations of the Parties hereunder shall cease, except (i) such rights and obligations as may have accrued on the date of termination or expiration, (ii) the obligation of confidentiality set forth in Clause 3.3 hereof, (iii) the Consultant's obligation to permit inspection, copying and auditing of their accounts and records set forth in Clause 3.6 (ii) hereof, and (iv) any right which a Party may have under the Applicable Law.

2.9.4 Cessation of Services

Upon termination of this Contract by notice of either Party to the other pursuant to Clauses 2.9.1 or 2.9.2 hereof, the Consultants shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Services to a close in a prompt and

orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum. With respect to documents prepared by the Consultants and equipment and materials furnished by the Client, the Consultants shall proceed as provided, respectively, by Clauses 3.9 or 3.10 hereof.

2.9.5 Payment upon Termination

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

- (i) remuneration pursuant to Clause 6 hereof for Services satisfactorily performed prior to the effective date of termination.
- (ii) reimbursable expenditures pursuant to Clause 6 hereof for expenditures actually incurred prior to the effective date of termination; and
- (iii) except in the case of termination pursuant to paragraphs (a) through (d) of Clause 2.9.1 hereof, reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract including the cost of the return travel of the Consultants' personnel and their eligible dependents.

2.9.6 Disputes about Events of Termination

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

3. OBLIGATIONS 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, as well as the Personnel and agents of the Consultants and any Sub consultants, 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 6 hereof shall constitute the Consultants' sole remuneration in connection with this Contract or the Services and 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, as well as the Personnel and agents of either of them, similarly shall not receive any such additional remuneration.

3.2.2 Consultants and Affiliates not to be otherwise interested in Project

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

3.2.3 Prohibition of Conflicting Activities

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

- (a) during the term of this Contract, any business or professional activities in the Government's country which would conflict with the activities assigned to them under this Contract; or
- (b) after the termination of this Contract, such other activities as 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 relation 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 Special Conditions (SC), and (ii) at the Client's request, shall provide evidence to the Client showing that such insurance has been taken out and maintained and that the current premiums therefor 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 the bases of the Consultants' costs and charges), and (ii) shall permit the Client or its designated representative periodically, and up to one year from the expiration or termination of this Contract, to inspect the same and make copies thereof as well as to have them audited by auditors appointed by the Client.

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 B;

- (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;
- (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 A/E** hereto, in the form, in the numbers and within the time periods set forth in the said Appendix.

3.9 **Documents prepared by the Consultants to be the Property of the Client**

All plans, drawings, specifications, designs, reports and other documents prepared by the Consultants in performing the Services shall become and remain the property of the Client, and the Consultants shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Client, together with a detailed inventory thereof. The Consultants may retain a copy of such documents. Restrictions about the future use of these documents, shall be as specified in 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 in an amount equal to their full replacement value.

4. **CONSULTANTS' PERSONNEL**

4.1 **General**

The Consultants shall employ and provide such qualified and experienced Personnel 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 Professional / Sub Professional Personnel are described in Appendix B.
- (b) If required to comply with the provisions of Clause 3.1.1 of this Contract, adjustments with respect to the estimated periods of engagement of Key Professional / Sub Professional Personnel set forth in Appendix B 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 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 B may be increased by agreement in writing between the Client and the Consultants, provided that any such increase shall not, except as otherwise agreed,

cause payments under this Contract to exceed the ceilings set forth in Clause 6.1 (b) of this Contract.

4.3 **Approval of Personnel**

The Key Personnel and Sub consultants listed by title as well as by name in Appendix B 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. If the Client does not object in writing (stating the reasons for the objection) within twenty-one (21) calendar days from the date of receipt of such biographical data, 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 Professional / Sub Professional Personnel are set forth in Appendix C 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 C hereto.
- (b) The Key Professional / Sub Professional Personnel shall not be entitled to be paid for overtime nor to take paid sick leave or vacation leave except as specified in Appendix C 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 B. Any taking of leave by Personnel shall be subject to the prior approval of the Client by the Consultants, who 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**

- (a) During an assignment, if substitution is inevitable, the consultants shall forthwith provide as a replacement a person of equivalent or better qualification and experience which would be judged on the basis of evaluation criteria specified in the Data Sheet of Letter of Invitation.
- (b) 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.
- (c) For the reason other than death/ extreme medical ground (i) for replacements upto 33% of key personnel, remuneration shall be reduced by 5% (ii) for replacements between 33% to 50%, remuneration shall be reduced by 10% (iii) for replacements between 50% to 66%, remuneration shall be reduced by 15% (iii) for replacements beyond 66% of the total key personnel, the Client may initiate action for debarment of such consultant for future projects of State PWD/MORTH (d) for a period of 6 months to 24 months.
- (e) If the team leader or any other key personnel/ specialist considered pivotal to the project is replaced, the substitute may be interviewed by State PWD/ MoRTH to assess their merit and suitability.
- (f) If any member of the approved team of a consultant engaged by State PWD/MORTH leaves that consultant before completion of the job, he should 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 State PWD/MORTH projects.

(g) Deleted

4.6 **Resident Project Manager**

If required by the SC, the Consultants shall ensure that at all times during the Consultants' performance of the Services in the Government's country a resident project manager, acceptable to the Client, shall take charge of the performance of such Services.

(a) OBLIGATION OF THE CLIENT

5.1 Assistance and Exemptions

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

- (a) provide the Consultants, Sub consultants and Personnel with work permits and such other documents as shall be necessary to enable the Consultants, Sub consultants or Personnel to perform the Services;
- (b) assist for the Personnel and, if appropriate, their eligible dependents to be provided promptly with all supporting papers for necessary entry and exit visas, residence permits, exchange permits and any other documents required for their stay in India;
- (c) facilitate prompt clearance through customs of any property required for the Services;
- (d) issue to officials, agents and representatives of the Government all such instructions as may be necessary or appropriate for the prompt and effective implementation of the Services;

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

5.5 **Payment**

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

(b)PAYMENT TO THE CONSULTANTS

6.1 Cost Estimates ; Ceiling Amount

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

6.2 Currency of Payment

- (a) The payment shall be made in Indian Rupees.

6.3 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 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) in such form as the Client shall have approved in writing.**

(b) Payment Schedule

The Consultant will be paid stage-wise as a percentage of the contract value as per the schedule given below:

S. No.	Description	Payment
1	On submission of Inception Report	10%
2	On Submission of draft feasibility report including strip plan and utility relocation plan.	20%
3	On Submission of Draft Detailed Project Report, Bidding Documents and land acquisition report	25%
4	On submission of all required project clearances from the concerned agencies	25%
5	On approval of Final Detailed Project Report and Bidding Documents	20%
	Total	100%

Note: Consultants have to provide a certificate that all the key personnel as envisaged in the Contract Agreement have been actually deployed in the projects. They have to furnish the certificate at the time of submission of their bills to State PWD/RO's MORTH from time to time.

The payment shall be released by **RO Chandigarh, MoRT&H** in INR.

- (c) No payment shall become eligible for the next stage till the consultant completes to the satisfaction of the client the work pertaining to the preceding stage. The payment for the work of sub-soil investigation (Boring) will be as per plan approved by the client and will be paid as per actual at the rates quoted by the consultants. The payment for the quantity given by the client for boring will be deemed to be included in the above mentioned payment schedule. Any adjustment in the payment to the consultants will be made in the final payment only.
- (d) The Client shall cause the payment of the Consultants in Para 6.4 (b) above as given in schedule of payment within thirty (30) days after the receipt by the Client of bills. Interests at the rate specified in the SC shall become payable as from the above due date on any amount due by, but not paid on, such due date.
- (e) The final payment under this Clause shall be made only after the final report and a final statement, identified as such, shall have been submitted by the Consultants and approved as satisfactory by the Client. The Services shall be deemed completed and finally accepted by the Client and the final report and final statement shall be deemed approved by the Client as satisfactory ninety (90) calendar days after receipt of the final report and final statement by the Client unless the Client, within such ninety (90) day period, gives written notice to the Consultants specifying in detail deficiencies in the Services, the final report or final statement. The Consultants shall thereupon promptly make any necessary corrections, and upon completion of such corrections, the foregoing process shall be repeated. Any amount which the Client has paid or caused to be paid in accordance with this Clause in excess of the amounts actually payable in accordance with the provisions of this Contract shall be reimbursed by the Consultants to the Client within thirty (30) days after receipt by the Consultants of notice thereof. Any such claim by the Client for reimbursement must be made within twelve (12) calendar months after receipt by the Client of a final report and a final statement approved by the Client in accordance with the above.
- (f) All payments under this Contract shall be made to the account of the Consultants specified in the SC.

7. Responsibility for Accuracy of Project Documents

7.1 General

- 7.1.1 The Consultant shall be responsible for accuracy of the data collected, by him directly or procured from other agencies/authorities, the designs, drawings, estimates and all other details prepared by him as part of these services. He shall indemnify the Authority against any inaccuracy in the work which might surface during implementation of the project. The Consultant will also be responsible for correcting, at his own cost and risk, the drawings including any re-survey / investigations and correcting layout etc. if required during the execution of the Services.
- 7.1.2 The Consultant shall be fully responsible for the accuracy of design and drawings of the bridges and structures. All the designs and drawings for bridges and structures including all their

components shall be fully checked by a Senior Engineer after completion of the designs. All drawings for bridges and structures shall be duly signed by the (a) Designer, (b) Senior Checking Engineer, and (c) Senior Bridge / Structure Expert. The designs and drawings not signed by the three persons mentioned above shall not be accepted. The Consultant shall indemnify the Client against any inaccuracy / deficiency in the designs and drawings of the bridges and structures noticed during the construction and even thereafter and the Client shall bear no responsibility for the accuracy of the designs and drawings submitted by the Consultants.

7.1.3 The survey control points established by the Consultant shall be protected by the Consultants till the completion of the Consultancy Services.

7.2 Retention Money

An amount equivalent to 5% of the contract value shall be retained at the end of the contract for accuracy of design and quantities submitted and the same will be released after the completion of civil contract works

7.3 Penalty

7.3.1 Penalty for Error/Variation

If variation in any of the main quantities of work like earth work including sub grade, GSB, WMM, Bituminous works (BM/DBM/AC/BC), drains, total concrete quantities and reinforcing steel in bridge works or overall project cost, found during execution is more than +/- 15%, the penalty equivalent to 5% of the contract value shall be imposed. For this purpose retention money equivalent to 5% of the contract value will be forfeited. This shall exclude any additional/deletion of items/works ordered during the execution.

7.3.2 Penalty for delay

In case of delay in completion of services, a penalty equal to 0.05% of the contract price per day subject to a maximum 5% of the contract value will be imposed and shall be recovered from payments due/performance security. However in case of delay due to reasons beyond the control of the consultant, suitable extension of time will be granted.

7.4 ACTION FOR DEFICIENCY IN SERVICES

7.4.1 Consultants liability towards the Client

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

7.4.2 Warning / Debarring

In addition to the penalty as mentioned in para 7.3, warning may be issued to the erring consultants for minor deficiencies. In the case of major deficiencies in the Detailed Project Report involving time and cost overrun and adverse effect on reputation of State PWD/MORTH, other penal action including debarring for certain period may also be initiated as per policy of State PWD/MORTH.

8. FAIRNESS AND GOOD FAITH

8.1 Good Faith

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

8.2 Operation of the Contract

The Parties recognize that it is impractical in this Contract to provide for every contingency which may arise during the life of the Contract, and the Parties hereby agree that it is their intention that this Contract shall operate fairly as between them, and

without detriment to the interest of either of them, and that, if during the term of this Contract either Party believes that this Contract is operating unfairly, the Parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with Clause 9 hereof.

9. SETTLEMENT OF DISPUTES

9.1 Amicable Settlement

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

9.2 Dispute Settlement

Any dispute between the Parties as to matters arising pursuant to this Contract which cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement may be submitted by either Party for settlement in accordance with the provisions specified in the SC.

SPECIAL CONDITIONS OF CONTRACT

Number of GC Clause

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

1. 1(a) The words "in the Government's country" are amended to read "in INDIA"

1.4 The language is: **English**

1.6.1 The addresses are:

**For the Client : Chief Engineer,
PW(R&B)Deptt Jammu
LokNirmanBhavan, Rail Head Complex, Jammu (J&K)
Pin-18004**

**Attention : Executive Engineer
PWD(R&B) Division, Basohli
Pin-184101**

For the Consultants:

Attention:

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 Entity to Act as Member in charge (In case of Joint Venture of Consultants):

- Not Applicable-

1.9 The Authorized Representatives are:

**For the Client : Chief Engineer
PW(R&B)Deptt Jammu
LokNirmanBhavan, Rail Head Complex Jammu
Pin-18004 (J&K)For
the Consultant:**

1.10 The Consultants and their personnel shall pay all taxes(including GST), custom duties, fees, levies and other impositions levied under the laws prevailing seven days before the last date of submission of the bids. The effects of any increase / decrease of any type of taxes levied by the Government shall be borne by the Client / Consultant, as appropriate. The Consultant will remit GST monthly or as applicable under the law and seek reimbursement from MORTH

2.1 **The effectiveness conditions are the following:**

- a) The contract has been approved by the State PWD/ MORTH.
- b) The consultant will furnish with in 15 days of the issue of Letter of Acceptance, an unconditional Bank Guarantee from the Bank(Generally, by SBI or its subsidiaries or any Indian nationalized bank or IDBI or ICICI or ICICI Bank or by a foreign bank through a correspondent bank in India) for an amount equivalent to **10 %** of the total contract value to be received by him towards Performance Security valid for a period of **three years** beyond the date of completion of services. The Bank Guarantee will be released by State PWD/MORTH upon expiry of three years beyond the date of completion of services provided, rectification of errors, if any, found during implementation of the contract of civil works and satisfactory report by State PWD/ MoRTH in this regard is issued.

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

2.3 The time period shall be δ fifteen days δ or such other time period as the parties may agree in writing.

2.4 The time period shall **12 months** be or such other time period as the parties may agree in writing.

3.4 Limitations of the Consultant's Liability towards the Client

- a) Except in case of negligence or willful misconduct on the part of the Consultants or on the part of any person or firm acting on behalf of the Consultants in carrying out the Services, the Consultants, with respect to

the damage caused by the Consultants to the Client's property, shall not be liable to the Client

- (i) for any indirect or consequential loss or damage; and,
- (ii) for any direct loss or damage that exceeds; (A) the total payments for Professional Fees and Reimbursable 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.

- b) The Limitation of liability shall not affect the Consultants' liability, if any, for damage to Third Parties caused by the Consultants or any person or firm acting on behalf of the Consultants in carrying out the Services.

3.5 The risks and the coverages shall be as follows:

- (a) Third Party motor vehicle liability insurance as required under Motor Vehicles Act, 1988 in respect of motor vehicles operated in India by the Consultants or their Personnel or any Sub consultants or their Personnel for the period of consultancy.
- (b) Third Party liability insurance with a minimum coverage, for Rs. 1.00 million for the period of consultancy.
- (c) (i) The Consultant shall provide to State PWD/MORTH Professional Liability Insurance (PLI) for a period of five years beyond completion of Consultancy services or as per Applicable Law, whichever is higher.
 - (ii) The Consultant will maintain at its expense PLI including coverage for errors and omissions caused by Consultant's negligence in the performance of its duties under this agreement, (A) For the amount not exceeding total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder OR (B) the proceeds, the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of (A) or (B) is higher.
 - iii) The policy should be issued only from an Insurance Company operating in India.
 - iv) The policy must clearly indicate the limit of indemnity in terms of "Any One Accident" (AOA) and "Aggregate limit on the policy" (AOP) and in no case should be for an amount less than stated in the contract.
 - v) If the Consultant enters into an agreement with State PWD/MORTH in a joint venture or "in association" the policy must be procured and provided to State PWD/MORTH by the joint venture/in association entity and not by the individual partners of the joint venture/ association.
 - vi) The contract may include a provision whereby the Consultant does not cancel the policy midterm without the consent of State PWD/ MORTH. The insurance company may provide an undertaking in this regard.
- (d) Employer's liability and workers' compensation insurance in respect of the Personnel of the Consultants and of any Sub consultant, in accordance with the relevant provisions of the Applicable Law, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate; and all insurances and policies should start from the date of commencement of services and remain effective as per relevant requirements of contract agreement.

- 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 B shall serve in that capacity, as specified in Clause 4.6.
- 6.1 (b) The ceiling amount in local currency is **Rs..... Excluding GST**
- 6.3 (a) No advance payment will be made.
- 6.3 (e) The interest rate is: @ 12% per annum 6.3
- (f) **The account is:**
(Bank A/C Details)
- 9.2 Disputes shall be settled by arbitration in accordance with the following provisions:

9.2.1 Selection of Arbitrators

Each dispute submitted by a Party to arbitration shall be heard by a sole arbitrator or an arbitration panel composed of three arbitrators, in accordance with the following provisions:

- (a) Where the Parties agree that the dispute concerns a technical matter, they may agree to appoint a sole arbitrator or, failing agreement on the identity of such sole arbitrator within thirty (30) days after receipt by the other Party of the proposal of a name for such an appointment by the Party who initiated the proceedings, either Party may apply to the President, Indian Roads Congress, New Delhi, for a list of not fewer than five nominees and, on receipt of such list, the Parties shall alternately strike names therefrom, and the last remaining nominee on the list shall be the 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.
- (b) Where the Parties do not agree that the dispute concerns a technical matter, the Client and the Consultants shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration panel. If the arbitrators named by the Parties do not succeed in appointing a third arbitrator within thirty (30) days after the later of the two arbitrators named by the Parties has been appointed, the third arbitrator shall, at the request of either Party, be appointed by Secretary, the Indian Council of Arbitration, New Delhi.
- (c) If, in a dispute subject to Clause SC 9.2.1 (b), one Party fails to appoint its arbitrator within thirty (30) days after the other Party has appointed its arbitrator, the Party which has named an arbitrator may apply to the Secretary, Indian Council of Arbitration, New Delhi, to appoint a sole arbitrator for the matter in dispute, and the arbitrator appointed pursuant to such application shall be the sole arbitrator for that dispute.

9.2.2 Rules of Procedure

Arbitration proceedings shall be conducted in accordance with procedure of the Arbitration & Conciliation Act 1996, of India unless the Consultant is a foreign national/firm, where arbitration proceedings shall be conducted in accordance with the rules of procedure for arbitration of the United Nations Commission on International Trade Law (UNCITRAL) as in force on the date of this Contract.

9.2.3 Substitute Arbitrators

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

9.2.4 Qualifications of Arbitrators

The sole arbitrator or the third arbitrator appointed pursuant to paragraphs (a) through (c) of Clause 9.2.1 hereof shall be an internationally recognized legal or technical expert with extensive experience in relation to the matter in dispute.

9.2.5 Miscellaneous

In any arbitration proceeding hereunder:

- (a) Proceedings shall, unless otherwise agreed by the Parties, be held in CHANDIGARH.
- (b) the English language shall be the official language for all purposes; and [Note: English language may be changed to any other Language, with the agreement of both the Parties.]
- (c) the decision of the sole arbitrator or of a majority of the arbitrators (or of the third arbitrator if there is no such majority) 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.
- (d) The maximum amount payable per Arbitrator in Arbitration clauses shall be as under

S.No	Particulars	Maximum amount payable per Arbitrator/ per case
1	Arbitrator fee	Rs 8,000/- per day subject to a maximum of Rs 2 lacs or Rs 1.5 lacs (lump sum) subject to publishing the award within 12 months.
2	Reading charges	Rs 6,000/-
3	Secretarial Assistance	Rs 5,000/-
4	Incidental charges (telephone, fax, postage etc)	Rs 6,000/-
5	Charges for publishing/ declaration of the award	Maximum of Rs 10,000/-
6	Other expenses (actual against bills subject to the prescribed ceiling)	Maximum ceiling
	Traveling expenses	Economy class (by air), First class AC (by train) and AC Car (by road)

	Lodging and Boarding	<ul style="list-style-type: none"> a) Rs 10,000/- per day (in metro cities) b) Rs 5,000/- per day (in other cities) c) Rs 2,000/- per day if any Arbitrator makes their own arrangements.
7	Local travel	Rs 10,000/- per day
8	Extra charges for days other than hearing/ meeting days (maximum for 2 days)	Rs 2,500/- per day

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 MORTH before appointment of the Arbitrator,

Appendix A

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

Appendix B

ConsultantsøSub consultants, Key Personnel and Sub Professional Personnel

Appendix C

Hours of work for Consultantsø Personnel

Appendix D

Duties of the Client

Appendix E

Cost Estimate

Appendix F

Minutes of Financial/ Contract Negotiations with the Consultant

Appendix G: Copy of letter of invitation

Appendix H: Copy of letter of acceptance

notwithstanding any security or other guarantee that the Client may have in relation to the Consultant's liabilities.

We, _____ (indicate the name of the bank) also undertake not to revoke this Guarantee during its currency except with previous consent of Client in writing.

(Signature of the Authorised Official)

(Name & Designation with Bank Stamp)

NOTE:

- (i) The bank guarantee(s) contains the name, designation and code number of the officer(s) signing the guarantee(s).*
- (ii) The address, telephone no. and other details of the Head Office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing Branch.*
- (iii) The bank guarantee for Rs. 10,000 and above is signed by at least two officials (or as per the norms prescribed by the RBI in this regard).*

Appendix J : Reply to Queries of the Applicant