

GOVERNMENT OF PUNJAB

PWD CENTRAL WORKS DIVISION,SANGRUR AT PATIALA(PUNJAB)

Notice Inviting Proposal from Ministry's empanelled consultant Category-1(B)

Technical Consultant for Consultancy Services for preparation of Feasibility Study and Detailed Project Report for the work of

1	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab.	: Approx length 40.56 Kms.
	Total:	: Approx 40.56 Kms.

on BOT/EPC/ Hybrid Annuity Mode

REQUEST FOR PROPOSAL

(RFP)

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GOVERNMENT OF PUNJAB
PWD CENTRAL WORKS DIVISION, SANGRUR AT PATIALA (PUNJAB)
Notice Re- inviting Proposal from Ministry's empanelled consultant category-1(B).

MORT&H intends to take up the Technical Consultant for preparation of Feasibility Study and Detailed Project Report For the Following Roads in the State of Punjab on BOT/EPC/Hybrid Annuity Mode in the State of Punjab

1	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab.	: Approx length 40.56 Kms.
	Total:	: Approx 40.56 Kms.

The details of the roads are as follows:

S.No:	State.	Stretch.	Approx. Length (Kms)	Package	Period of Assignment.
1.	Punjab.	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab	40.56		2 Months for feasibility study and 1 month for obtaining project related clearances total 3 months
		Total	40.56		

2. Proposals are hereby invited from Consultants empanelled under category 1(B) by Ministry of Road Transport & Highways for preparation of Feasibility Study and Detailed Project Report for the following roads in the State of Punjab on BOT/EPC/HYBRID ANNUITY Mode is available on line on e-tender portal of MORT&H <https://morth.eproc.in> from **01.08.2016 at 11:00 hrs to 16.08.2016 upto 1600.00 Hrs. IST :-**

1	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab.	: Approx length 40.56 Kms.
	Total:	: Approx 40.56 Kms.

- 3 The fee for the document amounting to Rs.10,000/- (Rupees Ten Thousand only) in the form of Demand Draft favouring Pay & Accounts Officer, MORT&H" and payable at Chandigarh/ Executive Engineer, Central Works Division, PWD,B&R Branch, Sangrur at Patiala (Punjab) and payable at Patiala must be furnished a separate envelop while submitting the proposal.
4. The RFP have also been uploaded on "INFRACON" (www.infracon.nic.in). As such before submitting the proposal the Consultant shall mandatorily register and enlist themselves (the firm and all key personnel), on the MoRTH portal "INFRACON" and furnish registration details along with its RFP.
5. 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.

6. Bid must be submitted online at e-tender portal of MORT&H <https://morth.eproc.in> on or before **16.08.2016 (upto16:00hrs IST)**

Executive Engineer,
Central Works Division,
Pb.PWD,B&R Branch,
Sangrur at Patiala.

Letter of Invitation (LOI)

NIT No.

Dt:

To,

The Category-IB Consultants empanelled by Ministry (As per list Available on Ministry's website)

Sub: Invitation of Proposals for Consultancy Services for Feasibility Study and Detailed Project Report for the Following Roads in the State of Punjab on BOT/EPC/HYBRID ANNUITY Mode in the State of Punjab.

1	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab.	: Approx length 40.56 Kms.
	Total:	: Approx 40.56 Kms.

Introduction

- 1.1** The President of India acting through the Ministry of Road Transport & Highways(MORTH), Government of India, and represented by the Director General (Road Development) & Special Secretary is engaged in the development of National Highways and as part of this endeavor, the MORTH now invites proposal for carrying out feasibility study and detailed project **rehabilitation and up-gradation to 4 lane/ 6 Lane(as per Traffic studies) with paved shoulders configuration & strengthening of Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab. (Approx length 40.56 kms)**
- 1.2** A brief description of the assignment and its objectives are given in the enclosed **Terms of Reference**. As a policy, Government of India wants to redesign, rehabilitate and upgrade, the existing National Highways in the State of Punjab to at least two lane standards with enhanced safety standards to road users. The work would be taken up for up-gradation on corridor concept. Therefore, corridors include strengthening (in adjoining reaches) in addition to widening to 2 lane/4lane/ 6 lane(as per Traffic studies) with paved shoulder standards in order to have a better facility in a long continuous stretch. Wherever required the re-alignment of NH network shall be done by incorporating the provisions ,high level bridges etc.
- 1.3** You are hereby invited to submit proposals in the manner prescribed in the RFP. 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, MORTH local office, local State PWDs, BRO and 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 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.
- 1.8.2 In case a Joint Venture/Association of firms, the proposal shall be accompanied by a certified copy of legally binding Memorandum of Understanding (MOU), signed by all firms to the joint venture/Association confirming the following therein:
 i. Date and place of signing;
 ii. Purpose of Joint Venture/Association (must include the details of contract works for which the joint venture has been invited to bid)
 iii. A clear and definite description of the proposed administrative arrangements for the management and execution of the assignment.
 iv. Delineation of duties/ responsibilities and scope of work to be undertaken by each firm alongwith resources committed by each partner of the JV/Association for the proposed services;
 v. An undertaking that the firms are jointly and severally liable to the Employer for the performance of the services and,
 vi. The authorized representative of the joint venture/Association
- 1.8.3 In case of Joint venture, one of the firm which preferably has relatively higher experience, will act as the lead firm representing the Joint Venture. The duties, responsibilities and powers of such lead firm shall be specifically included in the MOU / agreement. It is expected that the lead partner would be authorized to incur liabilities and to receive instructions and payments for and on behalf of the Joint Venture. For a JV to be eligible for bidding, the experience of lead partner and other partner should be as indicated in data sheet.
- 1.8.4 A firm can bid for a project either as a sole consultant or in the form of joint venture with other consultant or in association with any other consultant. However, alternative proposals i.e. one as sole or in JV with other consultant and another in association / JV with any other consultant for the same package will be summarily rejected. In such cases, all the involved proposals shall be rejected.

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 **04.08.2016**. 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 hosting the clarifications on Ministry's website.

- 2.3 At any time before the submission of proposals, the Client may, for any reason, whether at its own initiative or in response to a clarification requested by a Consulting firm, modify the Documents by amendment. The amendment will be posted in the website and will be binding on the applicants. 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 separate covers:

- (i) Technical Proposal
- (ii) Financial Proposal

3.1 Deleted

3.2 Technical Proposal

3.2.1 Under the technical proposal, 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. Team Leader, Highway Engineer, Bridge Engineer, Geo-technical cum material engineer and Survey Engineer 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. **The age limit for key personnel is 70 years as on the date of bid submission except for survey engineer. The proof of age and qualification of the key personnel must be furnished in the technical proposal.***
- vi. **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 a period of two years for all projects of MORT&H.***

- 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 2 to 3 months after start of the civil work at site during the period of survey and review of DPR by the Supervision consultant. 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. Deleted.
 - 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. 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.**
 - 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 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.
 - iv. 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.
 - v. 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 200 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.

- vi. **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. These agencies would however, be subject to approval of the client to ensure quality input by such agencies during technical negotiation before award of the work. For out-sourced services, proposed firms/consultants should have such experience on similar projects.
- vii. Comments or suggestion on the TOR, if any.
The data obtained from the topographic surveys should be handed over to MORT&H/ Executive Engineer, Central Works Division, PWD, B&R Br, Sangrur at Patiala(Punjab) 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 MORT&H).
- viii. Self Evaluation by the consultant: The consultant shall carryout self evaluation based on the criteria mentioned in the bid document. While submitting the self evaluation, consultant shall make references to the documents which have been relied upon in his self-evaluation.

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, geo-technical investigations etc. This cost should be broken down into foreign and local costs. 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 Rupees in case of domestic Consultant and in Indian Rupees and US Dollars in case of foreign Consultant. The payments shall be made in Indian Rupees by the MORT&H and the Consultant themselves would be required to obtain foreign currency to the extent quoted and accepted by MORT&H. Rate for foreign exchange for payment shall be at the rate established by RBI applicable at the time of making each payment installment on items involving actual transaction in foreign currency. No compensation done to fluctuation of currency exchange rate shall be made.
- 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

- 4.1 ***The Applicants shall submit the Technical Proposal online as well as in hard bound form with all pages numbered serially along with index of submissions. The financial proposal is to be submitted online only.*** Applications submitted in other forms like spiral bound form; loose form etc shall be rejected. Copies of Applications shall not be submitted and considered. Submission in any other form shall not be acceptable. In the event, any of the instructions mentioned herein have not been adhered to the Employer may reject the proposal.

- 4.2 You must submit **original proposal** as indicated in the Data Sheet. The proposal will be sealed in an outer envelope which will bear the address and information indicated in the Data Sheet. The envelope must be clearly marked:

Consultancy Package No: Project Name

Do not open, except in presence of the evaluation committee

- 4.2.1 This outer envelope will contain two separate envelopes, one clearly marked '**Technical Proposal**' and the other clearly marked '**Financial Proposal**' .
- 4.2.2 The proposal must be prepared in indelible ink and must be signed by the authorized representative of the consultants. The letter of authorization must be confirmed by a written power of attorney accompanying the proposals. All pages of the technical and financial proposals must be initialled by the person or persons signing the proposal.
- 4.3 The proposal must contain no interlineations or overwriting except as necessary to correct errors made by the Consultants themselves, in which cases such corrections must be initialed by the person or persons signing the proposal.
- 4.4 Your completed Technical and Financial proposal must be delivered on or before the time and date stated in Data Sheet.
- 4.5 Your proposal must be valid for the number of days stated in the Data Sheet from the closing date of submission of proposal.

5 Proposal Evaluation

- 5.1 A two-stage procedure will be adopted in evaluating the proposal. In the first stage, the 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 second 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 Data Sheet. The award shall be made in such a manner which leads least cost to MORT&H.

5.2 Evaluation of 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 service tax which is separately reimbursable.
- 5.3.2 The evaluation committee will determine whether the financial proposals are complete and Consultant has quoted rates/amount against the each corresponding items given in Form III. In case, if the consultant have not quoted any rate for a item then their cost will be considered as NIL but the consultant shall however be required to carry out such obligations without any compensation as per quantities given in Form III. In case, if client feels that the work cannot be carried out within overall cost of financial proposal, the proposal can be rejected. Evaluation committee will carry out computational errors and correct price. In case, the consultant reduces the quantities of an item, the same shall be increased to match with quantity given in Form III and amount will be added to bring the proposal at par as per RFP. In case, the consultant increases the quantities of an item, the same shall be reduced to bring the proposal at par as per RFP and amount will be reduced to bring the proposal at par as per RFP. The Evaluation Committee will carry out financial evaluation accordingly for the purpose of evaluation and subsequent award of work. Therefore Consultants are advised not to modify the quantities while

submitting financial proposal and rates shall be quoted strictly as per Form III. 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)

- 5.3.3 For a package for which 3 or more Financial Proposals are opened, Average of all the opened Financial Proposals for each package shall be determined. A Financial Proposal for a particular package shall be considered "reasonable" if its variation from the average is within (+) /(-) 20% of the average. Only bidders with a "Reasonable Financial Proposal" shall be considered for determining the "most preferred bidder(H-1 bidder)" based on QCBS(80% weightage on Technical Proposal and 20% weightage on Financial Proposal).

For the sake of clarity it is mentioned that if for a particular package (say package-A), Financial Proposal of 5 consultants are opened and suppose the values of Financial Proposal quoted by 5 consultants are as follows- Consultat X-1 quotes Rs 200 Lakhs, Consultat X-2 quotes Rs 120 Lakhs, Consultat X-3 quotes Rs.180 Lakhs, Consultat X-4 quotes Rs 190 Lakhs and Consultat X-5 quotes Rs. 250 Lakhs. Average Quote = (Rs 200+120+180+190+250)/5=Rs 188Lakhs. So all quotes lying within (+)/(-)20% of Rs 188 Lakhs i.e quotes which lies in the range of Rs 225.60 Lakhs to Rs 150.4 Lakhs shall be considered as "Reasonable financial proposal". So out of 5 firms whose financial proposal were opened , Financial Proposal submitted by only 3 firms namely X-1 (Financial Quote of Rs 200 Lakhs) , X-3(Financial Quote of Rs 180 Lakhs and X-4 (Financial Quote of Rs 190 Lakhs) shall be considered as "Reasonable Financial Proposal" and they shall only be considered for determining the "most preferred bidder (H-1 bidder)"for that particular package. Financial Proposal submitted by X-2 (Financial quote of Rs 120 Lakhs) and X-5 (Financial quote of Rs 250 Lakhs) shall not be considered further.

- 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 i.e. the lowest bidder 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 total replacement upto 33% of key personnel, remuneration shall be reduced by 5% (ii) for total replacement between 33% to 50%, remuneration shall be reduced by 10% (iii) for total replacement beyond 50% of the total key personnel, the Client may initiate action for termination/debarment of such consultant for future projects of MORT&H 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 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 7 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 the MORT&H upon expiry of three 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 the MORT&H 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 General Conditions of Contract.

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 lowest perceived bidder 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: **email :**

eecwd2sanatptlpwdpb@gmail.com

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

Thanking you,

Yours sincerely

()

Ministry of Road Transport & Highways.

Detail of the stretch proposed for DPR

S.No:	State.	Stretch.	Approx. Length (Kms)	Package	Period of Assignment.
1.	Punjab.	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab	40.56		2 Months for feasibility study and 1 month for obtaining project related clearances total 3 months
		Total	40.56		

DATA SHEET

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

1. **The Name of the Assignment is preparation of Feasibility study & detailed project report (DPR) for rehabilitation and up-gradation to 4 lane/6 lane(as per traffic studies) with paved shoulders configuration & strengthening of National Highway National Highway\NH**
(A) Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab Approx.length 40.56 Kms.)

-

(Name of Projects/Packages are mentioned at **Annexure-I.** (Ref. Para 1.1)

2. **The Name of the Client is:** Director General(RD) & SS
Ministry of Road Transport & Highways,
Transport Bhawan,
1, Parliament Street,
New Delhi-110001.
3. The Description of the Project: Consultancy Services for preparation of Feasibility Study and Detailed Project Report for the following Road in the State of Punjab on BOT/EPC/ Hybrid Annuity Mode
(A) Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab (Approx.length 40.56 Kms.)

4. **Date and Time of Pre-Proposal Conference**
Date: 05.08.2016 at 1100 Hrs IST
Venue: Executive Engineer, Central Works Division, Pb. PWD B&R Branch, Nabha Raod (Near Harpal Tiwana Kala kender), Patiala (Ref. Para2.2)

5. **The Documents are:**
 - i. Appendix-I: Terms of Reference (TOR)
 - ii. Appendix-II: Formats for Technical Proposal
 - iii. Appendix-III: Formats for Financial Proposal
 - iv. Appendix -IV Draft Contract Agreement (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 service tax), custom duties, fees, levies and other impositions levied under the laws prevailing seven days before the last date of submission of the bids. The effects of any increase / decrease of any type of taxes levied by the Government shall be borne by the Client / Consultant, as appropriate.
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 :

1. For any indirect or consequential loss or damage; and, 13

2. 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 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 risk and coverage shall be as follows:
 - a) Third Party Motor Vehicle Liability Insurance as required under extant Motor Vehicles Act 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. 1.0 Million for the period of Consultancy.
 - c) (i) The consultant shall provide to Executive Engineer, Central Works Division, PWD,B&R Branch, Sangrur at Patiala (Punjab) Professional Liability Insurance **(PLI) for a period of 5 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 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 state in the contract.**
 - v) **If the Consultant enters into an agreement with PUNJAB PWD NH/MORT&H in a joint venture or in association with, the policy must be procured and provided to PUNJAB PWD NH/MORT&H by the joint venture / in association entity and not by the individual partners of the joint venture/ association.**

The contract may include a provision whereby the Consultant does not cancel the policy midterm without the consent PUNJAB **PWD NH/MORT&H**. 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.

It may please be noted that all insurances and policies should start from the date of commencement of services and remain effective as per relevant requirements of Contract Agreement.

8. **The number of copies of the proposal required to be submitted:** 1 no. (ref. para 4.1) 14
9. The address is --- (Ref. para 4.2) **Executive Engineer, Central Works Division, PWD, B&R Branch, Sangrur at Patiala.**

The envelopes must be clearly marked:

- i. ORIGINAL PROPOSAL;
 - ii. DOCUMENTS IN TECHNICAL PROPOSAL or FINANCIAL PROPOSAL as Appropriate; and,
 - iii. DO NOT OPEN, EXCEPT IN PRESENCE OF THE EVALUATION COMMITTEE on the outer envelope.
- (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	
<i>Mobile LiDAR Technology equipped with minimum engineering grade system or any other equivalent technology having output accuracy at least as per IRC SP 19</i>	<i>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</i>
Total station and GPS/DGPS	<i>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</i>
4. Office equipment	
Computer	
Plotter	
5. Software	
MX/ MOSS or equivalent	
AutoCAD	
STAD or equivalent	

(v) Additional essential equipment

1. 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 MORT&H
2. 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

v. Group No.:-----

vi. Consultancy Package No.:-----

vii. Project Name:-----

viii. Name and Address of Consultant

10. The date and time of proposal submission are: (Ref. Para 4.4)
(up to 16:00hrsIST)

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

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

12.1 Deleted

12.2 Second stage technical evaluation(Indicative) (Refer Para 5.1 and 5.2)

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 weight age 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 12.2.2
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 (2009 onwards)**
- | | Points |
|---|--------|
| (a) Specific experience of the DPR consultancy related to the Assignment for eligibility (3 marks per assignment) | 15 |
| (b) DPR of Bridge having length more than 100 m (1 marks per assignment) | 5 |
| Total | 20 |
- (ii) Adequacy of the proposed work plan and methodology in responding to the TOR
- Sub criteria:
- | | |
|--|---|
| (a) Understanding TOR (comments/Suggestion on TOR) | 2 |
| (b) Quality of approach methodology | 2 |
| (c) Work Programme and Manning Schedule | 1 |
| Total | 5 |
- (iii) Modern Survey and investigation equipment **including mobile LiDAAR technology or any other equivalent technology** and software proposed to be used 15

Sr. No.	Description	Points
1.	Availability of Modern Survey & Investigation equipment (Mobile Lidar technology or any other equivalent Technology & Software proposed to be used (owned/hired))	5
2.	Availability of DGPS & Total Station (Owned)	5
3.	Availability of Software for processing & Drawing (Owned)	5
	Total	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
1	Team Leader –cum-Sr. Highway Engineer	25
2.	Bridge Engineer	10
3	Highway Engineer -cum-Pavement Specialist	15
4	Traffic Engineer	10
5	Material-cum-Geo-technical Engineer	10
6	Senior Survey Engineer(preferably with experience in LiDAR technology or any other equivalent technology)	10
7	Quantity Surveyor/Documentation Expert	10
8	Environment Specialist	10
	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..... 40
(b) Experience relevant to particular assignment as mentioned in TOR..... 30

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.

NOTE: Sub-criteria for qualification of key personnel is as mentioned below: Each Key Personnel will be initially evaluated for 100 marks and final marks of each key personnel will be calculated as per the weight age given in Table (C) above.

Sl.No	Key Personnel	Educational Qualification	Professional Experience	Adequacy Assignment	for the	Total
1	Senior Highway Engineer cum Team Leader	Post Graduate in Highway, Traffic & Transportation, /Highway Safety/Geo Tech & SMFE Engineering- 10 Marks Graduate in Civil Engg.- 7	More than 22 year – 10 Marks Between 20 to 22 years – 8 marks	(i)Experience in specific position in similar project- 15 marks /assignment, maximum 40 marks	(ii)Experience relevant to particular assignment/ similar project not included in (i)- 10 marks /assignment , maximum 40 marks	100
2.	Bridge Engineer	Post Graduate in Structure Engineering / -10 Marks BTech /BE in Civil Engg.- 7Marks	More than 15 year – 10 Marks Between 10 to 15 years – 8 marks	(i)Experience in specific position in similar project- 15 marks /assignment, maximum 40 marks	(ii)Experience relevant to particular assignment/ similar project not included in (i)-10 marks /assignment maximum 40	100
3.	Highway Engineer cum Pavement Specialist	Post Graduate in Highway Engineering / Highway Safety /or Geotech and SMFE -10 Marks BTech /BE in Civil Engg.- 7Marks	More than 15 year – 10 Marks Between 10 to 15 years – 8 marks	(i)Experience in specific position in similar project- 15 marks /assignment, maximum 40 marks	(ii)Experience relevant to particular assignment/ similar project not included in (i)-10 marks /assignment maximum 40	100

4.	Traffic Engineer	Post Graduate in Highway Engineering / Highway Safety / Traffic Transportation Engg- 10 Marks BTech /BE in Civil Engg.- 8 Marks	More than 15 year - 10 Marks Between 10 to 15 years - 8 marks	(i)Experience in specific position in similar project- 15 marks /assignment, maximum	(ii)Experience relevant to particular assignment/ similar project not included in (i)-10 marks /assignment maximum 40	100
5.	Material cum Geo-tech/Geotechnical Engineer	MTech/ME in Geotechnical Engg- 10 Marks BTech /BE in Civil Engg.- 7 Marks	More than 15 year - 10 Marks Between 10 to 15 years - 8 marks	(i)Experience in specific position in similar project- 15 marks /assignment, maximum 40 marks	Experience relevant to particular assignment/ Similar project not included in (i)- 10	100
6	Senior survey expert	BTech /BE in Civil Engg.- 10 Marks Diploma in Civil Engg. Or Diploma (ITI) in Surveying in Civil Engg.- 7	More than 15 year - 10 Marks Between 10 to 15 years - 8 marks	(i)Experience in specific position in similar project- 15 marks /assignment, maximum 40 marks	(ii)Experience relevant to particular assignment/ similar project not include in (i)- 10 marks /assignment ,maximum	100
7.	Environment Specialist	MTech /ME in Geotechnical Engg- 10 Marks BTech /BE in Civil Engg.- 7 Marks	More than 15 year - 10 Marks Between 10 to 15 years - 8 marks	(i)Experience in specific position in similar project- 15 marks /assignment, maximum 40 marks	Experience relevant to particular assignment/ Similar project not included in (i)- 10 marks/assignment Maximum 40 marks	100

8.	Quantity Surveyor / Documentation Expert	Graduate in Engg- 10 Marks Diploma in Civil Engg./ certificate course from Institution of Quantity Surveying 8 Marks	More than 15 year - 10 Marks Between 10 to 15 years - 8 marks	(i) Experience in specific position in similar project- 15 marks / assignment, maximum 40 marks	(ii) Experience relevant to particular assignment/ similar project not included in (i)-10 marks / assignment maximum 40 marks	100
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Note: 1). Similar project includes Feasibility Study./ DPR /design/ proof-checking of DPR preparation of a road project.

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)

TOR FOR

Consultancy Services for Preparation of Feasibility Study Detailed Project Report for Redesigning, Rehabilitation and Up-gradation to 4 lane/6 lane (as per Traffic studies) with paved shoulders configuration for National Highways on BOT/EPC/Hybrid Annuity Mode in the State of Punjab

1	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab	: Approx length 40.56 Kms.
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Terms of Reference for Consultancy Services (TOR)

1. Background

- 1.1** Ministry of Road Transport & Highways (MORTH) has decided to implement the preparation of Feasibility Study and Detailed Project Report for the following Road in the State of Punjab on BOT / EPC/ Hybrid Annuity Mode.

Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab Chief Engineer Punjab PWD NH Mini Secretariat Sector – 9, Chandigarh will be the employer and executing agency for the consultancy services and the standards of output required from the appointed consultants are of international level both in terms of quality and adherence to the agreed time schedule.

- 1.2** The total length of this NHs in Punjab state is **about 40.56 Kms km.** The instant proposal is to carry out Technical Consultancy Services for preparation of Feasibility Study and Detailed Project Report for the following this Road in the State of Punjab on BOT/EPC/HYBRID ANNUITY Mode

- 2.** Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab **Objective**

The main objective of the consultancy service is to establish the technical availability of the project and prepare Feasibility and Preparation of Detailed Project Report for the above referred subject.

The objective of this consultancy is to undertake feasibility studies and prepare a Detailed project Report of the Project Highway for the purpose of firming up the requirements in respect of development and construction of the Project Highway and Project Facilities and enabling the prospective bidders to assess the requirements in a clear and predictable manner with a view to ensuring:

- (i) enhanced safety and level of service for the road users;
- (ii) minimal adverse impact on environment;
- (iii) minimal additional acquisition of land; and

- 2.1.1** The Consultant shall be guided in its assignment by the Model Agreement for (BOT/EPC/HYBRID ANNUITY) and the Manual of Specifications and Standards published by IRC (the "**Manual**").

- 2.1.3** The Consultant shall be responsible for preparing the Schedules A, B, C, D, and I of the Contract Agreement and for bringing out any special feature or requirement of the Project Highway referred to in the Contract Agreement or the Manual. The details and particulars to be specified in the Schedules shall be duly addressed and incorporated

therein, in accordance with.

- 2.1.4 The consultant shall prepare the bid documents including required schedules (as mentioned above) as per BOT/EPC/HYBRID ANNUITY documents. For that it is suggested that consultant should go through the BOT/EPC/HYBRID ANNUITY documents of ministry before bidding the project. The Consultant shall assist the CE NH Punjab PWD / Executive Engineer, C. W. Division, PWD Sangrur at Patiala / MoRT&H and its Financial Consultant and the Legal Adviser by furnishing clarifications as required for the financial appraisal and legal scrutiny of the Project Highway and Bid Documents.
- 2.2 The viability of the project shall be established taking in to account the requirements with regard to upgrading and improvement based on highway design, type of intersections, widening of service roads, provision of structures like Under passes etc, road safety features, quantities of various items of works and cost estimates and economic analysis.
- 2.3 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 under passes and cross drainage structures and grade separated structures, design of service roads, quantities of various items, detailed working drawings, detailed cost estimates, economic and financial viability analyses, environmental and social feasibility, social and environmental action plans as appropriate and documents required for tendering the project for local competitive bidding. **The consultant should also give cost estimates and BOT/EPC/HYBRID ANNUITY tender documents along with feasibility report.**
- 2.4 The DPR consultant should ensure detailed project preparation in incorporating aspects of value engineering, quality audit and safety audit requirement in design and implementation.

3. **Scope of Services**

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 Major Bridges are given in **Supplement II**):

- (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 Mobile LiDAR Technology equipped with minimum engineering grade system or any other equivalent technology having output accuracy at least as per IRC SP 19 (as per Ministry's circular RW/NH-35075/1/2010/Part dated 26th May 2015), Total Stations and GPS/DGPS.***
 - (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 The Consultant to suggest overall improvement of the stretch for improvement and

better operational efficiency. The Consultant to interact with local administration and MORT&H and BRO officials, before finalizing feasibility report.

4.3 Deleted

4.4 Deleted

4.5 The Consultant shall furnish land acquisition details as per revenue records/maps for further processing of land acquisition. Consultant also submits land acquisition estimate to Executive Engineer Punjab CW Division PWD Sangrur at Patiala/Chief Engineer NH Punjab PWD Chandigarh/MoRT&H.

4.6 Deleted

4.7 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 Letter of Invitation and the TOR. The Consultant shall prepare documents for BOT/EPC/HYBRID ANNUITY/HYBRID ANNUITY contracts for the project.

4.8 All ready to implement 'good for construction' drawings shall be prepared.

4.9 Environmental Impact Assessment, Environmental Management Plan and Rehabilitation and Resettlement Studies shall be carried out by the Consultant meeting the requirements of existing regulations.

4.10 Wherever required, consultant will liaise with concerned authorities and arrange all clarifications.

Approval of all drawings including GAD and detail engineering drawings will be got done by the consultant from the Railways. However, if Railways require proof checking of the drawings prepared by the consultants, the same will be got done by MORT&H and payment to the proof consultant shall be made by MORT&H directly. 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 schedule and draft 3a, 3A, 3D, 3G notification as per L.A. act) for acquisition of land either under NH Act or State Act.

4.11 The DPR consultant shall prepare the Bid Documents, based on the feasibility report, due to exigency of the project for execution.

4.12 Consultant shall obtain all types of necessary clearances required for implementation of the project on the ground from the concerned agencies like MOEF, CWLB or other agency etc. 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.

4.13 Deleted

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

Sr. NR.	Description	Number of Survey Stations
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

2. The number of survey locations indicated in the table above is indicative only. The Consultants shall, immediately upon award of the work, submit to Executive Engineer C. W. Division, PWD Sangrur at Patiala/ MORT&H 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 finalized in consultation with MORT&H.

4.9.2. Classified Traffic Volume Count Survey

The classified traffic volume count	Non-Motorized Traffic
2-Wheeler	Bi-Cycle
3-Wheeler	Cycle-Rickshaw
Passenger Car	Animal Drawn Vehicle(ADV)
Utility Vehicle (Jeep, Van etc.)	Hand Cart
Other Non-Motorized 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	

1. All results shall be presented in tabular and graphical form. The survey data shall be analyzed 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.
2. 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 IC/Concessionaire shall be suitably explained.

4.9.3. Deleted

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 MORT&H 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 analyzed to identify requirements of suitable remedial measures, such as construction of under passes, flyovers, inter changes, grade-separated inter sections along the project road alignment. Inter sections with high traffic volume requiring special treatments either presently or in future shall be identified.

4.9.5. Deleted

4.9.6. Deleted

4.9.7 Deleted

4.9.8 Deleted

4.10. Deleted

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. **Mobile LIDAR technology or any other equivalent technology shall be used for timely and more survey accuracy.**
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 via-duct 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 MORTH'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. mobile LIDAR technology with engineering grade or any other equivalent technology*** . 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 ***.Availability of total stations may be ensured at certain intervals so that accuracy of the survey data of the LiDAR technology or any other equivalent technology may be authenticated if required.***
2. 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.

3. 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 boundry.
- 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.

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 25m interval, at the locations of curve points, small streams, intersections and at the locations of change in elevation.*
- ii. *Cross sections at every 50m 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.

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 building and structures, monuments, burial grounds, cremation grounds, places of worship, railway lines, stream / river / canal, watermains, sewers, gas/ oilpipes, crossings, trees, plantations, utility services such as electric, and telephone lines (O/H & U/G) and poles, optical fiber cables (OFC) etc. The survey would cover then tire 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 27 etc. assessed and suitable actions can be initiated. Separate strip plan for each of the services involved shall be prepared for submission to the concerned agency.

4.11.1. 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. Existing utility services on either side within ROW
 - xiv. General drainage conditions
 - xv. Design speed of existing road

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.

4.11.3.2 Pavement Investigation:

1. Pavement Composition

- i. The data concerning the pavement composition may be already available with the BRO.

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
- ☐ grade type (textural classification) and condition (dry, wet)

2. Road and Pavement Condition Surveys

3.

- 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 are affected;*
- ☐☐☐ *ravelling, % of pavement are affected;*
- ☐☐☐ *pot holing, % of pavement are affected*
- ☐☐☐ *edge break, length (m); and,*
- ☐☐☐☐ *rut depth mm*

Shoulder

- ☐ *Paved: Same as for pavement*
- ☐ *U paved :material loss, rut depth and corrugation,*
- ☐ *Edge drop, mm.*

Embankment

- ☐ *general condition and*
- ☐ *extent of slope erosion*

- ii. *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 them 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 in case all other things are considered similar.*

Drainage

- ☐ ☐ *General condition*
- ☐ ☐ *Connectivity of drainage turn outs into the natural topography*
- ☐ ☐ *Condition in cut sections*
- ☐ ☐ *Condition at high embankments*

The data obtained from the condition surveys should be analyzed 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 the World Bank's /IRC Technical Publications / 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.

- ii. *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 analyzed 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:*
 - ☐ *main line testing; and,*
 - ☐ *control section testing.*
- iii. *The deflection tests for the main line shall be carried out as condition survey but in no case it will be more than 100m along the road sections covered under the study. The control section testing shall involve carrying out deflection testing for each 100m 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 100m per kilometer. The deflection measurements for the control section testing should be at an interval of not more than 10m.*
- 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 MORT&H 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 purpose 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 Sub grade Characteristics and Strength

1. The data on soil classification and mechanical characteristics for soils along the existing alignments may already be available with the Concessionaire. The testing scheme is, therefore, proposed as given under:
 - i. For the widening of existing road, the Consultants shall test atleast 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 sub grade soil shall be @ 5km or for each soil type, whichever is more. A minimum of three samples should be tested corresponding to each homogenous segment.
2. The testing for sub grade soil shall include:
 - i. in-situ density and moisture content at each test pit
 - ii. field CBR using DCP at each test pit
 - iii. characterization (grain size and At terberg limits)at each test pit and,
 - iv. laboratory moisture-density characteristics (modified AASHTO compaction);
 - v. laboratory CBR (un soaked and 4- day soak compacted at three energy levels) and swell.
3. For problematic oils, the testing shall be more rigorous. The characteristics with regard to permeability and consolidation shall also be determined for theses oils .30 The frequency of sampling and testing of theses oils shall be finalized in consultation with the MORT&H officers after the problematic soil types are identified along the road sections.
4. The laboratory for testing of material should be got approved from MORT&H be fore 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, via ducts, ROBs, culverts, etc.) along the road under the project. The inventory for the bridges, via ducts 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 ("Guidelines for the Design of Small Bridges and Culverts") and IRC : 5-1998 ("Standard Specifications & Code of Practice for Road Bridges, Section I General Feature of Design"). 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, stereo scopic 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 are co naissance 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 over topped 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 are port 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 indicated is tress 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 ("Guidelines for Evaluation of Load Carrying Capacity of Bridges"). 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 MORT&H for limited duration say 12 hrs. or so.
5. Consultant shall carry out 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 investigation sand sub-surface explorations for the proposed Road over bridges / tunnels / via ducts / 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.	Description	Location of Boring
1.	Overall length = 6 – 30m	One abutment location
2.	Overall length = 30 – 60m	One abutment location and at least one intermediate location between abutments for structures having more
3.	Overall length > 60m	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 MORT&H.

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 finalize the bore hole locations in consultation with the MORT&H officers.
4. Sub-soil investigations will be done as per IRC 78-2000.
5. The scheme for the borings locations and the depth of boring shall be prepared by the Consultants and submitted to MORT&H for approval. These may be finalized in consultation with MORT&H.
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 out sourcing Geo -Technical Investigation, the firms elected by the Consultant for this purpose should also be got approved from MORT&H 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 2km intervals whichever is less shall be carried out to a depth of at least 2m 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: Deleted

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 site stop respective civil works contractors, should be duly taken in to 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, Grade separated structures and under passes

4.12.1. General

1. The Consultants are to carry out detailed designs and prepare working drawings for the following:
 - i. *design of pavement for the additional lanes, paved shoulders, medians, verges;*
 - ii. *bridges, viaduct / subways and structures including ROBs etc.;*
 - iii. *at-grade and grade-separated intersections, interchanges(if required);*
 - iv. *prepare alignment plans, longitudinal sections and cross-sections @ 50m intervals;*
 - v. *designs for road furniture and road safety / traffic control features;*
 - vi. *designs and drawings for service road/under passes/overpass / cattle passes tree planting / fencing at locations where necessary / required*
 - vii.. *Expansion of toll plazas*
 - viii. *drainage design showing location of turn outs, out falling structures, separate drawings sheet for each 5km. stretch. 33*

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 Standard sand material specifications for the Study primarily based on IRC publications, MoRT&H Circular sand relevant recommendations of the international standards (American, Australian, British, Canadian, Japanese) for approval by MORT&H.
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, including refuge lane (50m) at every 2kms.
 - iv. junctions, intersections and interchanges;
 - v. Widening of service roads.
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 work out the traffic flow capacity for the improved project road. The analysis should clearly establish the widening requirements with respect to the different horizon period 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. 34

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 Consultants shall prepare design and other details in respect of the parallel service roads and other locations to cater to the local traffic.

4.12.4. Pavement Design

1. The detailed design of pavement shall involve:
 - i. design of the new pavement if any,
 - ii. 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 in put shall be decided on the basis of rigorous testing and evaluation of its suitability and relevance in respect of in-service 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. Further more, 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. The paved shoulders 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.

6.

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 within 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 6m 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 Structures

1. The Consultant shall prepare General Arrangement Drawing (GAD) and Alignment Plan showing the salient features of the 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 MORT&H to approve the best alternative.
2. 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.
3. 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 MORT&H.

4.12.7. Drainage System

1. The requirement of road side 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. 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 out fall structures fitting into natural contours. A separate drawing sheet covering every 5 km. stretch of road shall be prepared.

4.12.8. Traffic Safety Features, 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 : deleted

4.12.10. Toll Plaza : deleted

4.12.11. Weighing Station, Parking Areas and Rest Areas : deleted

4.12.12. Office-cum-Residential Complex for PIU : deleted

4.12.13 Miscellaneous Works

1. The Consultants shall make suitable designs and layout for miscellaneous works including bus bays, vehicle parking areas etc. wherever appropriate.
2. The Consultants shall prepare the detailed scheme and layout 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 and Social Impact Assessment

The consultant shall undertake the detailed environmental and social impact assessment in accordance with the standard set by the Government of India for projects proposed to be funded by MORT&H. In respect of projects proposed to be funded by ADB loan assistance, Environmental Assessment Requirements, Environmental Guidelines for selected infrastructure projects, 1993 of Asian Development Bank shall be followed. Similarly, for projects proposed to be funded by World Bank loan assistance, World Bank Guidelines shall be followed.

4.13.1 Environmental Impact Assessment

Environment impact assessment or initial environment examination be carried out in accordance with Government of India Guidelines, as applicable

1. The consultant should carry out the preliminary environmental screening to assess the direct and induced impacts due to the project.
2. The consultant shall ensure to document base line conditions relevant to the project with the objective to establish the bench marks.
3. The consultant shall assess the potential significant impacts and identify them mitigative measures to address these impacts adequately.
4. The consultant shall do the analysis of alternatives incorporating environmental concerns. This should include with and without scenario and modification incorporated in the proposed project due to environment considerations.
5. The consultant shall give special attention to the environmental enhancement measures in the project for the following:
 - (a) Cultural property enhancement along the highways
 - (b) Bus bays and bus shelters including are view of their location,
 - (c) Highway side landscape and enhancement of the road junctions,
 - (d) Enhancement of highway side water bodies, and
 - (e) Re development of the borrow areas located on public land.
6. The consultant shall prepare the bill-of-quantities (BOQ) and technical specifications for all items of work in such a way that these may be readily integrated to the construction contracts.
7. The consultant shall establish a suitable monitoring network with regard to air, water and noise pollution. The consultant will also provide additional inputs in the areas of performance indicators and monitoring mechanisms for environmental components during construction and operational phase of the project.
8. The consultant shall provide the cost of mitigation measures and ensure that environmental related staffing, training and institutional requirements are budgeted in project cost.
9. The consultant shall prepare the application forms and obtain forestry and environmental clearances from the respective authorities including the SPCBs and the MOEF on behalf of MORT&H. The consultants will make presentation, if required, in defending the project to the MOEF Infrastructure Committee.

10. The consultant shall assist in providing appropriate input in preparation of relevant environment and social sections of BPIP.

4.13.2 Social Assessment: Deleted

4.13.3 Reporting Requirements of EIA

The consultant would prepare the stand-alone reports as per the requirement of the ADB/ World Bank /MORT&H, as applicable, with contents as per the following:

- ☐ Executive Summary
- ☐ Description of the Project
- ☐ Environmental setting of the project.
- ☐ Identification and categorization of the potential impacts (during pre-construction, construction and operation periods).
- ☐ Analysis of alternatives (this would include correlation amongst the finally selected alternative alignment / routing and designs with the avoidance and environmental management solutions).
- ☐ The public consultation process.
- ☐ Policy, legal and administrative framework. This would include mechanisms at the states and national level for operational policies. This would also include a description of the organizational and implementation mechanism recommended for this project.
- ☐ Typical plan or specific designs for all additional environmental items as described in the scope of work.
- ☐ In incorporating any other as per the suggestions of the MORT&H, till the acceptance of the reports by the MORT&H, as applicable.
- ☐ EMP Reports for Contract Package based on uniform methodology and processes. The consultant will also ensure that the EMP has all the elements for it to be a legal document. The EMP reports would include the following:
 - ⌚ Brief description of the project, purpose of the EMP, commitments on incorporating environmental considerations in the design, construction and operations phases of the project and institutional arrangements for implementing the EMP.
 - ⌚ A detailed EMP for construction and operational phases with recourse to the mitigation measures for all adverse impacts.
 - ⌚ Detailed plans for highway-side tree plantation (as part of the compensatory afforestation component).
 - ⌚ Environmental enhancement measures would be incorporated. Enhancement measures would include items described in the scope of work and shall be complete with plans, designs, BOQ and technical specifications.
 - ⌚ Environmental monitoring plans during and after construction including scaling and measurement techniques for the performance indicators selected for monitoring.
 - ⌚ The EMP should be amendable to be included in the contract documents for the works.

4.13.4 Reporting requirements of RAP : Deleted

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 (Short term and Long term improvements packages wise), including the cost of environmental and social safe guards 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 separately for civil work Package as defined in this TOR.
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 in to account the various inputs and their basic rates, suggested location of plants and respective lead distances from mechanized construction. The unit rate for each item of works shall be worked out in terms of man power, machinery and materials.

6. Viability and Financing Options : Deleted

6.1. Economic Analysis : deleted

6.2. Financial Analysis : deleted

7. Time period for the service

1. Time period envisaged for the study of the project is indicated in **Annex-I to LOI**. The final reports, drawings and documentation shall be completed within this time schedule.
2. MORT&H 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. List of suggested key personnel to be fielded by the consultant with appropriate man-month of 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 one very 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 39 there are special reasons for carrying out part of the office work else where for which prior approval of MORT&H 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 MORT&H 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 MORT&H from time to time.
- 9. Reports to be submitted by the Consultant to Executive Engineer CW Div PWD Sangrur at Patiala/ MORT&H**
- 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 in to four 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: Preliminary Project Report (PPR)

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 MORT&H

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 /CD's 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 sr. 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 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 traceability 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 MORT&H.
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 MORT&H.

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 finalized in consultation with the MORT&H 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;
 - iv. 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) finalized in consultation with MORT&H;
 - x.* Draft design standards; and
3. 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 MORT&H.

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
 - ☐ review of MORT&H's organization and activities, SARDP program, and project financing and cost recovery mechanisms
 - ☐ project description including possible alternative alignments/bypasses and technical / engineering alternatives
 - ☐ methodology adopted for the feasibility study
 - ☐ socio economic profile of the project areas
 - ☐ captive design standards, methodologies and specifications
 - ☐ traffic surveys and analysis
 - ☐ environmental screening and preliminary environmental assessment
 - ☐ initial social assessment and preliminary land acquisition / resettlement plan
 - ☐ test estimates
 - ☐ economic and financial analysis
 - ☐ conclusions and recommendations
2. In view of para 1 above the consultant has to submit the following documents in six sets:
 - i. **Technical Specifications :** The MORT&H's Technical Specifications for Road and Bridge works shall be followed for this study. However, Volume-IV: Technical Specifications shall contain the special technical specifications which are not covered by MOST Specifications for Roads and Bridges (latest edition / revision) and also specific quality control norms for the construction of works.
 - ii. **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.
 - iii. **Cost Estimates :** This volume will present the each item of work as well as summary of total cost.
 - iv. **Bill of Quantities :** This volume shall contain the detailed Bill of Quantities for all items of works

- v. **Civil Work Contract Agreement** :A civil works contract agreement shall be submitted or BOT / EPC -draft agreement shall be submitted.
- 3. The basic data obtained from the field studies and investigations shall be submitted in a separate volume as an Appendix to Feasibility Report.
- 4. The Final Feasibility Study Report incorporating comments, revisions and modifications suggested by MORT&H shall be submitted within 15 days of receipt of comments from MORT&H on draft feasibility study report.

10.4 Strip Plan and Clearances

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 ; 42
 - 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, major trees, 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 strip plans and land acquisition plan shall be prepared on the basis of data from reconnaissance and detailed topographic surveys.
3. The Report accompanying the strip plans should cover the essential aspects as given under:
 - i. *Kilo metre-wise Land Acquisition Plan (LAP) and schedule of owner ship there of 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. Kilo metre-wise Utility Relocation Plan (URP) and costs for relocation per civil construction package as per concerned authorities.
- iv. Kilo metre -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 should be duly taken in to account while working out the widening scheme (left, right or symmetrical). The widening scheme shall be finalized in consultation with MORT&H.
- 5. Kilo metre - wise Strip Plans for section (Package) shall be prepared separately for each concerned agency and suggested by MORT&H.

STAGE : 3

10.5 Land Acquisition Report

1. The Land acquisition report shall be prepared and submitted for section (package). 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 as per land revenue proforma. The land acquisition report shall be submitted in both Hindi and English languages.
2. The land acquisition report should be prepared in consultation with affected persons, non-governmental organizations 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 affore station, its land requirement with specific locations and cost involved for undertaking all activities in this regard.

10.6 Preliminary Project Report - PPR

1. The Draft PPR shall be prepared separately for construction package and shall contain the following :

Volume – I: Preliminary Design Report

- ☐ Executive summary
- ☐ Project description
- ☐ Summary of EIA / IEE and Action Plan
- ☐ Updated cost estimates

- ☐ *Updated economic and financial analyses*
- ☐ *Suggested methods of procurement and packaging*
- ☐ *Conclusions and recommendations*
- ☐

Volume – II: Design Report

- ☐ Road and bridge inventory
- ☐ Summary of survey and investigations data
- ☐ Proposed design basis, standards and specifications
- ☐ Proposed pavement design and preliminary bridge designs

Volume– III : Drawings

- ☐ Location map
- ☐ Lay out plans
- ☐ Typical cross sections showing pavement details
- ☐ Drawings for cross-drainage and other structures
- ☐ Road junction designs
- ☐ Indicative land acquisition plans

Volume-IV : Environment Impact Assessment or Initial Environmental Examination and Environment Management Plan

2. The basic data 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 PPR.
3. The Final PPR incorporating comments, revisions and modifications suggested by MORT&H shall be submitted within 15 days of the receipt of comments of MORT&H on the Draft PPR.

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, Environmental Assessment Report, Package - wise bid Documents and Drawings.
2. The Report volumes shall be submitted as tabulated in para 10 above.
3. The Documents and Drawings shall be submitted for the Package and shall be in the following format:

Reports

- i. **Volume-I , Main Report:** This report will present the project background, social analysis of the project, 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 Environmental Impact Assessment (EIA) Report for contract package shall be submitted as a part of the main report.

The basic data 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 design of road features and pavement composition while Part-II shall deal with the design of 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 where in 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. There port shall include details on locations of borrow are as 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 endues 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 stabilization (cement, lime, mechanical) should be included in the Report.

- iv. **Volume-IV, Environmental Assessment Report including Environmental Management Plan (EMP) :** The Report shall be prepared conforming to the **Guidelines of the Government of India & State Government.**
- v. **Volume - V, Technical Specifications :** The MORT&H's Technical Specifications for Road and Bridge works shall be followed for this study. However, Volume-IV: Technical Specifications shall contain the special technical specifications which are not covered by MOST Specifications for Roads and Bridges (latest edition / revision) and also specific quality control norms for the construction of works.
- 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 1:250 V 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. Horizontal Alignment and Longitudinal Profile.
 - b. Cross-section @50m interval along the alignment within ROW
 - c. Typical Cross-Sections with details of pavement structure.
 - d. Detailed Working Drawings for individual Culverts and Cross-Drainage Structures.
 - e. Detailed Working Drawings for individual Bridges, tunnels and Structures.
 - f. Detailed Drawings for Improvement of At-Grade and Grade-Separated Intersections and Interchanges.
 - g. *Drawings for Road Sign, Markings, Toll Plazas, and other Facilities.*
 - h. *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 of toll plaza, parking areas, weighing stations, bus bays, rest areas, if any.

I All drawings will be prepared in A2 size sheets. The format for plan, cross-section and profile drawings shall be finalized in consultation with the concerned MORT&H 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.

j 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** : A civil works contract agreement shall be submitted.

xi. **Volume-XI, Project Clearances**—All the necessary (project related) clearances (such as from MOEF, and any other concerned agencies) shall be obtained by the consultant and submitted to MORT&H so that project implementation can straight away proceed without any holdup.

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 MORT&H on the draft DPR shall be submitted as per the schedule given in Enclosure-III.

11. Interaction with MORT&H

1. During entire period of services, the Consultant shall interact continuously with Executive Engineer, PWD Central Works Division, Sangrur at Patiala / Chief Engineer, NH Punjab PWD Chandigarh /MORT&H and provide any clarification as

regards methods being followed and carry out modification as suggested by Executive Engineer CW PWD Divn, Sangrur at Patiala/ Chief Engineer, NH Punjab PWD Chandigarh / MORT&H. A programme of various activities shall be provided to Executive Engineer, CW PWD Divn, Sangrur at Patiala / Chief Engineer NH, Punjab PWD Chandigarh / MORT&H Hand prior intimation shall be given to MORT&H regarding start of key activities such as boring, survey etc. so that inspections of Executive Engineer CW Divn, PWD Sangrur at Patiala / Chief Engineer NH, Punjab PWD Chandigarh / MORT&H officials could be arranged in time.

2. The Executive Engineer C W Divn, PWD Sangrur at Patiala/ Chief Engineer NH , Punjab PWD Chandigarh / MORT&H officers and other Government officers may visit the site at any time, individually or collectively to acquaint themselves with the field investigation and survey works.
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 MORT&H. 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:

Sr. No.	Item	Payment as % of Contract Value
1	Submission of final inception report	15%
2.	Submission of final alignment report	10%
3	Submission of final feasibility report	5%
4.	Submission of final land acquisition report	10%
5.	Submission of clearance proposals	5%

6.	Submission of draft DPR	10%
7.	Approval of final DPR	10%
8.	Approval of technical schedules	5%
9.	Publication of 3D notification	10%
10.	Forest/ wild life clearance-Stage I Approval	5%
11.	Forest/ wild life clearance-Stage II/ Final Approval (including approval of utility shifting estimates by agency and MoRTH / implementation agency)	5%
12.	Retention to be released after 3 years/ completion of civil contract works whichever earlier	10%
	Total	100%
	Submission of draft 3A within 1 month of alignment finalization	2.5% bonus
	Submission of draft clearance proposals within 1 month of alignment finalization	2.5% bonus
<p>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 MORT&H from time to time.</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.

13. Data and Software

1. The floppy diskettes / 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 MORT&H 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, Test Pit (Pavement composition), Benkelman Beam Deflection, Material Investigation including test results for sub grade 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 or widely used utility packages.
 - ii. **Topographic Surveys and Drawings** : All topographic data would be supplied in (x, y, z) format along with complete references that the data could be imported

into any standard highway design software. The drawing files would be submitted index for 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.
-
- 2. **Software:** The Consultant shall also hand-over to MORT&H floppies /CD's containing any general software including the financial model which has been specifically developed for the project.
 - 3. The DVD's/CD's should be properly indexed and a catalogue giving contents of all DVD's/CD's and print-outs of the contents (data from field studies topographic data and drawings) should be handed over to MORT&H at the time of submission of the Final Report.

SUPPLEMENT I (Not Applicable)

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

Sr. 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 in depth 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> <p>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.</p> <p>a) Climatic conditions i.e. temperature, rainfall data, snowfall data, fog conditions, unusual weather conditions etc.</p> <p>b) Re alignment requirements including provision of tunnels, if required.</p> <p>c) Inventory of tunnels and geologically sensitive areas like slip prone areas, areas subject to land slides, rock fall, snow drifts, erosion, avalanche activity etc.</p>
8.	4.11.2.1 (ii)	<p>Cross sections shall be taken at every 25mtr. 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> <p>a) General elevation of road indicating maximum & minimum heights negotiated by main ascents & descents and total no. of ascents & descents.</p> <p>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 hair pin bends etc.</p> <p>c) Details of tunnels Details & types of protective structures, erosion & land slide control / protection measures, snow drift control measures, avalanche protection / control measures etc.</p>
10.	4.11.3.2 (2)	<p>Pavement:</p> <p>a) Location of crust failures along with their causes</p> <p>b) Conditions of camber / cross falls / super elevations etc., whether affected by subsidence 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: The consultant shall make an inventory of all the structures related to Slope Stabilization, Erosion Control, Land slide 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) Land slide Investigation</p> <p>This shall be carried out to identify land slide prone areas, to suggest preventive measures or alternate routes that are less susceptible to land slide 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. 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 25mtr intervals</p> <p>b) Slope stabilization and erosion control measures</p> <p>c) Design of protection / control structures in areas subject to subsidence, land slides, 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>
13.	4.12.2 (1)	<p>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.</p>

14.	4.12.3	Wherever practicable / feasible hair pin 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 rain fall, 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	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. b) Further, adequate provision shall be made for sub-surface / sub grade drainage to take care of see page through the adjacent hill face of the road & underground water flows.
19.	4.12.8	The Consultant shall design suitable traffic safety features and road furniture including traffic signals, signs, markings, overhead signboards, 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> <ul style="list-style-type: none"> a) Inventory of protection measures and other structures b) Inventory of tunnels, if required. c) Proposed preliminary designs for tunnels, if required. <p>Volume III : Drawings</p> <ul style="list-style-type: none"> a) Drawings for protection / control measures and other structures b) Drawings for tunnels, if required.
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 This shall also include :</p> <ul style="list-style-type: none"> a) Detailed working drawings for tunnels, if required. b) Detailed working drawings for protection / control structures

SUPPLEMENT II
ADDITIONAL POINTS TO BE CONSIDERED FOR BRIDGES IN ADDITION TO POINTS COVERED IN MAINTOR

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 4 - lane bridge along with approach roads, at least about 2km. 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 / Water ways Authorities.

For bridges 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.

Sr. 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 upto approximately 2km on 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> <p>a) The consultant should make an in depth study of available geological maps, catchment area maps, contour plans, flood flow data and seismological data.</p> <p>b) The primary tasks to be accomplished during the reconnaissance surveys also include:</p> <p>i. Typical physical features along the approach roads</p> <p>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</p>
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 MORT&H.</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 up stream and downstream, bed level upto top of bank sand ground levels to a sufficient distance beyond the edges of channel, nature of existing surfaces oil 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 back water, if any, aggradations / 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, consent ration of flow, scour, silting of bed, change in flow level ,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>Geo technical 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	General The consultants are also to carry out detailed designs and prepare working drawings for the followings; a) Design of pavement for approach road b) Design of river bank protection / training works
9.	4.12.6	Design of Bridges and Structures The data collected and investigation results shall be analyzed to determine the following: i. HFL ii. LWL iii. LBL iv. Erodibility of bed/scour level v. Design discharge vi. Linear water way and effective linear waterway vii. Likely foundation depth viii. Safe bearing capacity ix. Engineering properties of sub soil x. Artesian conditions xi. Settlement characteristics xii. Vertical clearance xiii. Horizontal clearance xiv. Freeboard for approach road xv. Severity of environment with reference to corrosion xvi. Data pertaining to seismic and wind load xvii. Requirement of model study etc.

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 designing in era sense of understanding of the place of safety audition 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

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

CONTENTS	ITEMS
Aspects to be checked	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. C. Departures from standards and action taken. D. Provision of pedestrians, cyclists and intermediate transport E. Safety implications of the scheme beyond its physical limits i.e. how the scheme fits in to its environs and road hierarchy
A1: General	<input type="checkbox"/> Departures from standards <input type="checkbox"/> Cross- sectional variation <input type="checkbox"/> Drainage <input type="checkbox"/> Climatic conditions <input type="checkbox"/> Landscaping <input type="checkbox"/> Services apparatus <input type="checkbox"/> Lay-byes <input type="checkbox"/> Footpaths <input type="checkbox"/> Pedestrian crossings <input type="checkbox"/> Access(minimize number of private accesses) <input type="checkbox"/> Emergency vehicles <input type="checkbox"/> Public Transport <input type="checkbox"/> Future widening <input type="checkbox"/> Staging of contracts <input type="checkbox"/> Adjacent development

A2: Local Alignment	<input type="checkbox"/> Visibility <input type="checkbox"/> New/Existing road interface <input type="checkbox"/> Safety Aids on steep hills.
A3: Junctions	<input type="checkbox"/> Minimize potential conflicts <input type="checkbox"/> Layout <input type="checkbox"/> Visibility
A4: Non-Motorized road users Provision	<input type="checkbox"/> Adjacent land <input type="checkbox"/> Pedestrians <input type="checkbox"/> Cyclists <input type="checkbox"/> Non-motorized vehicles
A5: Signs and Lighting	<input type="checkbox"/> Lighting <input type="checkbox"/> Signs/Markings
A6: Construction and Operation	<input type="checkbox"/> Build ability <input type="checkbox"/> Operational <input type="checkbox"/> 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.</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 in to its environs and road hierarchy</p>
B1: General	<ul style="list-style-type: none"> <input type="checkbox"/> Departures from standards <input type="checkbox"/> Cross-sectional variation <input type="checkbox"/> Drainage <input type="checkbox"/> Climatic conditions <input type="checkbox"/> Landscaping <input type="checkbox"/> Services apparatus <input type="checkbox"/> Lay-byes <input type="checkbox"/> Footpaths <input type="checkbox"/> Pedestrian crossings <input type="checkbox"/> Access(minimize number of private accesses) <input type="checkbox"/> Emergency vehicles <input type="checkbox"/> Public Transport <input type="checkbox"/> Future widening <input type="checkbox"/> Staging of contracts <input type="checkbox"/> Adjacent development
B2: Local Alignment	<ul style="list-style-type: none"> <input type="checkbox"/> Visibility <input type="checkbox"/> New/Existing road interface <input type="checkbox"/> Safety Aids on steep hills.
B3: Junctions	<ul style="list-style-type: none"> <input type="checkbox"/> Minimize potential conflicts <input type="checkbox"/> Layout <input type="checkbox"/> Visibility
B4: Non - Motorized road users Provision	<ul style="list-style-type: none"> <input type="checkbox"/> Adjacent land <input type="checkbox"/> Pedestrians <input type="checkbox"/> Cyclists <input type="checkbox"/> Non-motorized vehicles
B5: Signs and Lighting	<ul style="list-style-type: none"> <input type="checkbox"/> Lighting <input type="checkbox"/> Signs/Markings
B6: Construction and Operation	<ul style="list-style-type: none"> <input type="checkbox"/> Build ability <input type="checkbox"/> Operational <input type="checkbox"/> 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 road safety view point, 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	<ul style="list-style-type: none"> <input type="checkbox"/> Departures from standards <input type="checkbox"/> Drainage <input type="checkbox"/> Climatic conditions <input type="checkbox"/> Landscaping <input type="checkbox"/> Services apparatus <input type="checkbox"/> Lay-byes <input type="checkbox"/> Access <input type="checkbox"/> Skid-resistance <input type="checkbox"/> Agriculture <input type="checkbox"/> Safety Fences <input type="checkbox"/> Adjacent development
C2: Local Alignment	<ul style="list-style-type: none"> <input type="checkbox"/> Visibility <input type="checkbox"/> New/Existing road interface
C3: Junctions	<ul style="list-style-type: none"> <input type="checkbox"/> Layout <input type="checkbox"/> Visibility <input type="checkbox"/> Signing <input type="checkbox"/> Lighting <input type="checkbox"/> Road Markings <input type="checkbox"/> T,X,Y-junctions <input type="checkbox"/> All roundabouts <input type="checkbox"/> Traffic signals
C4: Non- Motorized road users Provision	<ul style="list-style-type: none"> <input type="checkbox"/> Adjacent land <input type="checkbox"/> Pedestrians <input type="checkbox"/> Cyclists <input type="checkbox"/> Non-motorized vehicles
C5: Signs and Lighting	<ul style="list-style-type: none"> <input type="checkbox"/> Advanced direction signs <input type="checkbox"/> Local traffic signs <input type="checkbox"/> Variable message signs <input type="checkbox"/> Other traffic signs <input type="checkbox"/> Lighting
C6: Construction and Operation	<ul style="list-style-type: none"> <input type="checkbox"/> Build ability <input type="checkbox"/> Operational <input type="checkbox"/> Network Management

Enclosure-I

Manning Schedule

Sr .No.	Key Personnel	Total Project Assignment 3 Months (2 months for DPR and 1 for clearances)		
		At site (mm)	At design office (mm)	Total Time Period (mm)
1	Sr. Highway Engineer-cum-Team Leader	2	1	3
2	Bridge Engineer	2	1	3
3	Highway Engineer cum Pavement Engineer	2	1	3
4	Transport Economist	1	1	2
5	Material-cum-Geo-technical Engineer	1	1	2
6	Senior Survey Engineer	1	1	2
7	Quantity Surveyor/Documentation Expert	2	1	3
8	Environment Specialist cum. Resettlement & Rehabilitation Specialist	0.5	0.5	1
	Total	11.5	7.5	19

Note: Consultants have to provide a certificate that all the key personnel as envisaged in the contract Agreement have been actually deployed in the project. They have to furnish the certificate the certificate at the time of submission of their bills to MORT&H from time to time.

Qualification and Experience Requirement of Key Personnel Enclosure-II
Senior Highway Engineer – cum – Team Leader

i)Educational Qualification	
Essential	Graduate in Civil Engineering
Desirable	Post Graduate in Highway, Traffic & Transportation, /Highway Safety/Geo Tech & SMFE
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 , including 2 /4 laning /expressways.
c)Experience in similar capacity	He should have work as team Leader for at least 2 projects of 2/4/ 6 laning of major highway projects of aggregate length of minimum 25 Km.(4 lane equivalent.)*
iii)Age Limit	70 years on the date of submission of proposal

Note: (A) Similar Capacity includes the following positions

- i) On behalf of Consultant: Team Leader / Resident Engineer.
- ii) On behalf of Contractor: Project Manager.
- i) In Government Organizations : Superintending Engineer (or equivalent) and above

(B) ** 2/4/6 lane as applicable for the project for which RFP is invited . For 2-lane projects experience of 4/6 lane also to be considered with a multiplication factor of 1.5. Experience of 4/6 lane shall be considered interchangeably for 4/6 laning projects. Experience of 2 lane will be considered for 2/4/6 laning projects with a multiplication factor of 0.75. For standalone Bridge projects, experience in bridge work (either standalone project or as a part of road) only be considered.

This note (B) is applicable to experience of all Key Personnel

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL
Bridge Engineer

i)Educational Qualification	
Essential	Graduate in Civil Engineering
Desirable	M. Tech in Structure Engineering
ii)Essential Experience	
a)Total Professional Experience	Min.10 years
b)Experience in Bridge Projects	Min.8 years in project preparation and design of structure/bridge projects
c)Experience in Similar Capacity	Bridge Engineer in Highway design consultancy projects (NH/SH/Expressways) involving design/ proof Checking/ review of minimum two Major Bridges / Structures
iii)Age Limit	70 years on the date of submission of proposal

3. Bridge Engineer

Note: (1) Similar Capacity includes the following positions

- I) On behalf of Consultant: Bridge Engineer / Assistant Resident Engineer.
- II) On behalf of Contractor: Project Manager Bridges.
- III) In Government Organizations: Executive Engineer (or equivalent) or above

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL
Highway Cum Pavement Engineer**

i)Educational Qualification	
Essential	Graduate in Civil Engineering
Desirable	Post Graduated in Highway Engineering/ Highway Safety or Geo Tech& SMFE.
ii)Essential Experience	
a)Total Professional Experience	Min. 10 years
b)Experience in Highway Projects	Min. 8 years in Planning, project preparation and design of Highway projects, including 4 laning / expressways. experience in pavement design and maintenance
c)Experience in Similar Capacity	At least 2 projects of 2/4/6 laning of major highway projects of aggregate length of minimum 25Km (4 lane equivalent) and Pavement design of major highway projects of aggregate length of minimum 25Km (4 lane equivalent)
iii)Age Limit	70 years on the date of submission of proposal

Highway Engineer cum Pavement Specialist

Note: Similar Capacity includes the following positions

- I) On behalf of Consultant: Resident Engineer / Assistant Resident Engineer/ Highway Engineer.
- II) On behalf of Contractor: Project Manager / Project Director/ Highway Engineer
- III) In Government Organizations : Executive Engineer (or equivalent)

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL
Traffic Engineer

i)Educational Qualification	
Essential	Graduate in Civil Engineering
Desirable	PG in Traffic & Transport Engineering/ Highway Safety
ii)Essential Experience	
a)Total Professional Experience	Min.10years
b)Experience in Highway Projects	Min.5 years in on similar Projects
c)Experience in Similar Capacity	Traffic Engineer in (i) At least 2 projects of 2/4/6 laning of major highway projects of aggregate length of minimum 25Km (4 lane equivalent) (ii) Design of at least one multi level inter change on NH/SH/ city roads and financially set or equivalent in Highway project (NH/SH/Expressways).
iii)Age Limit	70 years on the date of submission of proposal

Traffic Engineer

Note: Similar Capacity includes the following positions

- I) On behalf of Consultant: Resident Engineer / Assistant Resident Engineer/ Transport Engineer.
- II) On behalf of Contractor: Project Manager / Project Director/ Transport Engineer
- III) In Government Organizations : Executive Engineer (or equivalent)

Enclosure-**II(contd.) QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL*****Material Engineer–cum–Geotechnical Engineer***

i)Educational Qualification	
Essential	Graduate in Civil Engineering or M.Sc. Geology
Desirable	PG in Geotechnical Engineering
ii)Essential Experience	
a)Total Professional Experience	Min. 10 years
b)Experience in Similar type of working infrastructure projects	Min. 8 years on similar projects in design and/or construction
c)Experience in Similar Capacity	At least 2 projects of 2/4/6 laning of major highway projects of aggregate length of minimum 25Km (4 lane equivalent)
iii)Age Limit	70 years on the date of submission of proposal

Material cum Geo- tech/Geotechnical Engineer

Note: Similar Capacity includes the following positions

- I) On behalf of Consultant : Material Engineer /Quality Control Engineer / Assistant Resident Engineer.
- ii) On behalf of Contractor: Deputy Project Manager/Quality Control.
- iii) In Government Organizations: Assistant Executive Engineer / Sub Divisional Engineer (or equivalent)

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL
Senior Survey Engineer

i)Educational Qualification	
Essential	Diploma in civil Engineering or Diploma (ITI) in Surveying
Desirable	Graduate in Civil Engineering
ii)Essential Experience	
a)Total Professional Experience	Min.10 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	At least 2 projects of 2/4/6 laning of major highway projects of aggregate length of minimum 25Km (4 lane equivalent)
iii)Age Limit	65 years on the date of submission of proposal

6. Senior survey Expert

Note: Similar Capacity includes the following positions

- I) On behalf of Consultant : Survey Engineer/ Surveyor
- ii) On behalf of Contractor:Survey Engineer/ Surveyor
- iii) In Government Organizations: Junior Engineer/ Surveyor (or equivalent)

Enclosure-II(contd.)

Enclosure-II(contd.)

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSON EL
Quantity Surveyor/Documentation Expert

i)Educational Qualification	
Essential	Diploma in Civil Engineering / Certificate course from 'Institution of Quantity Surveying'
-----	Graduate in Civil Engineering
ii)Essential Experience	
a)Total Professional Experience	Min .10 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	At least 2 projects of 2/4 / 6 laning of major highway projects of aggregate length of minimum 25Km (4 lane equivalent)
iii)Age Limit	70 years on the date of submission of proposal

Quantity Surveyor /Documentation Expert

Note: Similar Capacity includes the following positions

- I) On behalf of Consultant : Quantity Surveyor .
- ii) On behalf of Contractor: Quantity Surveyor / J.E.
- i) In Government Organizations: Junior Engineer (or equivalent)

Schedule for Submission of Reports and Documents
Submission Time wef Date of Commencement of Consultancy Services
(in Months)

Stage No.	Activity	No. of copies	Time Period for assignment
1	Monthly Reports	3	3 Months
2	Inception Report (i) Inception Report including QAP Document	3	0.5
3	F. S. REPORT i) Draft Feasibility Report including Environmental and Social impact screening Reports ii) Strip Plan iii) Final Feasibility Report (with in 15 days of receiving comments of MORT&H on draft feasibility report)	4 6	1 1
4	P. P. REPORT i) Draft PPR including details and drawings for repair / rehabilitation of existing bridges & draft environmental impact assessment reports, RAP and L.A. Reports & Plans ii) Final PPR including details and drawings for repair / rehabilitation of existing bridges & final environmental impact assessment reports & RAP (Final PPR within 15 days of receiving comments of MORT&H on draft PPR)	4 6	1 1.5
5	D. P. REPORT i) Draft DPR (including drawings and draft bidding (ICB) documents) EMP, RAP ii) Final DPR (including drawings and draft bidding (ICB) documents) EMP, RAP	4 6	1.5 2
6	Project clearances from concerned agencies e.g., from MOEF; etc	Original letters from the concerned agencies and 5 photocopies of each.	3

Appendix II

(Form-I)

TECHNICAL PROPOSAL

FROM:

TO:

Sir
:

Subject: Hiring of Consultancy Service for

Regarding Technical Proposal

I/We_____Consultant/Consultancy firm here with enclose Technical Proposal for selection of my/ourfirm/ organizationas 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

Sr. 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 with in 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 Authorized 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 and analysis. | [not more than ½ of a page] |
| 3) | Quality Assurance system for consultancy assignment | [not more than ½ of a page] |

Note: 1) Marks will be deducted for writing lengthy and out of context approach and methodology for the assignment.

(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

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

II. Support Staff

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

(Form-VII)

Photo

Photo

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)*** Contact Address with Phone and mobile numbers:

6. Membership of Professional Societies: _____

7. Training/Publication:

List of details of Training / (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*
- 2 I, 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,.....(Name and Address) have not left any assignment with the consultants engaged by MORT&H / contracting firm (firm to be supervised now) for any continuing works of MORT&H without completing my assignment. I will be available for the entire duration of the current project (named.....). If I leave this assignment in the middle of the completion of the work, MORT&H works for an appropriate period to be decided by MORT&H. I have also no objection if my services are extended by MORT&H for this work in future.

UNDERTAKING FROM CONSULTING FIRM

The undersigned on behalf of (name of consulting firm) certify that Shri..... (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 MORT&H / contracting firm (firm to be supervised now) for the on going projects. We understand that if the information about leaving the past assignment with MORT&H without completing his assignment

is known to MORT&H, MORT&H would be at liberty to remove the personnel from the present assignment and debar him for an appropriate period to be decided by MORT&H.

(Form-VIII)

**WORK PROGRAM AND TIME SCHEDULE FOR KEY PERSONNEL
MONTHS (in the Form of Bar Chart)**

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

Field Full: Part Time:

Reports Due:

Activities:

Duration:

(Form-IX)

A. FIELD INVESTIGATION

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

Sr.	Item of Work/Activities	Months							
1									
2									
3									
..									
..									

B. COMPLETION AND SUBMISSION OF REPORTS

Sr.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

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

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

Appendix III

(Form-I)

FINANCIAL PROPOSALS

FROM:

TO:

Sir:

Subject: Hiring of Consultants' Services for

Regarding Price Proposal

I/We_____Consultant / consultancy firm here with
enclose*Price Proposal for selection of my/ our firm/ organization as Consultant for__

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 Local and Foreign Currency (US\$)

No.	Description	Amount (LC)*
	Local Consultants	
I	Remuneration for Local Staff (inclusive of per diem allowance)	
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:	
	Total Cost Net of Tax:	
Taxes and Duties	I. Income Tax(Expatriate)	
	II. Import duties	
	III. Value added tax	
	Total cost net of service tax**	
	Service Tax	
	TOTAL COSTS (Including Service Tax)	

LC*Local Currency

**Total Cost Net of Service Tax 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.

Rates for all items shall be quoted in figures as well as in words.

(Form-III)
Estimate of Local Currency Costs

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

Sr.N	Position	Name	Rate	SM	Amt.
Professional Staff					
1	Sr. Highway Engineer-cum-Team Leader.			3	
2	Bridge Engineer			3	
3	Highway cum Pavement Engineer			3	
4	Traffic Engineer			2	
5	Material-cum-Geo-technical Engineer			2	
6	Senior Survey Engineer			2	
7	Environmental Specialist			1	
8	Quantity Survey or / Documentation			3	
Total					
Sub-Total:				19	
Sub-Professional Staff		(9 Man Month to be distributed by the Consultant as per Position and requirement of assignment)			
	Sub-Total:				
	TOTAL				

II. Support Staff

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

III Per Diem Allowance of Expatriate

Staff S.No.	Key Personnel	Name	Total Time Period	Billing Rate (Rs.)	Amount (Rs.)
1					
2					
3					
4					
5					
6					
7					
8					

IV. Transportation (Fixed costs)

Sr. No	Description	Qty.	Nos. of Vehicl	Rate / Vehicle Month	Amount(Rs.)
1	The vehicles provided by the Consultants shall include the cost for rental, drivers, operation, maintenance, repairs, insurance, etc. A. For use of consultants	2 x 3	6		
	Total				

Duty Travel to Site (Fixed Costs)

Trips	NO	Rate	Amount
Deleted			

VI. Office Rent (Fixed Costs)

The rent cost includes maintenance,
cleaning, repairs, etc. **5 months x Rate**

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

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

TOTAL:-----**VIII. Office Furniture and Equipment (Rental)**

No.	Description	Month	Rate/Month (Rs.)	Amount (Rs.)
1	Office Furniture and Equipment	3		
Total				

IX. Reports and Document Printing No.

No.	Description	No. of Copies	Rate per Copy (Rs.)	Amount (Rs.)
1	Monthly Report	3 Per Month		
2	Inception Report & QAP	3 Per Month		
3	Environment and Social Impact Screening Report	4 Per Month		
4	Draft Feasibility Report	4 Per Month		
5	Final Feasibility Report	6 Per Month		
6	Strip Plan with L.A.	6 Per Month		
7	Draft Preliminary Project	4 Per Month		
8	Draft Environmental	4 Per Month		
9	Final Preliminary Project	6 Per Month		
10	Final Environmental	6 Per Month		
11	Draft Detailed Design	4 Per Month		
12	Draft Bidding Documents	4 Per Month		
13	Final Detailed Project	10 Per Month		
14	Final Bidding Documents	6 Per Month		
			Total	

X. Survey and Investigation**A. Topographical Survey (Fixed Rate)**

Item	Kms	Rate per Km(Rs.)	Amount(Rs.)
Topographic Survey including hire charges for equipment (GPS, Total Station, Auto Level etc.,) and supply of survey Teams comprising of project survey field staff etc. inclusive of cost of materials, labourer and construction of BM, (satellite imaginary, aerial photo grammetry if considered necessary) etc. complete	40.56 Kms		

B. Investigation (Fixed cost)

No.	Description	Rate	Quantity	Unit	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)				
	a)Boring in all type of soils (other than hard rock)		1500	M	
	b)Boring in hard rock		50	m	
Total					

XI Contingencies

Sr. No.	Item	Amount(Rs.)
1.	A fixed amount of Indian Rupees 5 lac. shall be included in the Financial Proposal. The provisions of Contingency shall be operated with the specific approval from the Authority.	5,00,000

TENTATIVE QUANTITIES FOR SUB-SOIL INVESTIGATIONS (BORING)**(Form-IV)**

No	Stretch Proposed for DPR	Approximate Length (in Km.)	Package No.	State	Cumulative Tentative Quantities (in m)	
					In Soils other than hard rock	In hard rock
1	Technical consultant for Feasibility Study and Detailed Project Report For the following Roads in the State of Punjab on BOT / EPC Mode. a) Punjab/ Haryana border to Moonak - Jakhal - Budhladha - Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab	40.56 Kms	NIT No. Dated	Punjab	1000	200

Between

**Chief Engineer
PUNJAB PWD NH CHANDIGARH**

And

“Consultant”

For

**Technical Consultant for preparation of Feasibility Study and Detailed Project Report
For the Following Road in the State of Punjab on BOT/EPC/HYBRID ANNUITY Mode**

1	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab	: Approx length 40.56Kms.
2		

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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: 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: Format for Bank Guarantee for Performance Security
- Appendix J: Minutes of the Pre-bid meeting

CONTRACT FOR CONSULTANT'S SERVICES

**GOVERNMENT OF PUNJAB
PWD NATIONAL HIGHWAY DIVISION MOHALL (PB)**

**CONTRACT FOR CONSULTANTS'
SERVICES**

Technical consultant for Feasibility Study and Detailed Project for the following Roads in the State of Punjab on BOT / EPC Mode

1	Punjab/ Haryana border to Moonak – Jakhal – Budhladha – Bhikhi road NH- 148 B section from Km. 247.150 to 287.710 in the State of Punjab	: Approx length 40.56Kms.

(From km-----to km-----)

This CONTRACT (here in after called the "Contract") is made on the-----day of the month of----- 2016 between, on the one hand, Chief Engineer (NER) Ministry of Road Transport and Highways (here in after called the "Client") and, on the other hand,-----
----- (herein after called the "Consultants").

WHEREAS

- (A) the Client has requested the Consultants to provide certain consulting services as defined in the General Conditions attached to this Contract (herein after called the "Services");
- (B) the Consultants, having represented to the Client that they have the required professional skills, personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract;
- NOW THEREFORE the parties here to hereby agree as follows:
1. The following documents attached here to shall be deemed to for man integral part of this Contract:
 - (a) The General Conditions of Contract (herein after called "GC");
 - (b) The Special Conditions of contract (herein after 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: Minutes of the pre-bid meeting

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

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

FOR AND ON BEHALF OF

Witness

(National Highways Authority of India)

1. Signature

Name Address By
Authorized Representative

2. Signature

Name Address
Witness (Consultant)

FOR AND ON BEHALF OF

1. Signature Name Address By
Authorized Representative

2. Signature Name Address

GENERAL CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

1. GENERAL PROVISIONS

1.1 Definitions

Unless the context other wise 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 Government of India;
- (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 Sub consultant 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 in side 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 here to;
- (l) "SC" means the Special Conditions of Contract by which these General Conditions of Contract may be amended or supplemented;
- (m) "Sub consultant" means any entity to which the Consultants sub contract any part of the Services in accordance with the provisions of clause GV 3.7 ; and
- (n) "Third Party" means any person or entity other than the Government, the Client, the Consultants or a Sub consultant.

1.2 Relation between the Parties

Nothing contained here in 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 here under.

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.

1.6.3 A party may change its address for notice here under 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 (Appendix -I)** here to and, where the location of a particular task is not so specified, at such locations, whether in India or else where, 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 GC7.2 here of, 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 here under impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earth quake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lock outs or other industrial action (except where such strikes, lock outs or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.
- (b) Force Majeure shall not include (i) any event which is caused by the negligence or intentional action of a Party or such Party's Sub consultants or agents or employees, nor (ii) any event which a diligent Party could reasonably have been expected to both (A) take into account at the time of the conclusion of this Contract and (B) avoid or over come in the carrying out of its obligations here under.
- (c) Force Majuere shall not include in sufficiency of funds or failure to make any payment required here under .

2.7.2 No Breach of Contract

The failure of a Party to fulfill any of its obligations here under shall not be considered to be a breach of, or default under, this Contract in so far as such inability arises from an event of Force Majuere, 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 in ability to fulfill its obligations here under with a minimum of delay.
- (b) A party affected by an event of Force Majuere 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 here under 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 here under, as specified in a notice of suspension pursuant to Clause 2.8 here in above, within thirty (30) days of receipt of such notice of suspension or within such further

- period as the Client may have subsequently approved in writing;
- (b) if the Consultants become (or, if the Consultants consist of more than one entity, if any of their Members becomes) in solvent or bankrupt or enter in to any agreements with their creditors for relief of debtor take advantage of any law for the benefit of debtors or go into liquidation or receiver ship 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 here of;
 - (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) day's written notice to the Client, such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (d) 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 8 here of within forty-five (45) days after receiving written notice from the Consultants that such payment is over due;
- (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 here of, or upon expiration of this Contract pursuant to Clause 2.4 hereof, all rights and obligations of the Parties here under 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 here of, 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 off setting against these payments any amount that may be due from the Consultant to the Client):

- (i) remuneration pursuant to Clause 6 here of 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 here of 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 here under 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 Contractor 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 here of shall constitute the Consultants' sole remuneration in connection with this Contractor 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 Contractor to the Services or in the Discharge of their obligations here under, 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 Contractor 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 therefore have been paid.

3.6 **Accounting, Inspection and Auditing**

The Consultants(i) shall keep accurate and systematic accounts and records in respect of the Services hereunder, in accordance within 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 sub contract 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 sub contract shall have been approved in writing by the Client prior to the execution of the sub contract, 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 there a sons 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 here to. To account for travel time, foreign Personnel carrying out Services in side 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 been titled 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 forth with provide as are placement a person of equivalent or better qualifications.
- (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, forth with provide are placement with qualifications and experience acceptable to him.

- (c) For the reason other than death /extreme medical ground (i) for total replacement upto 33% of key personnel, remuneration shall be reduced by 5% (ii) for total replacement between 33% to 50%, remuneration shall be reduced by 10% (iii) for total replacement beyond 50% of the total key personnel, the Client may initiate action for termination / debarment of such consultant for future projects of MORT&H for a period of 6 months to 24 months.
- (d) If the team leader or any other key personnel / specialist considered pivotal to the project is replaced, the substitute may be interviewed by a committee headed by Member / CGM to assess their merit and suitability.
- (e) If any member of the approved team of a consultant engaged by MORT&H 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 MORT&H projects.
- (f) In exceptional situations where there placement with equivalent or better qualification is not available as mentioned in Sub-Para (a) & (b) above, replacement with lower qualifications than the originally approved may be accepted with reduction in remuneration as per the procedure prescribed below. This kind of relaxation shall however, be limited to replacement of 2 key personnel only in one consultancy contract package.
- i) The new proposed personnel as are placement has to be evaluated as per the criteria fixed at the time of evaluation of original proposal and marks / rating and then : If the original personnel (included in the original proposal based on which the contract was awarded) is to be replaced at the instruction of MORT&H and the new proposed personnel is having less qualification / experience i.e. marks / rating (but fulfilling the minimum requirement as per TOR), his remuneration would be reduced by 15% over and above the stipulated conditions in the contract because of less qualified personnel .If the original personnel (Included in Contract Agreement is to be replaced by the Consulting firm and the new proposed personnel is having less qualification / experience (marks / rating), then his remuneration would be decreased proportionally in comparison to the marks of the original personnel. This will also take into account the contract condition and if the proposed reduction is less than that stipulated in contract condition, it would be as per the contract provision. It will be ensured that the new proposed personnel should score at least 75% of the marks

of the originally approved key personnel. Both the Consulting firm and the proposed personnel should give the undertaking in the format available in Form VII of Appendix II along with the replacement CV.

- ii) The CV should be signed by personnel and the consulting firm in every page. If the CV is found incorrect at later date, the personnel accepted would be removed from the assignment and debarred from further MORT&H works for an appropriate period to be decided by MORT&H and the new proposed personnel in place of removed personnel would be paid 15% less salary than the original personnel. 15% reduction in the salary will be imposed as penalty for submitting the incorrect information. This penalty will be imposed only once. If the same consulting firm submits incorrect information again second time, necessary action will be taken by MORT&H to blacklist the firm.

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.

5. **OBLIGATION OF THE CLIENT**

5.1 Assistance and Exemptions

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

- (a) provide the Consultants, 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 there on 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 other wise payable to the Consultants under this Contract shall be increased or decreased accordingly by agreement between the Parties here to, 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 (c) herein after.

5.5 **Payment**

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

6. **PAYMENT TO THE CONSULTANTS**

6.1 **Cost Estimates; Ceiling Amount**

- (a) An abstract of the cost of the Services payable in **local currency (Indian Rupees)** is set forth in **Appendix E**.
- (b) Except as may be otherwise agreed under Clause 2.6 and subject to Clause 6.1 (c), the payments under this Contract shall not exceed the ceiling specified in the SC. The Consultants shall notify the Client as soon as cumulative charges incurred for the Services have reached 80% of the ceiling.

- (c) Not with standing Clause 6.1 (b) here of, 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

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

Sr. No.	Description	Payment
1	On submission of Inception Report	10%
2	On Submission of draft feasibility report including strip plan and utility relocation plan, draft land	25%
3	On Submission of final feasibility report and land acquisition report	20%
4	On Submission of Draft Detailed Project Report and Bidding	20%
5	On approval of Final Detailed Project Report and Bidding Documents	20%
6	On submission of required project clearances from the concerned	5%
Total		100%
<p>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 MORT&H from time to time.</p>		

- (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 be come 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 there upon promptly make any necessary corrections, and up on completion of such corrections, the fore going 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 there of. 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 payment sunder 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, estimate sand all other details prepared by him as part of the 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 there after 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 over all 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 equalto0.05% 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 over run and adverse effect on reputation of MORT&H, other penal action including debarring for certain period may also be initiated as per policy of MORT&H.

8. FAIRNESS AND GOOD FAITH

8.1 Good Faith

The Parties undertake to act in good faith with respect to each others rights under this Contract and to adopt all reasonable measures to ensure the realization of the objective soft his 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 the irintention 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 un fairly, the Parties will use their best efforts to agree on such action as maybe 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 here of.

9. SETTLEMENT OF DISPUTES

(g) Amicable Settlement

The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection With this Contractor the interpretation there of.

9.1 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.

Number
of
GC Clause

SPECIAL CONDITIONS OF CONTRACT

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 : **Sh. A. K. Singla, Chief Engineer**
Punjab PWD NH Mini Secretariat
Sector -9 Chandigarh
Attention : **Sh. N.P. Singh**
Executive Engineer
CW Division PWD Sangrur at Patiala (Punjab)

**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: (Sh. N.P. Singh, Executive Engineer, CW Division PWD Sangrur at Patiala (Punjab))

For the Consultant:

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

2.1 The effectiveness conditions are the following:

- a) The contract has been approved by the MORT&H.
- b) The consultant will furnish within 15 days of the issue of letter of acceptance, a 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 (**shall be extendable till the completion of civil contract works**) will be released by MORT&H upon successful completion of services and rectification of errors if any, found during implementation of

services.

- 2.2 The time period shall be "four months" or such other time period as the parties may agree in writing .
- 2.3 The time period shall be "fifteen days" or such other time period as the Parties may agree in writing.
- 2.4 The time period shall be 12 **months** or such other time period as the parties may agree in writing.
- 3.4 Limitation of the Consultants 'Liability towards the Client
 - (a) Exception case of negligence or willful misconduct on the part of the Consultants or on the part of any person or firm acting on behalf of the Consultants in carrying out the Services, the Consultants, with respect to damage caused by the Consultants to the Client's property, shall not be liable to the Client:
 - (i) for any indirect or consequential loss or damage ; and
 - (ii) for any direct loss or damage that exceeds (A) the total payments for Professional Fees and Reimbursable Expenditure made or expected to be made to the Consultants here under ,or (B) the proceeds the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, which ever of (A) or (B) is higher.
 - (b) This limitation of liability shall not affect the Consultants 'liability, if any, for damage to Third Parties caused by the Consultants or any person or firm acting on behalf of the Consultants in carrying out the Services.
- 3.5 The risks and the coverage's 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 MORT&H 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 here under 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 state in the contract.

v) If the Consultant enters in to an agreement with MORT&H in a joint venture or 'in association', the policy must be procured and provided to MORT&H 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 there by the Consultant does not cancel the policy midterm without the consent of MORT&H. 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 Senior Highway Engineer cum Team Leader 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 Service Tax)**

6.3 (a)No advance payment will be made.

6.3 (d) The interest rate is : @ 12% per annum

6.3 (f) **The account is:**

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 there from, 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 their 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 8.2.1 here of 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 here under:

- (a) Proceedings shall, unless otherwise agreed by the Parties, be held in DELHI
- (b) The English languages 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 here by 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

Sr.	Particulars	Maximum amount payable per Arbitrator / per
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.6,000/-
4	Incidental charges (telephone, fax, postage etc.)	Maximum of Rs. 10,000/-
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

7	Traveling expenses	Economy class (by air), First class AC (by train) and AC Car (by road)
8	Lodging and Boarding	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.
9	Local travel	Rs. 10,000/- per day
10	Extra charges for days other than hearing / meeting days (maximum for 2	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 Chief Engineer (PSRSP), (NER), MORT&H before appointment of the Arbitrator

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

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 Format for Bank Guarantee for Performance Security BANK
GUARANTEE FOR PERFORMANCE SECURITY**

To

The Executive Engineer
Central Works Division,
PWD B&R Sangrur at Patiala.

In consideration of "Chief Engineer Punjab PWD NH Chandigarh (here in after referred as the "Client", which expression shall, unless repugnant to the context or meaning there of include its successors, administrators and assigns) having awarded to M/s.....having its office at..... (Here in after referred to as the "Consultant" which expression shall repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a contract by issue of client's Contract Agreement no. / Letter of Acceptance No.....dated.....and the same having been unequivocally accepted by the Consultant, resulting in a Contract valued at Rs...../-(Rupees.....) excluding service tax for "Consultancy Services for Feasibility Study and Detailed Project Report for rehabilitation and improvement to two laning with paved should configuration of (Total Length -) on NH - in the states of Under -Contract Package No. DPR / DG / (Herein after called the "Contract"), and the Consultant having agreed to furnish a Bank Guarantee to the Clientas "Performance Security as stipulated by the Client in the said contract for performance of the above Contract amounting to Rs...../-(Rupees.....).

We,having registered office at, a body registered / constituted under the (herein after referred to as the Bank), which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the client immediately on demand any or, all money payable by the Consultant to the extent of Rs..... (Rupees.....) as aforesaid at anytime upto without any demur, reservation, contest, recourse or protest and / or without any reference to the consultant. Any such demand made by the client on the bank shall be conclusive and binding not with standing any difference between the Client and the Consultant or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We agree that the Guarantee herein contained shall be irrevocable and shall continue to been force able till the Client discharges this guarantee.

The Client shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee, from time to time to vary or to extend the time for performance of the contract by the Consultant. The Client shall have the fullest liberty without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the consultant and to exercise the same at any time in any manner, and either to enforce or to for bear to enforce any covenants, contained or implied, in the Contract between the Client and the Consultant any other course or remedy security available to the Client. The bank shall not be relieved of its obligations under these presents by any exercise by the Client of its liberty with reference to the matters aforesaid or any of them or by reason of any other actor for bear any or other acts of omission or commission on the part of the Client or any other indulgence shown by the Client or by any other matter or thing whatsoever which under law would but for this provision have the effect of relieving the Bank.

The Bank also agrees that the Client at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Consultant and not with standing any security or other guarantee that the Client may have in relation to the Consultant's liabilities.

Not with standing anything contained herein,

a) Our liability under this Bank Guarantee is limited to Rs.....(Rupees.....) and it shall remain in force up to and includingand shall be extended from time to time for such period as may be desired by M/s.....,on whose behalf this guarantee has been given.

b) This Bank Guarantee shall be valid up to.....

c) We are liable to pay the guaranteed amount or any part there of under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before.....(date of expiry of Guarantee).

(Signature of the Authorized 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 Bidder