

**STATE HIGHWAYS AUTHORITY OF  
JHARKHAND (SHAJ)  
Government of Jharkhand**

*Consultancy Services for Feasibility study and Preparation of Detailed Project  
Report for seven nos. Bypasses of 2-lane/2-lane with paved Shoulders  
configuration in Jharkhand .*

**REQUEST FOR PROPOSAL  
(RFP)**

**November, 2011**

**Deen Dayal Nagar  
(Near office of Executive Engineer, NH, Ranchi Division)  
Booty Road, Ranchi, Pin-834008**

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

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## **Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

### **DISCLAIMER**

The information contained in this Request for Proposal document (“RFP”) or subsequently provided to Applicants, whether verbally or in documentary or any other form by or on behalf of the State Highways Authority of Jharkhand (SHAJ) or any of its employees or advisers, is provided to Applicants on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

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

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

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

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

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

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

The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the SHAJ or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses will remain with the Applicant and the SHAJ shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Proposal, regardless of the conduct or outcome of the Selection Process.

**STATE HIGHWAYS AUTHORITY OF JHARKHAND  
Government of Jharkhand  
Invitation of Proposal**

**Sub: Invitation of Proposals for Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven no. Bypasses at various locations in Jharkhand**

State Highways Authority of Jharkhand (SHAJ) invites proposal for Consultancy services for feasibility and preparation of Detailed Project Report (DPR) on the basis of National Competitive bidding for the following work:

Sl no	Package No	Name of Town	Stretch		length in (Km)	Period of assignment
			Start	End		
1	DPR/Bypass-1	Godda	4 <sup>th</sup> km of Godda-Hansdiha Road at Kumardih	57 <sup>th</sup> km of Godda-Pirpaiti Road at Chilauna	10.5	4 months for DPR
2	Do-do	Pakur	ch 97.900 of Pakur-Littipara Road( near dead canal of Irrigation deptt	ch 1.500 Pakur-Malpahari Road	6.0	
3	Do-do	Deoghar	55 <sup>th</sup> km of Lakrapahari-Chopa Road(SH-15) (Hindosaoran)	REO road (Kunda More) crosses at 3 <sup>rd</sup> km of Deoghar-Sarath Road(SH-14)	12	
			Kunda More	Through Deosangh (REO road-3km)-Koriwasa( REO Road-3 km)-Rohini (RCD road-3km) crossing at 5 <sup>th</sup> km of Satsang-Bhirkhibad road)	9	
			Rohini	Industrial area (REO road ) crosses Srawan –Chakai-Jasidih road)	8	
			Industrial area	Manikpur chowk (RCD road)	3	
				<b>Total length package-1</b>	<b>48.5</b>	
4	DPR/Bypass-2	Giridih	37 <sup>th</sup> km of Dumri-Giridih road	3 <sup>rd</sup> km of Pachamba-Jamua Road	8	
			37 <sup>th</sup> km of Dumri-Giridih road	9 <sup>th</sup> km of Giridih-Bengabad-Madhupur Road	12	
			9 <sup>th</sup> km of Giridih-Bengabad-Madhupur Road	Giridih-Maheshmunda at Maheshmunda	9	
				<b>Total length package-2</b>	<b>29</b>	
5	DPR/Bypass-3	Chaibasa	51 <sup>st</sup> km of Chaibasa-Saraikela (SH-5) Road	41 <sup>st</sup> km of Tata-Chaibasa Road(SH-6)	8.5	
6		Lohardagga	14 <sup>th</sup> km of Kuru-Lohardagga-Ghagra Road	25 <sup>th</sup> km Kuru-Lohardagga-Ghagra road through villages of Manho, Harmu, Tigra, Torar	19	
7		Khunti	33 <sup>rd</sup> km of NH 75 ext ( Birhu More)	5 <sup>th</sup> km of Khunti –Torpa-Kolebira road( SH-3) (crossing karra road at Arenda)	10	
				<b>Total length package-3</b>	<b>37.5</b>	

*Note: Applicant shall submit separate proposal for separate Bypass package.*

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

2. You are hereby invited to submit your proposal for above Consultancy services. The Letter of Invitation (LOI) and Terms of Reference (ToR) including Request for Proposal (RFP) could be obtained from the office of Engineer-in-Chief, Road Construction Department, Govt. of Jharkhand, Room No-420, 4<sup>th</sup> floor, Project Building, Dhurwa, Ranchi-834004, Jharkhand from **28/11/2011 to 27/12/2011** during office hours on payment of Non- refundable document fee of Rs. 5,000 (Rupees Five Thousand only) in the form of Demand Draft favoring '**State Highways Authority of Jharkhand**' and payable at Ranchi. The RFP Document can also be downloaded from Web Site [www.jharkhand.gov.in](http://www.jharkhand.gov.in) from 28/11/2011. The Consultant who downloads the RFP document from the website will be required to pay the non-refundable fee of Rs 5000/- at the time of submission of the document.

3. The following schedule is to be followed for this assignment:

- i) Sale of bid documents : 28/11/2011
- ii) Last date of receipt of queries at SHAJ : 08/12/2011
- iii) Last date for reply of queries by SHAJ : 13/12/2011
- iv) Last date of submission of bids : 28/12/2011, not later than 15.00 hrs
- v) Date of opening of bids : 28/12/2011 at 16.00hrs

4. RFP document by post /Courier will not be accepted.

5. Pre-bid conference : at 11.30 hrs on 10.12.2011

6. Place of Pre-bid conference/Submission of bids/Opening of bids:

Office of Engineer-in-Chief,  
Road Construction Department,  
Room No-420, 4<sup>th</sup> Floor,  
Project Building, Dhurwa,  
Ranchi-834004, Jharkhand  
Telefax-0651-2400747, Fax-0651-2400243  
Mobile-+91 9431358783



**(S. K. Sinha)**

Member (Technical)

E-mail: [membertechnical.shaj@gmail.com](mailto:membertechnical.shaj@gmail.com)

**letter of Invitation (LOI)**

No. SHAJ/Technical/DPR-1/2011/46

Dated:25.11.2011

Dear Sir,

**Sub: Invitation of Proposals for Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven no. Bypasses at various locations in Jharkhand**

**Introduction**

Government of Jharkhand has embarked upon massive up gradation of its road network in the current plan of year 2011-12 through Road Construction Department (RCD) and State Highways Authority of Jharkhand (SHAJ). State Highways Authority of Jharkhand (SHAJ) has been constituted by the Government of Jharkhand (GoJ) with the purpose of development of highways and any structures thereon/other infrastructure projects entrusted to it and as part of this endeavour, the SHAJ has been mandated to undertake implementation of seven no bypasses at various urban location in Jharkhand.

SHAJ now invites proposal for carrying out feasibility study and detailed project preparation for seven number bypasses in Jharkhand which has to be taken up immediately. The project is likely to be implemented through assistance from ADB under phase II of the Jharkhand State Road Project.

- 1.1 SHAJ now invites proposal for carrying out feasibility study and detailed project preparation for this purpose.
- 1.2 A brief description of the assignment and its objectives are given in the enclosed ***Terms of Reference***.
- 1.3 You are hereby invited to submit proposals *in the manner prescribed in the RFP for packages enclosed at Annexure-I*. Only one set of document regarding would suffice. One clearly marked envelope contains “Proof of eligibility”. The Second envelope containing the ‘Technical Proposal’ shall be marked envelope contains ‘Technical Proposal’ and third the financial proposal shall be marked envelope contains ‘Financial Proposal’. The most preferred bidder for package would be determined on the basis of Quality and Cost. You may separately bid for all the three packages with the same team of key personnel. In the event of the consultant being most preferred in more than one, selection will be based on least cost to the client arrived at on comparison of the financial bid of the most preferred and

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the second most preferred bidder of this RFP. The award, however, would be on one team one award basis. Decision of SHAJ shall be final and binding on Consultants and no claim shall be entertained in this regard.

Note: There is no limitation on number of awards to a bidder if separate team is fielded for each package by the bidder.

1.4 Deleted

1.5 To obtain first hand information on the assignment and on the local conditions, you are encouraged to pay a visit to the client, local division of Road Construction Department, Government of Jharkhand 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. Please note that cost of any such visit is not reimbursable.

1.6 Financial Proposals will be opened for all technically qualified consultants in accordance with clause 5.3 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 (A certified copy of the authorization shall accompany the proposal).*

1.8.2 In case of Joint Venture (JV) of firms, JV shall have not more than two firms. The proposal shall be accompanied by a certified copy of the Joint Venture agreement. In case of an Association of Firms, the Association shall have not more than two members. A copy of legally binding Memorandum of Understanding (MOU), signed by both associates shall accompany the proposal. The JV Agreement or MOU, as applicable, shall confirm 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 constituted to bid);*
- iii. A clear and definite description of the proposed administrative arrangements for the*

## **Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

*management and execution of the assignment;*

- iv. Delineation of duties, responsibilities and scope of work to be undertaken by each along with resources committed by each partner / member 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, the firm which has submitted experience certificates to meet the eligibility requirements 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 the enclosed Data Sheet.

1.8.4 Any alternative proposal, such as one by a firm in sole capacity and another in JV or association with another firm, for the same package will be summarily rejected. In such an event, all the proposals submitted by such firm and his JV partner or associate shall be rejected.

1.8.5 The proposal of a firm is liable to be rejected if the firm makes any false or misleading statement in the proposal(s) without prejudice to the rights of SHAJ to initiate further proceedings against the said Firm(s).

## **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 **08.12.2011** after duly visiting the project stretch. Any request for clarification in writing or by tele-fax or email must be sent to the Client's address indicated in the Data Sheet. The Client will respond by cable, tele-fax or email to such requests and copies of the response will be sent to all Consultants who have purchased the RFP document.

2.3 At any time before the submission of proposals, the Client may, for any reason, whether at its own initiative or in response to a clarification requested by a Consulting firm, modify the Documents by amendment. The amendment will be notified in writing or tele-fax or email to all consulting firms who have purchased the RFP document and will be binding on them. The Client may at its discretion extend the deadline for the submission of proposals.

### **3. PREPARATION OF PROPOSAL**

Your proposal shall be prepared in three separate parts, each to be contained in a separate cover as follows:

Cover 1: Documents in support of Proof of Eligibility Cover 2: Technical Proposal

Cover 3: Financial Proposal

**The information shall be furnished in the formats prescribed in Appendices I, II and III.**

#### **3.1 Documents in support of Proof of eligibility**

3.1.1 The envelope marked “DOCUMENTS IN SUPPORT OF PROOF OF ELIGIBILITY” shall contain the following in the formats prescribed in **Appendix –I of Data Sheet.**

(i) Firm’s experience:

(ii) Firm’s turnover for the last 3 years supported by certified copies of audit reports

3.1.2 The experience claimed in sub para (i) of the above para shall be in respect of completed projects and supported by certificates/proof of completion from clients and shall be more than the minimum specified in the Data Sheet. Certificate should indicate clearly the firms Design/DPR/-experience, in *2/ 4/6-laning of highway/Bypasses*, structures like bridges, viaducts, grade separator and interchanges. Scope of services rendered by the firm should be clearly indicated in the experience certificate obtained from the client.

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

#### **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 only required 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*

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*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 of TOR . 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, Bridge Engineer, Geo-technical cum material engineer, Traffic/Transportation 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. ***Age limit for Team Leader is 70 years. Age limit for all other key personnel is 65 years as on the date of bid submission. The proof of age and qualification of the key personnel must be furnished in the technical proposal.***

- 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 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 SHAJ/Road Construction Department(RCD), GoJ.***

- vii. *Age limit for supporting staff to be deployed on project is not more than 60 years as on the date of bid submission.*

- viii. *A good working knowledge in 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*

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*for the envisaged project may be ensured during first 3 to 4 months after start of the civil work at site during the period of survey and review of DPR 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 enclosed with the CV of the proposed key personnel committing his services for the instant project.*

xiv. Deleted.

3.3 Your technical proposal must include the following information 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 up to a distance of maximum 400 km. from the project site being feasible would be accepted. For all other cases suitable nearby material Testing Laboratory shall be proposed before Contract Agreement is executed.

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- vi *In case the consultant envisages to outsource 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 SHAJ 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).

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 ( in the field, office etc), accommodation, transportation, equipment, printing of documents, surveys, geo-technical investigations etc. 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 shall be summarily 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 and draft contract agreement.

3.5.3 Costs (including break down of costs )shall be expressed in Indian Rupees. The payments shall be made in Indian Rupees by the State Highways Authority of Jharkhand.

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 details on issued/downloaded Application and in hard bound form with all pages numbered serially and by giving an index of submissions. Applications submitted in other forms like spiral bound form; loose form etc shall be rejected. No copies of proposals shall be submitted.**

- 4.2 You must submit the proposal as indicated in the Data Sheet. Each 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:

Project Name..... , Consultancy Package No. ....

**Do not open, except in presence of the evaluation committee**

- 4.2.1 This outer sealed envelope will contain three separate sealed envelopes, one clearly marked “**Documents in support of “Proof of eligibility”**”, second one marked “**Technical Proposal**” and the third clearly marked “**Financial Proposal**”.
- 4.2.2 The technical and financial 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 original technical and financial proposals must be numbered and 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 initialled by the person or persons signing the proposal.
- 4.4 Your completed 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 Evaluation of each proposal shall be made separately and combined proposal for more than one package shall not be entertained.

A three-stage procedure will be adopted in evaluating the proposal. In the first stage, eligibility of the firm will be ascertained on the basis of experience certificates, firm’s turnover and other information required to be submitted in **Appendix I**. The firms failing to meet the minimum requirement will be rejected. In the second stage a technical evaluation will be carried out. Only those technical proposals, which score at least 70 points out of **100**, shall be considered for financial evaluation in the third stage. The firms will be ranked using combined technical and financial scores, as indicated in the Data Sheet.

## **5.2 Evaluation of Technical Proposal**

The evaluation committee appointed by the Client will carry out its evaluation applying the evaluation criteria and point system specified in the Data Sheet. Each responsive proposal will be assigned a technical score ( $S_T$ ).

## **5.3 Opening and Evaluation of Financial Proposal**

Technically qualified Consultancy Firms shall be informed of date and time of opening of financial proposals with the request to attend the proceedings of opening.

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, unqualified and unconditional. The cost indicated in the financial proposal shall be deemed as final and reflecting the total cost of services. Omissions, if any, in costing any item shall not entitle the firm to be compensated and the liability to fulfil its obligations as per the terms of reference within the total quoted price shall be that of the consultant. The Committee will correct the computational errors, if any, in the following manner and correct the prices.

Errors will be corrected by the Employer as follows:

- a) where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
- b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

The amount stated in the Financial Bid will be corrected by the Employer in accordance with the above procedure for the correction of errors and shall be considered as binding upon the bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Bid Security shall be forfeited.

If the Client feels that the work cannot be carried out within overall cost of financial proposal, the proposal can be rejected). The official selling rates are to be provided by the source indicated in Data Sheet. The lowest financial proposal ( $F_M$ ) will be given a financial score of 100 points. The financial scores ( $S_F$ ) of other proposals will be computed as follows:

$$S_F = 100 \times F_M/F$$

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

#### **5.4 Combined Evaluation of Technical and Financial Proposals**

Proposals will finally be ranked according to their combined technical ( $S_T$ ) and financial ( $S_F$ ) scores using the weights indicated in the Data Sheet:

$$S = S_T \times T + S_F \times F$$

Where, T and F are weights assigned to technical and financial Proposals respectively as given in the Data Sheet.

#### **5.5 Earnest Money / Bid Security**

5.5.1 The consultant shall furnish, as part of the Bid, Bid Security for an amount of Rs. 50000/ (Rupees Fifty thousand only) during the time of submission of proposal along with technical bid document.

5.5.2 Bid Security shall be in the form of Bank Guarantee from the bank in the format as set out in Appendix K (from the SBI or its subsidiaries or any Indian Nationalised Bank). It shall be valid for 4 months from the date of opening of bid.

5.5.3 Any bid not accompanied by an acceptable Earnest money / Bid Security, shall be rejected as non-responsive.

5.5.4 The Earnest money / Bid Security of unsuccessful consultant will be returned within 28 days of the end of the Bid validity period.

5.5.5 The Earnest money / Bid Security of the successful consultant will be discharged when the consultant has signed the Agreement and furnished the required Performance Security.

5.5.6 The Bid Security / Earnest money will be forfeited:

(a) if the consultant withdraws the Bid after its submission during the period of Bid validity;

(b) if the Bidder does not accept the correction of the bid price, pursuant to Clause 5.3.2;  
or

(c) in the case of a successful consultant, if the consultant fails within the specified time limit to:

*i.* sign the Agreement; and/or

*ii.* furnish the required Performance Security.

#### **6. Negotiations**

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

6.2 Each key personnel of the preferred consultant may be called for interview at the time of negotiation at the cost of consultant before the award of work.

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- 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 and 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 but in no case shall exceed the ceiling amount.
- 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 a total replacement between 50 % and 66 % remuneration shall be reduced by 15 % (iv) for total replacement beyond 66% of the total key personnel, the Client may initiate debarment proceedings so as to debar such consultant for future projects of SHAJ/ Road Construction Department, GoJ for a period of 6 months to 24 months. If, for any reason beyond the reasonable control of the consultants, it becomes necessary to replace any of the personnel, the consultants shall forthwith provide as a replacement a person of equivalent or better qualification and experience.
- 6.7 The details related to para 3.3 (v) and 3.3 (vi) would also be finalized during negotiation.
- 6.8 The negotiations will be concluded with a review of the draft form of Contract. The Client and the Consultants will finalize the contract to conclude negotiations.

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**7. Performance Securities**

The Performance security shall be for a total of 10% of contract price to be submitted in the following manner (i) 5% of the Contract Price in form of unconditional Bank Guarantee & (ii) remaining 5% of contract price shall be deducted from running bills. The unconditional Bank Guarantee from the Bank (From SBI or its subsidiaries or any Indian nationalized bank for an amount equivalent to **5%** 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 will be furnished by the Consultant within 10 days of the issue of Letter of Acceptance (LOA). **The Performance security will be released by SHAJ upon expiry of 3 years beyond the date of completion of services, provided satisfactory report by SHAJ on recommendation of Central Design Organisation, RCD, GoJ is issued in this regard.**

**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 most preferred Consultant for Contract negotiations.

9.2 The selected Consultant is expected to commence the Assignment on the date and at the location specified in the Data Sheet.

**10.** Request for Proposal (RFP) could be obtained from the office of Engineer-in-Chief, Road Construction Department, Govt. of Jharkhand, Room No-420, 4<sup>th</sup> floor, Project Building, Dhurwa, Ranchi-834004, Jharkhand from **28/11/2011 to 27/12/2011** during office hours on payment of Non- refundable document fee of Rs. 5,000 (Rupees Five Thousand only) in the form of Demand Draft favoring **‘State Highways Authority of Jharkhand Fund’ and payable at Ranchi.** The RFP Document can also be downloaded from Web Site [www.jharkhand.gov.in](http://www.jharkhand.gov.in) from 28/11/2011. The Consultant who downloads the RFP document from the website will be required to pay the non-refundable fee of Rs 5000/- at the time of submission of the document without which the bid shall be summarily rejected.

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**11. The following Schedule is to be followed for this assignment:**

- i) last date for receipt of queries at SHAJ : **08.12.2011**
- ii) last date for reply of queries by SHAJ : **13.12.2011**
- iii) last date for submission of bids : **28.12.2011, not later than 15.00 hrs**
- (iv) Date of opening of bids : **28.12.2011 at 16.00 Hrs**

- 12. RFP document by post/Courier will not be accepted.
- 13. Conditional bid will be summarily rejected.
- 14. SHAJ will not be responsible for any delay in receiving the proposal.
- 15. Pre-bid conference: **at 11.30 hrs on 10.12.2011.**
- 16. Place of Pre-bid conference/ Submission of bids/ Opening of bids:

Office of the Engineer-in-Chief,  
Road Construction Department,  
Room No.420, 4<sup>th</sup> Floor,  
Project Building, Dhurwa,  
Ranchi-834004, Jharkhand  
Telefax: 0651-2400747  
Tel: 0651-2400239  
Fax: 0651-2400243  
Mobile: +91 9431358783

Thanking you.

Yours sincerely,

Encl : as above



**(S. K. Sinha)**  
Member (Technical),  
State Highways Authority of Jharkhand  
Deen Dayal Nagar, Booty More  
(Near NH Division, Ranchi), Ranchi-834008  
Telefax: 0651-2400747, Tel: 0651-2400239,  
Fax: 0651-2400243, Mobile: +91 9431358783  
E-mail: [membertechnical.shaj@gmail.com](mailto:membertechnical.shaj@gmail.com)

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Annexure-I**

**Detail of the stretch proposed for DPR**

Sl no	Package No	Name of Town	Stretch		length in (Km)	Period of assignment
			Start	End		
1	<b>DPR/Bypass-1</b>	Godda	4 <sup>th</sup> km of Godda-Hansdiha Road at Kumardih	57 <sup>th</sup> km of Godda-Pirpaiti Road at Chilauna	10.5	4 months for DPR
2	Do-do	Pakur	ch 97.900 of Pakur-Littipara Road( near dead canal of Irrigation deptt	ch 1.500 Pakur-Malpahari Road	6.0	
3	Do-do	Deoghar	55 <sup>th</sup> km of Lakrapahari-Chopa Road(SH-15) (Hindosaoran)	REO road (Kunda More) crosses at 3 <sup>rd</sup> km of Deoghar-Sarath Road(SH-14)	12	
			Kunda More	Through Deosangh (REO road-3km)-Koriwasa( REO Road-3 km)-Rohini (RCD road-3km) crossing at 5 <sup>th</sup> km of Satsang-Bhirkhibad road)	9	
			Rohini	Industrial area (REO road ) crosses Srawan –Chakai-Jasidih road)	8	
			Industrial area	Manikpur chowk (RCD road)	3	
				<b>Total length package-1</b>	<b>48.5</b>	
4	<b>DPR/Bypass-2</b>	Giridih	37 <sup>th</sup> km of Dumri-Giridih road	3 <sup>rd</sup> km of Pachamba-Jamua Road	8	
			37 <sup>th</sup> km of Dumri-Giridih road	9 <sup>th</sup> km of Giridih-Bengabad-Madhupur Road	12	
			9 <sup>th</sup> km of Giridih-Bengabad-Madhupur Road	Giridih-Maheshmunda at Maheshmunda	9	
				<b>Total length package-2</b>	<b>29</b>	
5	<b>DPR/Bypass-3</b>	Chaibasa	51 <sup>st</sup> km of Chaibasa-Saraikela (SH-5) Road	41 <sup>st</sup> km of Tata-Chaibasa Road(SH-6)	8.5	
6		Lohardagga	14 <sup>th</sup> km of Kuru-Lohardagga-Ghagra Road	25 <sup>th</sup> km Kuru-Lohardagga-Ghagra road through villages of Manho, Harmu, Tigra, Torar	19	
7		Khunti	33 <sup>rd</sup> km of NH 75 ext ( Birhu More)	5 <sup>th</sup> km of Khunti –Torpa-Kolebira road( SH-3) (crossing karra road at Arenda)	10	
				<b>Total length package-3</b>	<b>37.5</b>	

*Note: Applicant shall submit separate proposal for separate Bypass package.*

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**DATA SHEET**

(References to corresponding paragraphs of LOI are mentioned alongside)

**1. The Name of the Assignment is** Preparation of Feasibility and Preparation of Detailed Project Report for Bypasses at seven locations in Jharkhand

(Name of Project as mentioned at Annexure-I)

(Ref. Para 1.1)

(The Name of project and Package No. should be indicated by the firm in the format given in the technical proposal)

**2. The Name of the Client is:** Chief Executive Officer (CEO)  
State Highways Authority of Jharkhand  
Deen Dayal Nagar, (Near office of Executive Engineer, NH  
Ranchi Division)  
Booty Road, Ranchi, Pin-834008  
Tel: 0651-2400239  
Telefax: 0651-2400747  
Fax: 0651-2400243

**3. The Description of the Project:** It is proposed to provide seven no. Bypasses in urban locations in Jharkhand (Ref. Para 1.1)

**4. Date and Time for submitting queries**

**Date:** 08.12.2011 upto 15.00 hrs

**Address:** **Member (Technical)**  
State Highways Authority of Jharkhand (SHAJ)  
Office of the Engineer-in-Chief,  
Road Construction Department,  
Room No.420, 4<sup>th</sup> Floor,  
Project Building, Dhurwa,  
Ranchi-834004, Jharkhand  
Telefax: 0651-2400747  
Tel: 0651-2400239  
Fax: 0651-2400243  
Mobile: +91 9431358783

(Ref. Para 2.2)

**5. The Documents are:**

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

(Ref. Para 2.1)

**6. Deleted**

**7. Tax and Insurance**

(Ref. Para 3.5.2)

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

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 Consultant will remit service tax monthly or as applicable under the law and seek reimbursement from SHAJ.
2. **Limitations of the Consultant's Liability towards the Client (Ref. para 8)**
  - a) Except in case of negligence or wilful misconduct on the part of the Consultants or on the part of any person or firm acting on behalf of the Consultants in carrying out the Services, the Consultants, with respect to the damage caused by the Consultants to the Client's property, shall not be liable to the Client:
    - (i) for any indirect or consequential loss or damage; and,
    - (ii) For any direct loss or damage that exceeds; (A) the total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder, or (B) the proceeds the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of (A) or (B) is higher.
  - b) The Limitation of liability shall not affect the Consultants' liability, if any, for damage to Third Parties caused by the Consultants or any person or firm acting on behalf of the Consultants in carrying out the Services.
3. **The risks and the coverage shall be as follows:**
  - a) Third Party motor vehicle liability insurance as required under Motor Vehicles Act, 1988 in respect of motor vehicles operated in India by the Consultants or their Personnel or any Sub consultants or their Personnel for the period of consultancy.
  - b) Third Party liability insurance with a minimum coverage, for Rs. 1.00 million for the period of consultancy.
  - c)
    - (i) The Consultant shall provide to SHAJ Professional Liability Insurance (PLI) for a period of five years beyond completion of Consultancy services or as per Applicable Law, whichever is higher.
    - (ii) The Consultant will maintain at its expense PLI including coverage for errors and omissions caused by Consultant's negligence in the performance of its duties under this agreement, (A) For the amount not exceeding total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder OR (B) the proceeds, the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of (A) or (B) is higher.

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

- (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 as stated in the contract.
  - (v) If the Consultant enters into an agreement with SHAJ in a joint venture or ‘in association’, the policy must be procured and provided to SHAJ by the joint venture/in association entity and not by the individual partners of the joint venture/ association.
  - (vi) The contract may include a provision whereby the Consultant does not cancel the policy midterm without the consent of SHAJ. The insurance company may provide an undertaking in this regard.
- d) Employer’s liability and workers’ compensation insurance in respect of the Personnel of the Consultants and of any Sub consultant, in accordance with the relevant provisions of the Applicable Law, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate; and all insurances and policies should start from the date of commencement of services and remain effective as per relevant requirements of contract agreement.
8. **The number of copies of the proposal required to be submitted:** Only one proposal (in original) (Ref para 4.1)
9. The address is --- (Ref. para 4.2)
- Member (Technical)**  
State Highways Authority of Jharkhand (SHAJ)  
Office of the Engineer-in-Chief,  
Road Construction Department,  
Room No.420, 4<sup>th</sup> Floor,  
Project Building, Dhurwa,  
Ranchi-834004, Jharkhand  
Telefax: 0651-2400747  
Tel: 0651-2400239  
Fax: 0651-2400243  
Mobile: +91 9431358783  
E-mail: [membertechnical.shaj@gmail.com](mailto:membertechnical.shaj@gmail.com)

The envelopes must be clearly marked:

- i. ORIGINAL PROPOSAL;
- ii. TECHNICAL PROPOSAL or FINANCIAL PROPOSAL as Appropriate; and,

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

- iii. DO NOT OPEN, EXCEPT IN PRESENCE OF THE EVALUATION COMMITTEE on the outer envelope.
- iv. Consultancy Package No. :-----
- v. Project Name :-----
- vi. Name and Address of Consultant

The proposal for Technical Proposal and Financial Proposal be submitted as per para 3 of LOI.

- 10. The date and time of proposal submission are: **28.12.2011**  
**(not later than 15.00 hrs)**  
(Ref. Para 4.4)
- 11. Proposal Validity period (days, date): 120 days (Ref. Para 4.5)
- 12. **Evaluation criteria:** (Ref. Para 3 & 5)

**12.1 First stage evaluation** – Eligibility requirement of experience and the following information shall be provided for evaluation (Ref. Para 1.8.3, 3.1 & 5.1)

Firm's Experience of projects during last seven years and turnover during last three years

- i) shall be submitted in Forms I and II respectively of Appendix-I. The certificates from the Clients in support of the experience claimed in Form I shall be as per the sample format given in Form III of Appendix-II.
- ii) Eligibility criteria for sole applicant firm of lead partner in case of JV/Association.

1	Preparation of DPR for NH/SH/MDR/Expressways	Preparation of DPR for aggregate length of 200 lane kms or more for minimum 2-lane roads with one road package of at least 80 lane kms or one bypass/ring road having at least 20 km equivalent four lane length	Annual average turnover of the last 3 years more than Rs. 100 lakhs
---	--	--	---

- iii) In case of JV, lead partner must fulfill the requirements as at (ii) above. Other JV partner (not more than one partner shall be allowed) should fulfill at least 40% of the eligibility criteria as indicated in para (ii) above.

**Note:** The weights for experience shall be considered as follows:

S.No.	Status of the firm	Weightage for experience
1.	Sole firm	100 %
2.	Lead partner in a JV	75%
3.	Other partner in a JV	25 %
4.	Associate	10%

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

Experience of any constituent of the firm or any subsidiary or holding company of the firm shall not be taken into consideration for evaluation of the experience of any firm.

- iv) List of minimum essential equipment which the firm may possess or hire for eligibility:

1	Pavement condition survey equipment	1. Benkelman Beam 2. Roughometer or any other suitable equipment
2	Laboratory facility	Soil testing facility for Atterberg limits, soil classifications, moisture content, density, CBR value, etc
3	Survey Equipment	Total Station with appropriate software
4	Office equipment	Computer Plotter
5	Software	MX Road/MOSS or equivalent, Auto CAD, STAAD or equivalent

- (v) Additional essential equipment :

1.	GPS Survey	The firm can either own this necessary equipment for these specialized services or furnish an undertaking indicating the arrangement for carrying out such services.
2.	Geotechnical investigation	The firm can either own this necessary equipment for these specialized services or furnish an undertaking indicating the arrangement for carrying out such services through empanelled consultant with the RCD, GoJ.
3.	Condition survey and testing of existing bridge structures	

**12.1.1 Second stage: Technical Evaluation**

(Ref. Para 5.1 & 5.2)

The points given to evaluation criteria are:

**Evaluation Criteria for Technical Proposal**

Sl. no.	Description	Points
1	Firms Relevant Experience in last 7 years	
	(i) experience of the DPR Consultancy related to highway/bypass	15
	(ii) DPR for bridge having length more than 100 m	5
2	Adequacy of Approach and Methodology	5
3	Qualification and relevant experience of the proposed key personnel	75
	Total	100

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

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

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Weightage Points for Key Professionals**

Description	Weight (%)	Break up Details
Educational Qualification	25	In para 12.1.2
Employment with firm	5	
Relevant experience and experience at capacity proposed		
Relevant experience	40	
Experience at capacity proposed	30	
<b>Total</b>	<b>100</b>	

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

Sub criteria:	<b>5</b>
(a) Understanding TOR	2
(b) Quality methodology	2
(c) Work Programme and Manning Schedule	1
	.....
Total	5

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

SL No.	Key Personnel	Points
1	Sr. Highway Engineer cum Team Leader	17
2	Sr. Bridge Engineer	10
3	Highway Engineer cum pavement specialist	10
4	Traffic /Transportation Engineer	8
5	Material-cum-Geo-technical Engineer	6
6	Senior Survey Engineer	8
7	Financial Analyst	4
8	Environment Specialist	4
9	Resettlement & Rehabilitation Specialist	4
10	Quantity and contract engineer Surveyor/Documentation Expert	4
	<b>Total</b>	<b>75</b>

The technical proposal should score at least 70 points out of 100 to be considered for financial evaluation.

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

The weight (T) given to the Technical Proposal	80 Per cent. (Ref. Para 5.2)
The weight (F) given to the Financial Proposal	20 per cent.

**12.2 Third stage – Evaluation of Financial proposal**

Financial Proposals will be opened of all qualified consultants in accordance with clause 5.3 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.

13. The common currency is “Indian Rupee”. (Ref. Para 3.5.3) Fixed Exchange rate for conversion (for bid evaluation purpose only):

1 US \$=Rs. 47.00

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)

15. SHAJ shall reimburse only service tax. Consultant has to assess all other taxes and should inbuild them in their financial proposal. These taxes (other than service tax) should not be provided separately. (Ref. Para 5.3.1)

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for finalizing alignment, cost and financial viability for seven no. Bypasses at various locations in Jharkhand .**

**APPENDIX-I**

**(Formats for Proof of Eligibility)**

**(Form-I)  
Firm's Experience**

Sl no	Name of the project	Name and address of the client with tel no	Category of Roads NH / SH / MDR/Expressways	Total Length (kms)	Lane (2/4 /6)	Total Lane km	Cost of Consultancy (in Rs.) 1US \$= Rs 47/- )	Date of start and completion	Experience as sole firm/ lead partner in a JV/ other partner in JV/ Associate	Brief Scope of work

**Appendix-I**

**(Form-II)**

Firm's turnover for the last 3 years (certified copies of the audit reports to be enclosed)

S. No.	Financial Year	Turnover (Rs. in Lacs )	Weightage	Weighted Turnover
1	2008-09		1.33	
2	2009-10		1.21	
3	2010-11		1.10	
	<b>Total weighted Turnover</b>			
	<b>Total weighted Average Turnover</b>			

(Form-I)

**TECHNICAL PROPOSAL**

FROM:

TO:

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

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

Sir:

Subject: Hiring of Consultancy Service for (Package no-..... )

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

**Regarding Technical Proposal**

I/We \_\_\_\_\_ Consultant/ Consultancy firm herewith enclose  
Technical Proposal for selection of my/our firm/organization as Consultant for  
\_\_\_\_\_ (Package no \_\_\_\_\_ ).

Yours faithfully,

Signature \_\_\_\_\_

Full Name \_\_\_\_\_

Designation \_\_\_\_\_

Address \_\_\_\_\_

(Authorized Representative)

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Appendix - II**

**(Form-II)**

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

Sl.No.	Name of Project	Consultancy Package No.	Names of Proposed Key Personnel
1			

**(Form-III)**

**FIRM'S REFERENCES**

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

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

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

**Signature of Authorised Representative**  
**(Certificate from Employer regarding experience should be furnished in support)**

**(Form-IV)**

**CONSULTANT NAME:**

**APPROACH PAPER AND 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]  
Quality Assurance system for consultancy
- 3) assignment [not more than ½ of a page]

**(Form-V)**

**COMMENTS/ SUGGESTIONS OF CONSULTANT**

**On the Terms of Reference:**

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

**(Form-VI)**

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

**I. Technical/Managerial Staff**

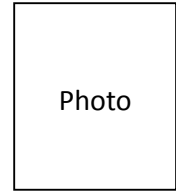
S.No.	Name	Position	Task Assignment
1			
2			
3			
4			
..			
..			
..			

**II. Support Staff**

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

**(Form-VII)**

**Format of Curriculum Vitae (CV) For Proposed Key Staff**



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

5. Educational Qualification:

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

Contact Address with Phone and mobile numbers:

6. Membership of Professional Societies: \_\_\_\_\_
7. Publication:  
(List of details of major technical reports/papers published in recognized national and international journals)
8. Employment Record:  
(Starting with present position, list in reversed order, every employment held in the following format given below. 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).

Sl. no.	From (M/Y)	To (M/Y)	Period (Months)	Project worked	Post	Organisation	Responsibility in short	Desirable experience in similar projects* (Months)	Desirable experience in similar capacity* (Kms)

*\*Relevant details for each project to be given as mentioned in Enclosure II of TOR.  
Note: Individual project should be indicated separately.*

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

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.
- iv) Experience at capacity proposed:..... 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 bio-data correctly describes me, my qualification and my experience.

**Signature of the Candidate** \_\_\_\_\_

Place \_\_\_\_\_

Date \_\_\_\_\_

Phone No. \_\_\_\_\_

**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, Address and mobile no.) have not left any assignment with the consultants engaged by NHAI / GoI/ State Govts./PSU's/contracting firm (firm to be supervised now) for any continuing works of NHAI / GoI/ State Govts./PSU's/contracting firm (firm to be supervised now) 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, SHAJ would be at liberty to debar me from SHAJ/RCD, GoJ projects for an appropriate period to be decided by SHAJ. I have also no objection if my services are extended by SHAJ for this work in future.

(Signature of key personnel)

**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 NHAI / GoI/ State Govts./PSU's/contracting firm (firm to be supervised now) for the ongoing projects. We understand that if the information about leaving the past assignment with NHAI / GoI/ State Govts./PSU's/contracting firm (firm to be supervised now) without completing his assignment is known to SHAJ, SHAJ would be at liberty to remove the personnel from the present assignment and debar him for an appropriate period to be decided by SHAJ.

(Signature of Authorized Representative of Firm)

**(Form-VIII)**

**WORK PROGRAM AND TIME SCHEDULE FOR KEY PERSONNEL**

**MONTHS (in the Form of Bar Chart)**

Sl. No.	Name	Position	Report Due/ Activities	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 :

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Appendix - II**

**(Form-IX)**

**A. FIELD INVESTIGATION**

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

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

**B. COMPLETION AND SUBMISSION OF REPORTS**

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

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Appendix - II**

**(Form –X)**

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

<b>S.No.</b>	<b>Details of activity</b>	<b>To be Carried out / prepared by (Name/Designation)</b>	<b>To be Checked/ Verified by (Name/Designation)</b>
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)

**Form-XI**

**Use of Software & Equipment**

<b>SI no</b>	<b>Software/ Equipment</b>	<b>No's available with the firm</b>	<b>No's proposed for the project</b>

**(Form-I)**

**FINANCIAL PROPOSALS**

FROM:

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

TO:

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

Sir:

Subject:

Hiring of Consultants' Services for

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

Regarding Price Proposal

I/We \_\_\_\_\_ Consultant/consultancy firm herewith enclose

\*Price Proposal for selection of my/our firm/organization as Consultant for \_\_\_\_\_  
(Package no.....)

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 Indian Rupees**

<b>No.</b>	<b>Description</b>	<b>Amount in figures (in INR)*(Rs.)</b>	<b>Amount in words (in RS)</b>
I	Remuneration for Staff (inclusive of per diem allowance)		
II			
III			
IV	Transportation Duty Travel to Site Office Rent Office Supplies, Utilities and Communication Office Furniture and Equipment (Rental)	L.S	
V			
VI			
VII			
VIII			
IX	Reports and Document Printing	L.S	
X	Surveys & Investigations	L.S	
A	Topographical Survey		
B	Investigations		
	Total cost net of service tax**		
	Service Tax		
	<b>TOTAL COSTS (Including Service Tax)</b>		

\*\* Total Cost Net of Service Tax shall be considered for financial evaluation Survey & Investigations also includes Sub-Soil exploration & Testing  
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.**

Note-(i) The ceiling cost of Consultancy is as shown in the Summary of costs. Payment will be made as per stipulations of the Conditions of Contract.(ii) Total cost net of service tax should be inclusive of all taxes duties etc. except Service Tax which is reimbursable.

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Appendix III**

**(Form-III)**

**Cost Estimate**

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

S.No.	Position	Name	Rate	SM	Amt.
	Professional Staff				
1	Team Leader			4	
2	Bridge Engineer			2	
3	Highway Engineer cum pavement specialist			4	
4	Traffic /Transportation Engineer			2	
5	Material-cum-Geo-technical Engineer			3	
6	Senior Survey Engineer			3	
7	Financial Analyst			1	
8	Environment Specialist			1	
9	Resettlement & Rehabilitation Specialist			1	
10	Quantity and Contract Engineer /Documentation Expert			4	
	Sub-Total:			25	
	Sub-Professional Staff ( To be assessed by Consultant as per requirement of assignment)				
1					
2					
3					
4					
5					
6					
7					
8					
9					
	Sub-Total:				
	<b>TOTAL</b>				

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**II. Support Staff**

No.	Position	Name	Staff Months	Billing Rate( )	Amount( )
1	Office Manager		}	L.S	
2	Typist				
3	Office Boy				
4	Night Watchman				
				<b>Total:</b>	

**III. Transportation (Fixed costs)**

S.N	Description	Qty.	Nos. of Vehicle months/ per vehicle	Rate/ Month	Amount
1	The vehicles provided by the Consultants shall include the cost for rental, drivers, operation, maintenance, repairs, insurance, etc. A. For use of consultants				L.S
	<b>Total</b>				

**IV. Duty Travel to Site (Fixed Costs)**

Trips	NO	Rate	Amount
			L.S

**V. Office Rent (Fixed Costs)**

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

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

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

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

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

No.	Description	Unit	Quantity	Rate ( )	Amount ( )
1	<b>Office Furniture and Equipment</b>		LS		L.S
				<b>Total</b>	

**VIII. Reports and Document Printing**

No.	Description	No. of Copies	Rate per Copy (Rs.)	Amount (Rs.)
1	Monthly Report	3 Per Month	}	L.S
2	Inception Report & QAP	3		
3	Environment and Social Impact Screening Report	4		
4	Draft Feasibility Report	4		
5	Final Feasibility Report	6		
6	Strip Plan with L.A. Reports	6		
7	Draft Preliminary Project Report	4		
8	Draft Environmental Assessment report & RAP	4		
9	Final Preliminary Project Report	6		
10	Final Environmental Assessment report	6		
11	Draft Detailed Design Report & Drawings etc. Draft EMP	4 4		
12	<b>Deleted</b>			
13	Final Detailed Project Report with Bill of Quantities, Cost Estimates, Updated Drawings etc. Final EMP	6 6		
14	<b>Deleted</b>			
			<b>Total</b>	

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**IX. Survey and Investigation**

**A. Topographical Survey (Fixed Rate)**

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

**B. Investigation (Fixed cost)**

No.	Description	Quantity	Amount (Rs.)	
1	Road and Bridge Inventory	L.S.	L.S.	
2	BBD Test and Pavement Evaluation			
3	Roughness Survey			
4	Axle Load Survey			
5	Material Survey and Investigation			
6	Sub-grade Investigation			
7	Traffic Survey			
8.	Socio-economic & Census Survey/Studies			
9.	Land Acquisition Studies			
10.	Any other investigations/surveys			
11.	* Sub-Soil Investigation (Boring)	Rate	Qty	Amount (Rs)
	a) Boring in all type of soils (other than hard rock)		L.S	L.S.
	b) Boring in hard rock			
	Total			

## **TERMS OF REFERENCE (TOR)**

## **Terms of Reference for Consultancy Services (TOR)**

### **1. General**

- 1.1 Government of Jharkhand has embarked upon massive up gradation of its road network in the current plan of year 2011-12 through Road Construction Department (RCD) and State Highways Authority of Jharkhand (SHAJ). State Highways Authority of Jharkhand (SHAJ) has been constituted by the Government of Jharkhand (GoJ) with the purpose of development of highways and any structures thereon/other infrastructure projects entrusted to it and as part of this endeavour, the SHAJ has been mandated to undertake implementation of seven no bypasses at various urban location in Jharkhand. SHAJ now invites proposal for carrying out feasibility study and detailed project preparation for seven no bypasses in Jharkhand which has to be taken up immediately. The project is likely to be implemented through assistance from ADB under phase II of the Jharkhand State Road Project
- 1.2 Taking into account of future traffic, efficient commercial transportation, decongestion of traffic in the urban stretches and to reduce pollution and travel time, State Highways Authority of Jharkhand (SHAJ) proposes to construct suitable bypasses at above seven urban locations. SHAJ accordingly proposes to procure the services of a technical cum financial Consultants for carrying out suitable feasibility Study for selection of the alignment, preparation of detailed project report including cost estimate and then render financial consultancy services for proper structuring and implementation of above mentioned seven bypasses.
- 1.3 SHAJ 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.

### **2. Objective**

- 2.1 The main objective of the consultancy service is for Feasibility study and Preparation of Detailed Project Report for finalizing alignment, cost and proper structuring and implementation from financial viability point of view for seven no Bypasses at various urban locations in Jharkhand. Although road stretches are being upgraded to 2-lane / 2-lane with paved shoulders, it has been decided to provide Bypasses of 2-lane/ 2-lane with paved shoulders configuration, as appropriate, with land acquisition plan for 4-lane . State

## **Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

Highways Authority of Jharkhand ( SHAJ) has been entrusted with the task of procuring consultancy services for Feasibility study and preparation of Detailed Project Report and subsequent implementation of these Bypass projects. SHAJ accordingly proposes to procure the services of a feasibility cum DPR Consultants for carrying out suitable feasibility Study for selection of the alignment, field investigation, hydraulic studies, providing detailed structural design, evaluate detailed cost analysis, LA and R&R plan, utility shifting & relocation plan, environmental analysis and recommending implementation mode for taking up the project. Financial analysis/modelling shall be submitted along with DPR as guidance to SHAJ for taking up the project on BOT toll/BOT annuity / EPC contract basis, as the case may be. The consultant shall clearly specify the type of contract to be implemented for taking up the work considering the viability of project.

- 2.2 The viability of the project shall be established taking into account the requirements with regard to pavement design, provision of service roads wherever necessary, type of intersections, construction of new bridges and structures including flyovers/VUP/PUP etc., road safety features, construction of new bridges and structures, quantities of various items of works and cost estimates and economic analysis.
- 2.3 The Detailed Project Report would inter-alia include detailed traffic circulation plan, highway design, design of pavement and options for flexible or rigid pavements, design of bridges and cross drainage structures, 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, land acquisition plan for 4-lane showing the additional requirement of land along with data, preparation of land acquisition proposal as per State Govt. requirement, preparation of draft LA notification proposal as per extant Land Acquisition Act in force in Jharkhand
- 2.4 The DPR consultant should ensure detailed project preparation incorporating aspects of value engineering, quality audit and safety audit requirement in design and implementation.
- 2.5 The consultant should, along with Feasibility Report, clearly bring out through financial analysis the preferred mode of implementation on which the Civil Work for the stretch is to be taken up.

### **3. Scope of Services**

- 3.1 The General Scope of services is given in the sections elsewhere as also that follow. However, the entire scope of services would, inter-alia, include the items mentioned in the letter of invitation and the TOR. The scope of consultancy services would demand a very high level of professional competence with optimal approach to meet all the objectives stated in para 2 above as it would require review of all available studies, data, records, information interaction with concerned agencies and identification of constraints besides carrying out necessary traffic surveys. The consultant shall also be fully responsible for the accuracy of the physical and ground details, such as alignment, grade, right of way details, abutting land use, and existing features
- 3.2 Detailed scope of consultancy services shall thus cover but be not limited to the following major tasks
- (i) Carry out the preliminary survey by using satellite or appropriate technique for fixing of suitable alignment amongst various alternatives for a bypass on each of the aforementioned urban sections mentioned in the packages for which bid is being submitted on the basis of Technical & Financial consideration.
  - (ii) Conduct Traffic studies including traffic surveys and future demands/ forecasting of identified connection.
  - (iii) Carry out Satellite and detailed topographical survey of the alignments indicating the revenue survey numbers , maps , extent of land to be acquired ; contours at every 5 M interval.
  - (iv) Cost estimation of various prospective connections with regard to quantum of work pertaining to rehabilitation/up-gradation and improvement on the basis of highway/pavement design, provision of service roads, suitable grade separated intersections, underpasses / flyovers / ROB's, rehabilitation/construction of bridges/structures, road safety features etc.
  - (v) Analysis of expected financial return through toll and other revenues taking into account of the effect of other Peripheral roads and Radial Roads in the vicinity of these cities which are either tolled or are being taken up or already taken up under BOT projects. The alignment/sections of ring/radial road (including Bypass and realignments) already undertaken/being undertaken by any other Authority shall be in harmony with these projects of SHAJ and conflict, if any, shall be minimized.

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

- (vi) Recommend a suitable alignment for the Bypasses on the basis of technical and financial viability of the project including prioritization of the sections.
  - (vii) Fix Benchmark pillars and boundary stones on the alignment.
  - (viii) Prepare prioritization plan of the sections keeping in view traffic demands and technical and financial viability
  - (ix) Cost estimation and analysis of financing option to develop the financing programme.
  - (x) Preparation of the implementation programme with identified phasing, if any.
  - (xi) Recommendations on user fee, from the considerations of its acceptability.
- 3.3 The general scope of services is given in the sections that follow. However, the entire scope of services would, inter-alia, include the items mentioned in the Letter of Invitation and the TOR.
- 3.4 All ready to implement 'good for construction' drawings shall be prepared.
- 3.5 Environmental Impact Assessment and Environmental Management Plan shall be carried out by the Consultant meeting the requirements of the Government of India or lending agencies like ADB / World Bank/ JBIC etc, as the case may be.
- 3.6 Wherever required, consultant will liaise with all concerned Govt. agencies including but not limited to Jharkhand State Electricity Board or its successors., Water Resources Deptt., Drinking Water & Sanitation Department, District Administration, Local Bodies, Road Construction Department, Municipality Department, Police Department, Revenue Department, Traffic Police, and secure all clearances. Consultant will also obtain 'NO Objection Certificate' from Ministry of Environment and Forest and also incorporate the estimates for shifting of utilities of all types involved from concerned local authorities in the DPR. Consultant is also required to prepare all Land Acquisition papers (i.e. all necessary schedules as per the extant LA Act in force in Jharkhand) for acquisition of land.
- 3.7 The consultant shall prepare and submit the drawings, cost estimate at feasibility report stage [Stage 2, Refer para 10.3].
- 3.8 Consultant shall obtain all types of necessary clearances required for implementation of the project on the ground from the concerned agencies. The client shall provide the necessary supporting letters to enable implementation. In case Consultant does not obtain

## **Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

all the necessary clearances up to the completion of the assignment, deduction up to 5% amount will be made from the final payment. The amount thus deducted will be released after all necessary clearances have been obtained.

- 3.9 The consultant shall also suggest alternate traffic movement plan during construction and also furnish the need for strengthening of any local body road on which the traffic shall be assigned during construction.
- 3.10 The DPR consultant should ensure detailed project preparation incorporating value Engineering, quality audit and safety audit requirement in design and implementation and the consultant will submit quality audit plan before starting preparation of Detailed Project Report.
- 3.11 Financial analysis/modeling shall be submitted along with DPR to Central Design Organisation (RCD), GoJ and as guidance to SHAJ for taking up the project on BOT toll/BOT annuity / EPC contract basis, as the case may be. The consultant shall clearly specify the type of contract to be implemented for taking up the work considering the viability project. Accordingly, the consultant is required to prepare and deliver bid documents for these possibilities/options.

### **4. General**

#### **4.1 Primary Tasks**

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

- i. **review of all available reports and published information about** the project road and project influence area.
- ii. Environmental and social impact assessment, including such as related to cultural properties, natural habitants, involuntary resettlement etc.
- 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, preliminary design stage and once final designs are concretized).**
- iii. detailed reconnaissance;
- iv. identification of possible improvements in the existing alignment and bypassing congested locations with alternatives, evaluation of different alternatives comparison

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

- 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; detailed traffic study along all the arms of the intersection including OD survey, traffic pattern during the peak hours, detailed traffic and axle load survey, demand forecasting for next 10, 20, 30 years and scope of peak hour congestion at the intersection by utilizing the existing local roads.
  - vi. inventory and condition surveys for road and ;
  - vii. inventory and condition surveys for bridges, cross-drainage structures and drainage provisions;
  - viii. detailed topographic surveys using Total Stations and GPS;
  - ix. pavement investigations;
  - x. sub-grade characteristics and strength: investigation of required sub-grade and sub-soil characteristics and strength for road and embankment design and sub soil investigation;
  - xi. identification of sources of construction materials;
  - xii. detailed design of road, its x-sections, horizontal and vertical alignment and **design of embankment of height more than 6m and also in poor soil conditions and where density consideration require, even lesser height embankment.** Detailed design of structures preparation of GAD and construction drawings and cross-drainage structures and underpasses etc.
  - xiii. identification of the type and the design of intersections;
  - xiv. design of complete drainage system and disposal point for storm water
  - xv. value analysis / value engineering and project costing;
  - xvi. economic and financial analyses
  - xvii. contract packaging and implementation schedule.
  - xviii. strip plan indicating the scheme for carriageway widening, location of all existing utility services (both over- and underground) and the scheme for their relocation, trees to be felled and planted and land acquisition requirements including schedule for LA: reports documents and drawings arrangement of estimates for cutting of trees and shifting of utilities from the concerned department;
  - xix. preparation of detailed project report, cost estimate, approved for construction drawings, rate analysis, detailed bill of quantities, documents for execution of civil works through budgeting resources.
  - xx. Any other user oriented facility enroute toll facility.
  - xxi. Tie-in of on-going/sanctioned works of MORT&H/NHAI/ RCD /other deptt. Of Govt. of Jharkhand /other agencies.
  - xxii. Preparation of social plans for the project affected people as per policy of the lending agencies/ Govt. of India R & R Policy.

- 4.2** While carrying out the field studies, investigations and design, the development plans being implemented or proposed for future implementation by the local bodies, should be taken into account. Such aspect should be clearly brought out in the reports and drawings.
- 4.3** The Consultant shall study the possible locations and design of toll plaza, way side amenities required and arboriculture along the highway shall also be planned.
- 4.4** The local and slow traffic may need segregation from the main traffic and provision of service roads and physical barrier including fencing may be considered, wherever necessary to improve efficiency and safety.
- 4.5 Standards and Codes of Practices**
1. All activities related to field studies, design and documentation shall be done as per the latest Guide lines/ circulars of MoSRT&H and relevant publications of the Indian Roads Congress (IRC) and Bureau of Indian Standards (BIS). For aspects not covered by IRC and BIS, international standard practices, such as, British and American Standards may be adopted. The Consultants, upon award of the Contract, may finalise this in consultation with Central Design Organisation(RCD), GoJ and reflect the same in the inception report.
  2. All notations, abbreviations and symbols used in the reports, documents and drawings shall be as per IRC:71-1977.
- 4.6 Quality Assurance Plan (QAP)**
1. The Consultants should have detailed Quality Assurance Plan (QAP) for all field studies including topographic surveys, traffic surveys, engineering surveys and investigations, design and documentation activities. The quality assurance plans/procedures for different field studies, engineering surveys and investigation, design and documentation activities should be presented as separate sections like engineering surveys and investigations, traffic surveys, material geo-technical and sub-soil investigations, road and pavement investigations, investigation and design of bridges & structures, environment and R&R assessment, economic & financial analysis, drawings and documentation, preparation, checking, approval and filing of calculations, identification and tractability of project documents etc. Further, additional information as per format shall be furnished regarding the details of personnel who shall be responsible for carrying out/preparing and checking/verifying various activities forming part of feasibility study and project preparation, since inception to the completion of work. The detailed Draft QAP Document must be discussed and finalised with the concerned Central Design Organisation(RCD), GoJ officers immediately upon the award of the Contract and submitted as part of the inception report.
  2. It is imperative that the QAP is approved by Central Design Organisation(RCD), GoJ before the Consultants start the field work.

#### **4.7 Review of Data and Documents**

1. The Consultants shall collect the available data and information relevant for the Study. The data and documents of major interest shall include, but not be limited to, the following:
  - i. Climate
  - ii. road inventory
  - iii. road condition, year of original construction, year and type of major maintenance/rehabilitation works;
  - iv. condition of bridges and cross-drainage structures;
  - v. sub-surface and geo-technical data for existing bridges and cross-drainage structures
  - vi. hydraulic data, drawings and details of existing bridges;
  - vii. details of sanctioned / on-going /recently completed works on the stretch sanctioned by MoRT&H/NHAI/GoJ other agencies for Tie-in purposes
  - viii. survey and evaluation of locally available construction materials;
  - ix. historical data on classified traffic volume (preferably for 5 years or more);
  - x. origin-destination and commodity movement characteristics; if available;
  - xi. speed and delay characteristics; if available;
  - xii. commodity-wise traffic volume; if available;
  - xiii. accident statistics; and,
  - xiv. vehicle loading behaviour (axle load spectrum), if available.
  - xv. Type and location of existing utility services (e.g. Fibre Optical Cable, O/H and U/G Electric, Telephone line, Water mains, Sewer, Trees etc.)
  - xvi. traffic behavior pattern in the area during peak and non-peak hours.
  - xvii) Environmental setting and social baseline of the project.

**4.8** The Social analysis study shall be carried out in accordance with the World Bank/ADB/GoJ guidelines, as the case may be. The social analysis report will, among other things, provide a socio-economic profile of the project area and address in particular, indigenous people, communicable disease particularly HIV/AIDS poverty alleviation, gender, local population, industry, agriculture, employment, health, education, child labour, land acquisition and resettlement.

#### **4.9 Traffic Surveys**

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

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**4.9.1 Number and Location of Survey Stations**

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

Sl.No.	Description	Number of Survey Stations for every location of Bypass
1.	Classified Traffic Volume Count	Minimum 1
2.	Origin-Destination and Commodity Movement Characteristics	Minimum 1
3.	Axle Loading Characteristics	Minimum 1
4.	Intersection Volume Count	All Major Intersection
5.	Speed-Delay Characteristics	Project Road Section
6.	Pedestrian/animal cross traffic count	All major habitations along the highway

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

**4.9.2. Classified Traffic Volume Count Survey**

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

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

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

#### **4.9.3. Origin-Destination and Commodity Movements Surveys**

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

#### **4.9.4. Turning Movement Surveys**

1. The turning movement surveys for estimation of peak hour traffic for the design of major and minor intersections shall be carried out for the Study. The details regarding composition and directional movement of traffic shall be furnished by the Consultant.

2. The methodology for the surveys shall be as per IRC: SP: 41-1994. The details including location and duration of surveys shall be finalized in consultation with Central Design Organisation (RCD), GoJ officials. The proposal in response to this TOR shall clearly indicate the number of locations that the Consultants wish to conduct turning movement surveys and the rationale for the same.
3. The data derived from the survey should be analysed to identify requirements of suitable remedial measures, such as construction of underpasses, fly-overs, interchanges, grade-separated intersections along the project road alignment. Intersections with high traffic volume requiring special treatments either presently or in future shall be identified.

#### **4.9.5. Axle Load Surveys**

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

#### **4.9.6. Speed-Delay Surveys**

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

#### **4.9.7. Pedestrian / animal cross traffic surveys:**

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

#### **4.9.8. Truck Terminal Surveys**

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

#### **4.9.9. User Acceptability Surveys**

1. The consultants shall carry out Stated Preference surveys along the project road route to estimate the acceptable user fee levels for the different vehicle categories. The questionnaire to be used to record the response by trained staff should be properly structured so as to avoid ambiguities. The scenarios in the questionnaire should represent the current speed, vehicle operating costs (VOC) and travel time levels and the probable effect on them due to traffic growth for both “do-minimum” and “with project” cases. The findings of these surveys shall be compared with the user fees being collected for the ongoing projects in the country. The sample should be selected judiciously.
2. In case a model is proposed to be used for the analysis of toll rates, the details of model calibration along with the appreciation of the statistical data and their relevance shall be clearly established.
3. The detailed toll analysis should take into account traffic diversion rates and willingness/ability to pay. The analysis should bring out an appropriate toll structure and the mechanisms for toll increases.
4. The analysis should be carried out with the user fee levels linked to various benefits to the users.

#### **4.10 Traffic Demand Estimates**

1. The consultants shall make traffic demand estimates and establish possible traffic growth rates in respect of all categories of vehicles, taking into account the past trends, annual population and real per capita growth rate, elasticity of transport demand in relation to income and estimated annual production increase. The other aspects including socio-economic development plans and the land use patterns of the region having impact on the traffic growth, the projections of vehicle manufacturing industry in the country, development plans for the other modes of transport, O-D and commodity movement behaviour should also be taken into account while working out the traffic demand estimates.
2. The values of elasticity of transport demand shall be based on the prevailing practices in the country. The Consultants shall give complete background including references for selecting the value of transport demand elasticity.
3. It is envisaged that the 2 lane /2 -lane with paved shoulders, as appropriate, of the project road sections covered under this TOR is completed and opened to traffic. The traffic demand estimates shall be done for a further period of 10, 20, 30 years from completion of 2 lane/ 2-lane with paved shoulders. The demand estimates shall be done assuming three scenarios, namely, optimistic, pessimistic and most likely traffic growth. The growth factors shall be worked out for five-yearly intervals.
4. Traffic projections should be based on sound and proven forecasting techniques. In case traffic demand estimated is to be made on the basis of a model, the application of the model in the similar situation with the validation of the results should be established. The traffic projections should also bring out the possible impact of implementation of any competing facility in the near future. The demand estimates should also take into account the freight and passenger traffic along the major corridors that may interconnect with the project. Impact of toll charges on the traffic estimates should be estimated.
5. The methodology for traffic demand estimates described in the preceding paragraphs is for normal traffic only. In addition to the estimates for normal traffic, the Consultants shall also work out the estimates for generated, induced and diverted traffic.
6. The traffic forecasts shall also be made for both diverted and generated traffic.
7. Overall traffic forecast thus made shall form the basis for the design of each pavement type and other facilities/ancillary works.

#### **4.11 Engineering Surveys and Investigations**

##### **4.11.1. Reconnaissance and Alignment**

1. The Consultants should make an in-depth study of the available land width (ROW) topographic maps, satellite imageries and air photographs of the project area and other available relevant information collected by them concerning the existing alignment. Consultant himself has to arrange the required maps and the information needed by him from the potential sources. Consultant should make efforts for minimizing land acquisition.
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. realignment requirements including the provision of bypasses, ROBs / Flyovers/via-duct for pedestrian crossings with possible alignment alternatives;
  - iv. possible alignment alternatives, vis-a-vis, scheme for the construction of additional lanes parallel to the existing road;
  - 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 Central Design Organisation(RCD), GoJ'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. Total stations. The data from the topographic surveys shall be available in (x, y, z) format for use in a sophisticated digital terrain model (DTM). The Consultants would be fully responsible for any inaccuracy in surveys.
3. The detailed field surveys would essentially include the following activities:
  - i. Topographic Surveys along the Existing Right of Way (ROW): Running a continuous open Traverse along the existing road and realignments, wherever required, and fixation of all cardinal points such as horizontal intersection points (HIP's), centre points and transit points etc. and properly referencing the same with a pair of reference pillars fixed on either side of the centre-line at safe places within the ROW.
  - ii. Collection of details for all features such as structures (bridges, culverts etc.) utilities, existing roads, electric and telephone installations (both O/H as well as underground), huts, buildings, fencing and trees (with girth greater than 0.3 metre) oil and gas lines etc. falling within the extent of survey.
4. The width of survey corridor will generally be as given under:
  - i. The width of the survey corridor should taken into account the layout of the existing alignment including the extent of embankment and cut slopes and the general ground profile. While carrying out the field surveys, the widening scheme of Highway or

Bridges (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 divided 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.

- 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 Central Design Organisation(RCD) GoJ in consultation with SHAJ. 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 and drainage etc.
  - iii. The width of the surveyed corridor will be widened appropriately where developments and / or encroachments have resulted in a requirement for adjustment in the alignment, or where it is felt that the existing alignment can be improved upon through minor adjustments.
  - iv. Where existing roads cross the alignments, the survey will extend a minimum of 100 m either side of the road centre line and will be of sufficient width to allow improvements, including at grade intersection to be designed.
5. The surveyed alignment shall be transferred on to the ground as under:
- i. Reference Pillar and Bench Mark / Reference pillar of size 15 cm X 15 cm X 45 cm shall be cast in RCC of grade M 15 with a nail fixed in the centre of the top surface. The reference pillar shall be embedded in concrete up to a depth of 30 cm with CC M10 (5 cm wide all around). The balance 15 cm above ground shall be painted yellow. The spacing shall be 250m apart, in case Bench Mark Pillar coincides with Reference Pillar, only one of the two need be provided.
  - ii. Establishing Bench marks at site connected to GTS Bench marks at an interval of 250 metres on Bench mark pillar made of RCC as mentioned above with RL and BM No. marked on it with red paint.

#### **4.11.2.1 Longitudinal and Cross-Sections**

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

- i. Longitudinal and cross sections for major and minor streams as per recommendations

contained in IRC:5-1998 (“Standard Specifications & Code of Practice for Road Bridges, Section 1 – General Features of Design”) and IRC Special Publication No. 13 (Guidelines for the Design of Small Bridges and Culverts)..

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

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

#### **4.11.2.2 Details of utility Services and Other Physical Features**

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

#### **4.11.3. Road and Pavement Investigations**

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

##### **4.11.3.1 Road Inventory Surveys**

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1. Detailed road inventory surveys shall be carried out to collect details of all existing road and pavement features along the existing road sections. The inventory data shall include but not limited to the following:
  - i. terrain (flat, rolling, mountainous);
  - ii. land-use (agricultural, commercial, forest, residential etc ) @ every kilometer;
  - iii. carriageway width, surfacing type @ every 500m and every change of feature whichever is earlier;
  - iv. shoulder surfacing type and width @ every 500m and every change of feature whichever is earlier;
  - v. sub-grade / local soil type (textural classification) @ every 500m and every change of feature whichever is earlier;
  - vi. horizontal curve; vertical curve
  - vii. road intersection type and details, at every occurrence;
  - viii. retaining structures and details, at every occurrence;
  - ix. location of water bodies (lakes and reservoirs), at every occurrence; and,
  - x. height of embankment or depth of cut @ every 200m and every change of feature whichever is earlier.
  - xi. land width i.e. ROW
  - xii. culverts, bridges and other structures (type, size, span arrangement and location)
  - xiii. Roadside arboriculture
  - xiv. Existing utility services on either side within ROW.
  - xv. General drainage conditions
  - xvi. Design speed of existing road
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 RCD / other deptts of GoJ/ local agencies. 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
  - sub grade type (textural classification) and condition (dry, wet)

## **2. Road and Pavement Condition Surveys**

- i. Detailed field studies shall be carried out to collect road and pavement surface conditions. The data should generally cover:
  - pavement condition (surface distress type and extent);
  - shoulder condition;
  - embankment condition; and
  - drainage condition

### **Pavement**

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

### **Shoulder**

Paved: Same as for pavement

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

### **Embankment**

General condition; and Extent of slope erosion

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

- vi. Middle 200m could be considered as representative sample for each one km. of road and in case all other things are considered similar.

### **Drainage**

General condition

Connectivity of drainage turnouts into the natural topography Condition in cut sections

Condition at high embankments

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

### **3. Pavement Roughness**

- i. The roughness surveys shall be carried out using Bump Integrator or similar instrument. The methodology for the surveys shall be as per the widely used standard practices. The calibration of the instrument shall be done as per the procedure given in the World Bank's 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.
- iii. The results of the survey shall be expressed in terms of BI/ IRI and shall be presented in tabular and graphical forms. The processed data shall be analysed using the cumulative difference approach to identify road segments homogenous with respect to surface roughness.

### **4. Pavement Structural Strength**

- i. The Consultants shall carry out structural strength surveys for existing pavements using Benkelman Beam Deflection technique in accordance with the CGRA procedure given in IRC:81-1997 ("Guidelines for Strengthening of Flexible Road Pavements Using Benkelman Beam Deflection Technique").
- ii. It is suggested that the deflection surveys may be carried out as per the scheme given below: Mainline testing; and,
- iii. control section testing.

- iv. The deflection tests for the mainline shall be carried out at every 500 m along the road sections covered under the study. The control section testing shall involve carrying out deflection testing for each 100 m long homogenous road segment along the road sections. The selection of homogenous segment shall be based on the data derived from pavement condition surveys. The total length of such homogenous segments shall not be less than 100 m per kilometre. The deflection measurements for the control section testing should be at an interval of not more than 10 m.
- v. 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.
- vi. 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 Central Design Organisation(RCD), GoJ the scheme describing the testing schedule including the interval. The testing scheme shall be supported by data from detailed reconnaissance surveys.
- vii. In case, the Consultants wish to use any acceptable method(s) other than Benkelman Beam deflection technique for the evaluation of pavement strength, details of such methods or innovative features for deflection testing using Benkelman Beam technique along with the methodology for data analysis, interpretation and the use of such data for pavement overlay design purposes using IRC or any other widely used practices, such as AASHTO guidelines, should be got approved by Central Design Organisation(RCD), GoJ. The sources of such methods should be properly referenced.

#### **4.11.3.3 Subgrade Characteristics and Strength**

1. Based on the data derived from condition (surface condition, roughness) and structural strength surveys, the project road section should be divided into segments homogenous with respect to pavement condition and strength. The delineation of segments homogenous with respect to roughness and strength should be done using the cumulative difference approach (AASHTO, 1993).

2. The data on soil classification and mechanical characteristics for soils along the existing alignments may be available with the consent state authorities. The testing scheme is, therefore, proposed as given under:
  - i. For the widening of existing road within the ROW, the Consultants shall test at least three sub-grade soil samples for each homogenous road segment or three samples for each soil type encountered, whichever is more.
  - ii. For the roads **along new alignments**, the test pits for subgrade soil shall be @2 km or for each soil type, whichever is more. A minimum of three samples should be tested corresponding to each homogenous segment.
3. The testing for subgrade soil shall include:
  - i. in-situ density and moisture content at each test pit
  - ii. field CBR using DCP at each test pit
  - iii. characterization (grain size and Atterberg limits) at each test pit and,
  - iv. laboratory moisture-density characteristics (modified AASHTO compaction);
  - v. laboratory CBR (unsoaked and 4-day soak compacted at three energy levels) and swell.
4. For problematic soils, the testing shall be more rigorous. The characteristics with regard to permeability and consolidation shall also be determined for these soils. The frequency of sampling and testing of these soils shall be finalised in consultation with the Central Design Organisation(RCD), GoJ officials officers after the problematic soil types are identified along the road sections.
5. The laboratory for testing of material should be got approved from Central Design Organisation(RCD), GoJ before start of work.

#### **4.11.4 Investigations for Bridges and Structures**

##### **4.11.4.1 Inventory of Bridges, Culverts and Structures**

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

**4.11.4.2 Hydraulic and Hydrological Investigations**

1. The hydrological and hydraulic studies shall be carried out in accordance with IRC:5-1998 (“Standard Specifications & Code of Practice for Road Bridges, Section I General Feature of Design”) and IRC Special Publication No. 13 (“Guidelines for the Design of Small Bridges and Culverts”) These investigations shall be carried out for all existing cross drainage structures along the road sections under the study.
2. The Consultants shall make a desk study of available data on topography (topographic maps, stereoscopic aerial photography), storm duration, rainfall statistics, top soil characteristics, vegetation cover etc. so as to assess the catchment areas and hydraulic parameters for all existing and proposed drainage provisions. The findings of the desk study would be further supplemented and augmented by a reconnaissance along the area. All important hydrological features shall be noted during this field reconnaissance.
3. The Consultants shall collect information on high flood level (HFL), low water levels (LWL), discharge velocity etc. from available past records, local inquiries and visible signs, if any, on the structural components and embankments. Local inquiries shall also be made with regard to the road sections getting overtopped during heavy rains.

**4.11.4.3 Condition Survey for Bridges, Culverts and Structures**

1. The Consultants shall thoroughly inspect the existing structures and shall prepare a report about their condition including all the parameters given in the Inspection pro-forma of IRC-SP; 35-1990. The condition and structural assessment survey of the bridges / culverts / structures shall be carried out by senior experts of the Consultants.
2. For the bridges identified to be in a distressed condition based upon the visual condition survey, supplementary testing shall be carried out as per IRC-SP:35 and IRC-SP:40. Selection of tests may be made based on the specific requirement of the structure.
3. The assessment of the load carrying capacity or rating of existing bridges shall be carried out under one or more of the following scenarios:
  - i. when the design live load is less than that of the statutory commercial vehicle plying or likely to ply on bridge;

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- ii. if during the condition assessment survey and supplementary testing the bridge is found to indicate distress of serious nature leading to doubt about structural and / or functional adequacy, and
  - iii. design live load is not known nor are the records and drawings available.
4. The evaluation of the load carrying capacity of the bridge shall be carried out as per IRC-SP:37 (“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 taking up load testing of bridges. Road closure for testing if unavoidable shall be arranged by SHAJ/ RCD /local authorities for limited duration say 12 hrs or so.
5. Consultant shall carryout necessary surveys and investigations to establish the remaining service life of each retainable bridge or structure with and without the proposed strengthening and rehabilitation according to acceptable international practice in this regard.

**4.11.4.4 Geo-technical Investigations, geological study and Sub-Soil Exploration**

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

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

The deviation(s), if any, by the Consultants from the scheme presented above should be got approved by Central Design Organisation(RCD), GoJ.

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2. However, where a study of geo-technical reports and information available from adjacent crossings over the same waterway (existing highway and railway bridges) indicates that subsurface variability is such that boring at the suggested spacing will be insufficient to adequately define the conditions for design purposes, the Consultants shall review and finalise the bore hole locations in consultation with the Central Design Organisation (RCD), GoJ officers.
3. Sub-soil investigations will be done as per IRC 78-2000.
4. The scheme for the borings locations and the depth of boring shall be prepared by the Consultants and submitted to Central Design Organisation(RCD), GoJ for approval. These may be finalised in consultation with Central Design Organisation (RCD), GoJ.
5. The sub-soil exploration and testing should be carried out through the Geotechnical Consultants who have done Geo-technical investigation work in similar project. In case of outsourcing Geo-Technical Investigation, the firm selected by the Consultant for this purpose should also be from empanelled agencies from MoRT&H/ RCD(GoJ). The soil testing reports shall be in the format prescribed in relevant IRC Codes.
6. For the road pavement, bore holes at each major change in pavement condition or in deflection readings or at 2 km intervals whichever is less shall be carried out to a depth of at least 2 m below embankment base or to rock level and are to be fully logged. Appropriate tests to be carried out on samples collected from these bore holes to determine the suitability of various materials for use in widening of embankments or in parts of new pavement structure.

### **4.11.4.5 Material Investigations**

1. The Consultants shall identify sources (including use of fly-ash/ slag), quarry sites and borrow areas, undertake field and laboratory testing of the materials to determine their suitability for various components of the work and establish quality and quantity of various construction materials and recommend their use on the basis of techno-economic principles. The Consultants shall prepare mass haul diagram for haulage purposes giving quarry charts indicating the location of selected borrow areas, quarries and the respective estimated quantities.
2. It is to be ensured that no material shall be used from the right-of-way except by way of leveling the ground as required from the construction point of view, or for landscaping and planting of trees etc. or from the cutting of existing ground for obtaining the required formation levels.

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3. Environmental restrictions, if any, and feasibility of availability of these sites to prospective civil works contractors, should be duly taken into account while selecting new quarry locations.
4. The Consultants shall make suitable recommendations regarding making good the borrow and quarry areas after the exploitation of materials for construction of works.
5. The Material Investigation aspect shall include preparation and testing of bituminous mixes for various layers and concrete mixes of different design mix grades using suitable materials (binders, aggregates, sand filler etc.) as identified during Material Investigation to conform to latest MoSRT&H specification.

### **4.12 Detailed Design of Bridges, Structures, Tunnels, Roads and Pavements,**

#### **4.12.1. General**

1. The Consultants are to carryout detailed designs and prepare working drawings for the following:
  - i. high speed highway complete in all respects;
  - ii. design of pavement and overlay for the existing road, paved shoulders, medians, verges;
  - iii. bridges, viaduct/subways and structures including ROB's etc.
  - iv. at-grade and grade-separated intersections, interchanges (if required);
  - v. ROB for railway crossings as per the requirement and the standards of the Indian Railways; and,
  - vi. prepare alignment plans, longitudinal sections and cross-sections @ 50m intervals;
  - vii. designs for road furniture and road safety/traffic control features;
  - viii. designs and drawings for under passes/overpass / cattle passes tree planting/fencing at locations where necessary / required
  - ix. toll plazas, if applicable
  - x. drainage design showing location of turnouts, out falling structures, separate drawings sheet for each 5 km. stretch.
  - xi. Bridges and structures rehabilitation plan with design and drawings
  - xii. traffic amenities (Parking Areas, Weighing Station and Rest Areas, etc.)
  - xiii. Median separation and other safety features.

#### **4.12.2. Design Standards**

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

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

**4.12.3. Design of bridges and Structures**

1. The Consultant shall prepare General Arrangement Drawing (GAD) and Alignment Plan showing the salient features of the bridges and structures proposed to be constructed / reconstructed along the road sections covered under the Study. These salient features such as alignment, overall length, span arrangement, cross section, deck level, founding level, type of bridge components (superstructure, substructure, foundations, bearings, expansion joint, return walls etc.) shall be finalized based upon hydraulic and geo-technical studies, cost effectiveness and ease of construction. The GAD shall be supplemented by Preliminary designs. In respect of span arrangement and type of bridge a few alternatives with cost-benefit implications should be submitted to enable Central Design Organisation(RCD), GoJ to approve the best alternative.
2. Subsequent to the approval of the GAD and the alignment plan by Central Design Organisation(RCD), GoJ, detailed design shall also be carried out. After approval of the GAD and the alignment plan, structural design and drawing shall also be carried out for the proposed underpasses, overpasses, interchanges.
3. The Consultants shall also carry out the design and make suitable recommendations for protection works for Bridges and cross drainage structures.
4. The location of all at-grade level crossings shall be identified falling across the existing level crossings for providing ROB at these locations. The Consultants shall prepare preliminary GAD for necessary construction separately to the Client. The Consultant shall pursue the Indian Railways Authorities or/and any statutory authority of State/Central Government for approval of the GAD from concerned Authorities.
5. Subsequent to the approval of the GAD and Alignment Plan by Central Design Organisation(RCD), GoJ and Railways if ROB's are to be constructed, the Consultant shall prepare detailed design as per IRC and Railways guidelines and working drawings for all components of the bridges and structures. The Consultant shall furnish the design and working drawings for suitable protection works and/or river training works wherever required.

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6. Dismantling/ reconstruction of existing structures shall be avoided as far as possible except where considered essential in view of their poor structural conditions/ inadequacy of the provisions etc. The existing structures having inadequate carriageway width shall be widened / reconstructed in part or fully as per the latest MoRT&H guidelines. The Consultant shall furnish the detailed design and working drawings for carrying out the above improvements.
7. 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.
8. Suitable repair / rehabilitation measures shall be suggested in respect of the existing structures as per IRC-SP:40 along with their specifications, drawings and cost estimate in the form of a report. The rehabilitation or reconstruction of the structures shall be suggested based on broad guidelines for rehabilitation and strengthening of existing bridges contained in IRC-SP:35 and IRC-SP:40.
9. In case land available is not adequate for embankment slope, suitable design for RCC retaining wall shall be furnished. However, RE wall may also be considered depending upon techno-economic suitability to be approved by Central Design Organisation(RCD), GoJ.

### 4.12.4. Pavement Design

- 1 The detailed design of pavement shall involve:
  - (a) strengthening of existing road pavement and design of the new pavement if any, if the findings of the traffic studies and life-cycle costing analysis confirm the requirement for widening of the road to 2-lane/ 2-lane with paved shoulders, as the case may be;
  - (b) pavement design for bypasses; and,
  - (c) design of shoulders/footpaths.
- 2 The design of pavement shall primarily be based on IRC publications. However, the consultants shall use the recommendations given in widely used international practices including AASHTO, NAASRA, RTAC and TRL wherever appropriate on approval by Central Design Organisation(RCD), GoJ.
- 3 The design of pavement shall be rigorous and shall make use of the latest Indian and International practices. **The design alternatives shall include both rigid and flexible**

**design options. The most appropriate design, option shall be established on life-cycle costing and techno-economic consideration.**

- 4 For the design of pavement, each set of design input shall be decided on the basis of rigorous testing and evaluation of its suitability and relevance in respect of 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. Furthermore, the methodology adopted for the design of pavement shall be complete with flow charts indicating the various steps in the design process, their interaction with one another and the input parameter required at each step.
- 5 For the design of overlays for the existing pavement, the strengthening requirement shall duly take into account the strength of the existing pavement vis-à-vis the remaining life. The overlay thickness requirements shall be worked out for each road segment homogenous with respect to condition, strength and sub-grade characteristics. The rehabilitation provisions should also include the provision of regulating layer. For existing pavement with acceptable levels of cracking, provision of a crack inhibiting layer should also be included.
- 6 Latest techniques of pavement strengthening like provision of geo-synthetics should be duly considered by the consultant for achieving economy.
- 7 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.
- 8 The pavement design task shall also cover working out the maintenance and strengthening requirements and periodicity and timing of such treatments.

#### **4.12.5. Design of Embankments**

1. The embankments design should provide for maximum utilization of locally available materials consistent with economy. Use of fly ash wherever available within economical leads must be considered. In accordance with Government instructions, **use of fly ash within 100 km from Thermal Power Stations is mandatory.**

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2. The Consultants shall carry out detailed analysis and design for all embankments of height greater than 6 m based on relevant IRC publications.
3. The design of embankments should include the requirements for protection works and traffic safety features.

### **4.12.6. Geometric Design**

1. The project is to be developed as a 2-lane/ 2-lane with paved shoulders with land acquisition Plans for 4-lanes.
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;
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 improvement requirements with respect to the different horizon periods taking into account special problems such as road segments with isolated steep gradients.
7. In the case of closely spaced cross roads the Consultant shall examine different options such as, providing grade separated structure for some of them with a view to reduce number of at-grade crossings, services roads connecting the cross-roads

and closing access from some of the intersections and prepare and furnish appropriate proposals for this purpose keeping in view the cost of improvement, impact on traffic movement and accessibility to cross roads.

The detailed drawings and cost estimate should include the provisions for realignments of the existing cross roads to allow such arrangements. This should be finalised in discussions with Central Design Organisation(RCD), GoJ officials.

8. The Consultant shall also prepare design of grade separated pedestrian crossings (viaducts) for large cross traffic of pedestrians and / or animals.
9. The Consultant shall also prepare details for at-grade junctions, which may be adopted as alternative to the grade separated structures. The geometric design of interchanges shall take into account the site conditions, turning movement characteristics, level of service, overall economy and operational safety.
10. The Consultants shall prepare design and other details in respect of the parallel service roads in urbanized locations and other locations to cater to the local traffic, their effect of the viability of the project on commercial basis if service roads are constructed as part of the project and the implications of not providing the service roads, if it is determined that the same is viable on BOT basis.
11. The consultant shall prepare complete road and pavement design including drainage for new bypass option identified around congested town enroute.

#### **4.12.7. Drainage System**

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

#### **4.12.8. Traffic Safety 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**

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

#### **4.12.10. Toll Plaza**

1. The Consultants shall identify the possible toll plaza locations(s), if viable on BOT basis, based on the data and information derived from the traffic studies and a study of the existing physical features including the availability of land. The location of the plaza should keep in view that it is required to collect toll on rational basis from as much of the vehicular traffic as possible consistent with economy of collection and operations. The location of the toll plaza should be finalized in consultation with Central Design Organisation(RCD), GoJ & SHAJ SHAJ.
2. The Consultants shall design the toll plaza layout based on the consideration of traffic segregation, acceptable queue length and the average waiting time for the vehicle during the analysis period. The variations of traffic is to be considered in the estimation of the inflow rate. The Consultants shall clearly bring out the comparison of the available systems and describe the operational characteristics including the advantages of the recommended toll collection system for Central Design Organisation (RCD), GoJ's acceptance.
3. The design of pavement for the toll plaza shall take into account the lay out features and the various stresses induced by the acceleration, deceleration, braking of vehicles and the effect of possible oil spillage from stationary vehicles.
4. The setting up, operation and administration costs for the proposed toll collection system shall be worked out by the consultants.

**4.12.11. Weighing Station, Parking Areas and Rest Areas**

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

**4.12.12 Deleted**

**4.12.13 Miscellaneous Works**

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

**4.13 Environment and Social Impact Assessment**

The consultant shall under take 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 GoJ. 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 ADB's Environmental Assessment Requirements of ADB 1998 guidelines for selected infrastructure projects 1993 as amended from time to time

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/World Bank Guidelines / 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 baseline conditions relevant to the project with the objective to establish the benchmarks.
3. The consultant shall assess the potential significant impacts and identify the imitative 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 a review of their location,
  - (c) Highway side landscape and enhancement of the road junctions,
  - (d) Enhancement of highway side water bodies, and
  - (e) Redevelopment 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, wildlife and environmental clearances from the respective authorities including the SPCBs and the MOEF on behalf of SHAJ.
10. The consultant shall identify and plan for plantation of the suitable trees along the existing highway in accordance with IRC guidelines.
11. The consultant shall assist in providing appropriate input in preparation of relevant environment and social sections of BPIP.

#### **4.13.2 Social Assessment**

1. The consultant would conduct base line socio-economic and census survey to assess the impacts on the people, properties and loss of livelihood. The socioeconomic survey will establish the benchmark for monitoring of R&R activities. A social assessment is conducted for the entire project to identify mechanisms to improve project designs to meet the needs of different stakeholders. A summary of stakeholders' discussions, issue raised and how the project design was developed to meet stakeholders need would be prepared.
2. The consultant shall prepare Land Acquisition Plan for 4-lane facility and assist SHAJ in acquisition of land under various Acts.
3. The consultant would prepare Resettlement and Rehabilitation Plan-assess feasibility and effectiveness of income restoration strategies and suitability and availability to relocation sites. The resettlement plan which accounts for land acquisition and resettlement impacts would be based on a 25% socio-economic survey and 100 % census survey of project affected people which provides the complete assessment of the number of affected households and persons, including common property resources. All untitled occupants are recorded at the initial stages and identify cards will be issued to ensure there is no further influx of people into the project area. All consultants with affected persons (to include list of participants) should be fully documented and records made available to Central Design Organisation(RCD), GoJ.
  - Assessment on the impact of the project on the poor and vulnerable groups along the project road corridor.
  - Based on the identified impacts, developing entitlement matrix for the project affected people.
  - Assessment on social issues such as indigenous people, gender, HIV/AIDS, labours including child labour.
  - Implementation budgets, sources and timing of funding and schedule of tasks.
  - Responsibility of tasks, institutional arrangements and personnel for delivering entitlement and plans to build institutional capacity.
  - Internal and external Monitoring plans, key monitoring indicators and grievance redress mechanism.
  - Incorporating any other suggestions of the ADB/ World Bank and the Central Design Organisation(RCD), GoJ, till the acceptance of the reports by the ADB/ World Bank/ Central Design Organisation(RCD), GoJ, as applicable.

#### **4.13.3 Reporting Requirements of EIA**

The consultant would prepare the stand-alone reports as per the requirement of the ADB/ World Bank / GoJ, 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.
- Incorporating any other as per the suggestions of the ADB/ World Bank / Central Design Organisation(RCD), GoJ, till the acceptance of the reports by the ADB/ World Bank / SHAJ/ Central Design Organisation(RCD), 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

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measurement techniques for the performance indicators selected for monitoring.

- The EMP should be amendable to be included in the contract documents for the works.
- Incorporating any other as per the suggestions of the ADB/ World Bank and the Central Design Organisation(RCD), GoJ, till the acceptance of the reports by the ADB/ World Bank / Central Design Organisation(RCD), GoJ, as applicable.

### **4.13.4 Reporting requirements of RAP**

Analysis on the resettlement plan be conducted based on ADBs Hand Book on Resettlement, A Guide to Good practice 1998 as amended time to time/ World Bank Guidelines / Government of India Guidelines, as applicable.

- Executive Summary
- Description of Project
- Objectives of the project.
- The need for Resettlement in the Project and evaluation of measures to minimize resettlement.
- Description and results of public consultation and plans for continued participation of PAPs.
- Definition of PAPs and the eligibility criteria.
- Census and survey results-number affected, how are they affected and what impacts will they experience.
- Legal and entitlement policy framework-support principles for different categories of impact.
- Arrangements for monitoring and evaluation (internal and external)
- Implementation schedule for resettlement which is linked to the civil works contract
- A matrix of scheduled activities linked to land acquisition procedures to indicate clearly what steps and actions will be taken at different stages and the time frame
- The payment of compensation and resettlement during the acquisition process
- An itemized budget (replacement value for all assets) and unit costs for different assets

## **5. Estimation of Quantities and Project Costs**

1. The Consultants shall prepare detailed estimates for quantities (considering designs and mass haul diagram) and project cost for the entire project (civil packages wise),

including the cost of environmental and social safeguards proposed based on MoRT&H's Standard Data Book (current NH SOR in force in Jharkhand) . 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 into account the various inputs and their basic rates, suggested location of plants and respective lead distances for mechanized construction. The unit rate for each item of works shall be worked out in terms of manpower, machinery and materials.
3. Deleted

## **6. Viability and Financing Options**

1. The Project Road should be divided into the traffic homogenous links based on the findings of the traffic studies. The homogenous links of the Project Road should be further subdivided into sections based on physical features of road and pavement, sub-grade and drainage characteristics etc. The economic and commercial analysis shall be carried out separately for each traffic homogenous link as well as for the Project Road.
2. The values of input parameters and the rationale for their selection for the economic and commercial analyses shall be clearly brought out and got approved by Central Design Organisation(RCD), GoJ.
3. For models to be used for the economic and the commercial analyses, the calibration methodology and the basic parameters adapted to the local conditions shall be clearly brought out and got approved by Central Design Organisation(RCD), GoJ.
4. The economic and commercial analyses should bring out the priority of the different homogenous links in terms of project implementation.

### **6.1 Economic Analysis**

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

2. The economic analysis shall cover but be not limited to be following aspects:
  - i) assess the capacity of existing roads and the effects of capacity constraints on vehicle operating costs (VOC);
  - ii) calculate VOCs for the existing road situation and those for the project;
  - iii) quantify all economic benefits, including those from reduced congestion, travel distance, road maintenance cost savings and reduced incidence of road accidents; and,
  - iv) estimate the economic internal rate of return (EIRR) for the project over a 30-year period. In calculating the EIRRs, identify the tradable and non-tradable components of projects costs and the border price value of the tradable components.
  - v) Saving in time value.
3. Economic Internal Rate of Return (EIRR) and Net Present Value (NPV), “with” and “without time and accident savings” should be worked out based on these cost-benefit stream. Furthermore, sensitivity of EIRR and NPV worked out for the different scenarios as given under:

Scenario – I Base Costs and Base Benefits

Scenario – II Base Costs plus 15% and Base Benefits

Scenario - III Base Costs and Base Benefits minus 15%

Scenario - IV Base Costs plus 15% and Base Benefits minus 15%

The sensitivity scenarios given above are only indicative. The Consultants shall select the sensitivity scenarios taking into account possible construction delays, construction costs overrun, traffic volume, revenue shortfalls, operating costs, exchange rate variations, convertibility of foreign exchange, interest rate volatility, non-compliance or default by contractors, political risks and force majeure.
4. The economic analysis shall take into account all on-going and future road and transport infrastructure projects and future development plans in the project area.

## **6.2 Financial Analysis**

1. The Consultant shall study the financial viability of the project under a commercial format and under different user fee scenarios and funding options. The Consultants shall submit and finalise in consultation with the Central Design Organisation(RCD), GoJ officers the format for the analysis and the primary parameters and scenarios that should be taken into account while carrying out the

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commercial analysis. The financial model so developed shall be the property of SHAJ.

2. The Financial analysis for the project should cover financial internal rate of return, projected income statements, balance sheets and fund flow statements and should bring out all relevant assumptions. The sensitivity analysis should be carried out for a number of probabilistic scenarios.
3. The financial analysis should cover identification, assessment, and mitigating measures for all risks associated with the project. The analysis shall cover, but be not limited to, risks related to construction delays, construction costs overrun, traffic volume, revenue shortfalls, operating costs, exchange rate variations, convertibility of foreign exchange, interest rate volatility, non-compliance or default by contractors, political risks and force majeure.
4. The consultant shall suggest positive ways of enhancing the project Viability and furnish different financial models for implementing on BOT format.

### **7. Time period for the service**

1. Time period envisaged for the study of the projects is indicated in **Annexure-I to LOI**. The final reports, drawings, project related clearances and documentation shall be completed within this time schedule.
2. Central Design Organisation (RCD), GoJ 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.
3. Along with feasibility report, the consultant should give cost estimate and documents on the preferred mode of implementation.

### **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 client's assessment.
3. A Manning Schedule for key personnel mentioned above is enclosed as **Enclosure I** along with broad job- description and qualification as **Enclosure II**. **The information furnished in Enclosures I & II are to assist the Consultants to understand the client's**

perception about these requirements and shall be taken by the Consultants for the purpose of Financial Proposal and deployment schedule etc. in technical proposal to be submitted by them. Any deviation proposed may be recorded in the comments on TOR. All the key personnel mentioned will be evaluated at the time of evaluation of technical proposal. Consultants are advised in their own interest to frame the technical proposal in an objective manner as far as possible so that these could be properly assessed in respect of points to be given as part of evaluation criteria as mentioned in Data sheet. The bio-data of the key personnel should be signed on every sheet by the personnel concerned and the last sheet of each bio-data should also be signed by the authorised signatory of the Consultants.

4. The Consultants shall establish an office at the project site manned by senior personnel during the course of the surveys and investigations. All the project related office work shall be carried out by the consultant in their site office unless there are special reasons for carrying out part of the office work elsewhere for which prior approval of Central Design Organisation(RCD), GoJ 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 Central Design Organisation(RCD), GoJ 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 SHAJ through Central Design Organisation(RCD), GoJ from time to time.

**9. Reports to be submitted by the Consultant to SHAJ**

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.

Project preparation activities will be split into 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)**

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 SHAJ**

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 pendrive /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 s.l.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,

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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 Central Design Organisation(RCD), GoJ.

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 Central Design Organisation(RCD), GoJ.

### **10.2 Inception Report (IR)**

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

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2. The requirements, if any, for the construction of bypasses should be identified on the basis of data derived from reconnaissance and traffic studies. The available alignment options should be worked out on the basis of available maps. The most appropriate alignment option for bypasses should be identified on the basis of site conditions and techno-economic considerations and finalised by Central Design Organisation (RCD), GoJ in consultation with SHAJ. Inception Report should include the details regarding these aspects concerning the construction of bypasses for approval by Central Design Organisation(RCD), GoJ.

### **STAGE 2**

#### **10.3 Feasibility Report**

1. The Consultant shall commence the Feasibility Study of the project in accordance with the accepted IR and the report shall contain the following:
  - Executive summary
  - Overview of RCD(GoJ)/SHAJ's organization and activities, SHAJ & RCD's road upgradation program, and project financing and cost recovery mechanisms
  - Project description including possible technical/engineering alternatives
  - Methodology adopted for the feasibility study
  - Socioeconomic profile of the project areas
  - Indicative design standards, methodologies and specifications
  - Traffic surveys and studies with analysis including traffic circulation plan
  - Environmental screening and preliminary environmental assessment
  - Initial social assessment and preliminary land acquisition/resettlement plan
  - Recommendation for preferred mode of implementation.
  - Suggested methods of procurement and packaging.
  - Cost estimates
  - Economic and financial analysis
  - Conclusions and recommendations
2. The basic data obtained from the field studies and investigations shall be submitted in a separate volume as an Appendix to Feasibility Report.
3. The Final Feasibility Study Report incorporating comments, revisions and modifications suggested by Central Design Organisation (RCD), GoJ shall be submitted within **15** days of receipt of comments from Central Design Organisation (RCD), GoJ 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 road along with the existing and proposed right-of-way limits to appreciate the requirements of land acquisition;
  - ii. The information concerning the area including ownership of land to be acquired for the implementation of the project shall be collected from the revenue and other concerned authorities and presented along with the strip plans;
  - iii. Strip plans showing the position of existing utilities and services indicating clearly the position of their relocation;
  - iv. Details for various clearances such as environment and forest clearances;
  - v. Separate strip plan showing shifting / relocation of each utility services in consultation with the concerned local authorities;
  - vi. The utility relocation plans should clearly show existing right-of-way and pertinent topographic details including buildings, 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 for 4-lane facility.
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. Kilometre-wise Land Acquisition Plan (LAP) and schedule of ownership thereof and Costs as per Revenue Authorities and also based on realistic rates.
  - ii. Details of properties, such as buildings and structures falling within the right-of way and costs of acquisition based on realistic rates.
  - iii. Kilometre-wise Utility Relocation Plan (URP) and costs for relocation per civil construction package as per concerned authorities.
  - iv. Kilometre-wise account in regard to felling of trees of different type and girth and value estimate of such trees based on realistic rates obtainable from concerned District forest office.
4. The strip plans shall clearly indicate the scheme for widening. The views and suggestions of the concerned State RCD division / local bodies should be duly taken into account while working out the widening scheme (left, right or symmetrical). The widening scheme shall be finalised in consultation with Central Design Organisation(RCD), GoJ.
5. Kilometre-wise Strip Plans for section (Package) shall be prepared separately for each concerned agency and suggested by Central Design Organisation(RCD), GoJ.

**STAGE: 3**

**10.5 Land Acquisition Report**

1. The Land acquisition report shall be prepared and submitted for section (package) separately. The report shall include detail schedules about acquisition of land holdings as per revenue records and their locations in a strip plan and also the costs as per district authorities. The land acquisition report shall be submitted in both Hind and English languages.
2. The land acquisition report should be prepared in consultation with affected persons, non-governmental organisations and concerned government agencies and should cover land acquisition and resettlement plan and costs of resettlement and rehabilitation of such affected persons. It should also include plan of compensating afforestation, its land requirement with specific locations and cost involved for undertaking all activities in this regard.

**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
  - Summary of resettlement 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
- Layout 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

Volume – V: Resettlement plan and resettlement action 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.

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3. The Final PPR incorporating comments, revisions and modifications suggested by Central Design Organisation(RCD), GoJ shall be submitted within **15** days of the receipt of comments of Central Design Organisation(RCD), GoJ 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, Economic and Financial Analysis Report, Environmental Assessment Report including Resettlement Action Plan (RAP), 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 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 each contract package shall be submitted separately 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 the design of road features and pavement composition while Part-II shall deal with the design of bridges, tunnels, underpasses and cross-drainage structures. The sub-soil exploration report including the complete details of boring done, analyses and interpretation of data and the selection of design parameters shall be included as an Appendix to the Design Report.

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

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

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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 and World Bank / ADB as appropriate for construction package section.
- 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 - VII, Bill of Quantities :** This volume shall contain the package-wise detailed Bill of Quantities for all items of works
- ix. **Volume - IX, Drawing Volume :** All drawings forming part of this volume shall be 'good for construction' drawings. All plan and profile drawings will be prepared in scale 1:250V and 1"=2500H scale to cover one km in one sheet. In addition this volume will contain 'good for construction' drawings for the following:
  - a. Horizontal Alignment and Longitudinal Profile.
  - b. Cross-section @ 50m interval along the alignment within ROW
  - c. Typical Cross-Sections with details of pavement structure.

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- 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 Intersection 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;
  - 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. Drawings for toll plaza( if applicable), Bus Bays, Parking areas, Rest areas, weighing stations etc.

All drawings will be prepared in A2 size sheets. The format for plan, cross section and profile drawings shall be finalised in consultation with the concerned Central Design Organisation(RCD), GoJ. 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, Railways in respect of ROB/ RUBs, Water Resources Deptt. and any other concerned agencies) shall be obtained by the consultant and submitted to Central Design Organisation(RCD), GoJ so that project implementation can straight away proceed without any hold up.

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**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 Central Design Organisation(RCD), GoJ on the draft DPR shall be submitted as per the schedule given in Enclosure-III.

**11. Interaction with SHAJ**

1. During entire period of services, the Consultant shall interact continuously with SHAJ/ Central Design Organisation(RCD), GoJ and provide any clarification as regards methods being followed and carry out modification as suggested by Central Design Organisation(RCD), GoJ. A programme of various activities shall be provided to Central Design Organisation(RCD), GoJ and prior intimation shall be given to Central Design Organisation(RCD), GoJ regarding start of key activities such as boring, survey etc. so that inspections of Central Design Organisation/ RCD GoJ/SHAJ officials could be arranged in time.
2. The SHAJ/ Central Design Organisation(RCD), GoJ 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 Central Design Organisation(RCD), GoJ/SHAJ. 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 Ranchi 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:

<b>S. No.</b>	<b>Description</b>	<b>Payment</b>
1	On submission of Inception Report	10%

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2	On Submission of draft feasibility report including strip plan and utility relocation plan.	15%
3	On Submission of draft preliminary project report and land acquisition report	15%
4	On Submission of Draft Detailed Project Report and Bidding Documents	30%
5	On approval of Final Detailed Project Report and Bidding Documents including estimates from client departments for shifting of utilities, cost of L.A. etc.	20%
6	Submission of revenue plans with L.A. draft notifications	5%
7	On submission of required project clearances from the concerned agencies	5%
	<b>Total</b>	100%
<p><i>Note: Consultants have to provide a certificate that all the key personnel as envisaged in the Contract Agreement have been actually deployed in the projects. They have to furnish the certificate at the time of submission of their bills to SHAJ through Central Design Organisation(RCD), GoJ from time to time.</i></p>		

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

**13. Data and Software**

1. The CD's / Pendrives containing all basic as well as the processed data from all field studies and investigations **in editable mode**, report, appendices, annexure, documents and drawings shall be submitted to SHAJ at the time of the submission of the Final Report. The data can be classified as follows:

- i) Engineering **Investigations and Traffic Studies** : Road Inventory, Condition, Roughness, Test Pit (Pavement composition), Benkelman Beam Deflection, Material Investigation including test results for subgrade soils, required Traffic Studies including OD survey and traffic surveys, axle load surveys, Sub-soil Exploration, Drainage Inventory, Inventory data for bridge and culverts indicating rehabilitation, new construction requirement etc. in MS EXCEL or any other format which could be imported to widely used utility packages.

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- ii) **Topographic Surveys and Drawings** : All topographic data would be supplied in (x, y, z) format along with complete reference so that the data could be imported into any standard highway design software. The drawing files would be submitted in dxf or dwg format.
  - iii) **Rate Analysis** : The Consultant shall submit the rate analysis for various works items including the data developed on computer in this relation so that it could be used by the Authority later for the purpose of updating the cost of the project.
  - iv) **Economic and Financial Analysis;**
2. **Software:** The Consultant shall also hand-over to SHAJ CD's/pendrives containing any general software including the financial model which has been specifically developed for the project.
  3. The CD's/pendrives should be properly indexed and a catalogue giving contents of all /CD's and print-outs of the contents (data from field studies topographic data and drawings) should be handed over to SHAJ at the time of submission of the Final Report.

**SUPPLEMENT I**

**ADDITIONAL POINTS TO BE CONSIDERED FOR HILL ROADS IN ADDITION TO POINTS COVERED IN MAINTOR**

**-DELETED-**

**SUPPLEMENT II**

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

For bridges, the main objective of the consultancy services is to establish the aesthetic, technical, economical and financial viability of the Project and prepare Detailed Project Reports for construction of 2-lane bridge (12 m width without footpath) .

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.

For bridges requiring model study, the same shall be got done at a recognised 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.

<b>Sl. No.</b>	<b>Clause No. of TOR</b>	<b>Additional points</b>	
1.	4.1	Primary Tasks	
		The scope of services shall also cover the following:	
		(i)	Inventory and condition surveys for existing river bank training/ protection works.
		(ii)	Detailed Design of approach roads
		(iii)	Detailed Design of Bridge, cross drainage structures.
		(iv)	Preparation of GAD, etc.
		(v)	Strip plan for bridge and approach road.
		(vi)	Design discharge and scour depth
2.	4.7	Review of available Data and Documents	
		The data and documents of major interest shall also include the following:	
		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	Reconnaissance and Alignment :	

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		<p>The consultant should make an in depth study of available geological maps, catchment area maps, contour plans, flood flow data and seismological data. The primary tasks to be accomplished during the reconnaissance surveys also include:                  Typical physical features along the approach roads 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:                  The detailed field surveys would essentially include the topographic surveys along the proposed location of bridge and alignment of approach road. The detailed topographic surveys should be carried out along the approach roads alignment and location of ridge approved by Central Design Organisation(RCD), GoJ.</p>
5.	4.11.2.1	<p>Longitudinal and Cross sections                  The topographic surveys for longitudinal and cross sections shall cover the following:                  Cross section of the channel at the site of proposed crossing and few cross sections at suitable distance both upstream and downstream, bed level upto top of banks and ground levels to a sufficient distance beyond the edges of channel, nature of existing surface soil in bed, banks &amp; approaches, longitudinal section of channel showing site of bridge etc.</p>
6.	4.11.4.2	<p>Hydraulic and Hydrological Investigations:                  The consultant shall also collect information on observed maximum depth of scour. History of hydraulic functioning of existing bridge, if any, under flood situation, general direction of river course through structure, afflux, extent and magnitude of flood, effect of backwater, if any, aggradation/degradation of bed, evidence of scour etc. shall be used to augment the available hydrological data. The presence of flood control/irrigation structures, if affecting the hydraulic characteristics like causing obliquity, concentration of flow, scour, silting of bed, change</p>

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		in flow levels, bed levels etc. shall be studied and considered in design of bridges. The details of any future planned work that may affect the river hydraulics shall be studied and considered.
7.	4.11.4.4	<p>Geotechnical Investigations and Sub soil Exploration</p> <p>Investigation shall be carried out to determine the nature and properties of existing soil in bed, banks and approaches with trial pits and bore hole sections showing the levels, nature and properties of various strata to a sufficient depth below the level suitable for foundations, safe intensity of pressure on the foundation soil, proneness of site to artesian conditions, seismic disturbance and other engineering properties of soil etc.</p>
8.	4.12.1	<p><b>General</b></p> <p>The consultants are also to carry out preliminary designs for the followings ;</p> <p>Design of pavement for approach road</p> <p>Design of river bank protection / training works</p>
9.	4.12.3	<p>Design of Bridges and Structures</p> <p>The data collected and investigation results shall be analysed to determine the following :</p> <ul style="list-style-type: none"> <li>• HFL</li> <li>• LWL</li> <li>• LBL</li> <li>• Erodibility of bed/scour level</li> <li>• Design discharge</li> <li>• Linear waterway and effective linear waterway</li> <li>• Likely foundation depth</li> <li>• Safe bearing capacity</li> <li>• Engineering properties of sub soil</li> <li>• Artesian conditions</li> <li>• Settlement characteristics</li> <li>• Vertical clearance</li> <li>• Horizontal clearance</li> <li>• Free board for approach road</li> <li>• Severity of environment with reference to corrosion</li> <li>• Data pertaining to seismic and wind load</li> <li>• Requirement of model study etc.</li> </ul>

**SUPPLEMENT III**

**ADDITIONAL REQUIREMENT FOR SAFETY AUDIT**

**Checklists**

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

**Stage F-During Feasibility Study**

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

<b>CONTENTS</b>	<b>ITEMS</b>
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 into its environs and road hierarchy
A1 : General	<ul style="list-style-type: none"> <li>• Departures from standards</li> <li>• Cross-sectional variation</li> <li>• Drainage</li> <li>• Climatic conditions</li> <li>• Landscaping</li> <li>• Services apparatus</li> <li>• Lay-byes</li> </ul>

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	<ul style="list-style-type: none"> <li>• Footpaths</li> <li>• Pedestrian crossings</li> <li>• Access (minimize number of private accesses)</li> <li>• Emergency vehicles</li> <li>• Public Transport</li> <li>• Future widening</li> <li>• Staging of contracts</li> <li>• Adjacent development</li> </ul>
A2 : Local Alignment	<ul style="list-style-type: none"> <li>• Visibility</li> <li>• New/Existing road interface</li> <li>• Safety Aids on steep hills.</li> </ul>
A3 : Junctions	<ul style="list-style-type: none"> <li>• Minimise potential conflicts</li> <li>• Layout</li> <li>• Visibility</li> </ul>
A4 : Non-Motorised road users Provision	<ul style="list-style-type: none"> <li>• Adjacent land</li> <li>• Pedestrians</li> <li>• Cyclists</li> <li>• Non-motorised vehicles</li> </ul>
A5 : Signs and Lighting	<ul style="list-style-type: none"> <li>• Lighting</li> <li>• Signs/Markings</li> </ul>
A6 : Construction and Operation	<ul style="list-style-type: none"> <li>• Buildability</li> <li>• Operational</li> <li>• Network Management</li> </ul>

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**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

<b>CONTENTS</b>	<b>ITEMS</b>
Aspects to be checked	<p>A. Safety and operational implications of proposed alignment and junction strategy with particular references to expected road users and vehicle types likely to use the road.</p> <p>B. Width options considered for various sections.</p> <p>C. Departures from standards and action taken.</p> <p>D. Provision of pedestrians, cyclists and intermediate transport</p> <p>E. Safety implications of the scheme beyond its physical limits i.e. how the scheme fits into its environs and road hierarchy</p>
B1 : General	<ul style="list-style-type: none"> <li>• Departures from standards</li> <li>• Cross-sectional variation</li> <li>• Drainage</li> <li>• Climatic conditions</li> <li>• Landscaping</li> <li>• Services apparatus</li> <li>• Lay-byes</li> <li>• Footpaths</li> <li>• Pedestrian crossings</li> <li>• Access (minimize number of private accesses)</li> <li>• Emergency vehicles</li> <li>• Public Transport</li> <li>• Future widening</li> <li>• Staging of contracts</li> <li>• Adjacent development</li> </ul>
B2 : Local Alignment	<ul style="list-style-type: none"> <li>• Visibility</li> <li>• New/Existing road interface</li> <li>• Safety Aids on steep hills.</li> </ul>

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B3 : Junctions	<ul style="list-style-type: none"> <li>• Minimise potential conflicts</li> <li>• Layout</li> <li>• Visibility</li> </ul>
B4 : Non-Motorised road users Provision	<ul style="list-style-type: none"> <li>• Adjacent land</li> <li>• Pedestrians</li> <li>• Cyclists</li> <li>• Non-motorised vehicles</li> </ul>
B5 : Signs and Lighting	<ul style="list-style-type: none"> <li>• Lighting</li> <li>• Signs/Markings</li> </ul>
B6 : Construction and Operation	<ul style="list-style-type: none"> <li>• Buildability</li> <li>• Operational</li> <li>• Network Management</li> </ul>

**Stage 2 – Completion of Detailed Design**

- 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.
- 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.

<b>CONTENTS</b>	<b>ITEMS</b>
Aspects to be checked	A. Any design changes since Stage 1.
	B. The detailed design from a road safety viewpoint, including the road safety implications of future maintenance (speed limits; road signs and markings; visibility; maintenance of street lighting and central reserves).
C1 : General	<ul style="list-style-type: none"> <li>• Departures from standards</li> </ul>
	<ul style="list-style-type: none"> <li>• Drainage</li> </ul>
	<ul style="list-style-type: none"> <li>• Climatic conditions</li> </ul>
	<ul style="list-style-type: none"> <li>• Landscaping</li> <li>• Services apparatus</li> <li>• Lay-byes</li> <li>• Access</li> <li>• Skid-resistance</li> </ul>

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	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Safety Fences</li> <li>• Adjacent development</li> </ul>
C2 : Local Alignment	<ul style="list-style-type: none"> <li>• Visibility</li> <li>• New/Existing road interface</li> </ul>
C3 : Junctions	<ul style="list-style-type: none"> <li>• Layout</li> <li>• Visibility</li> <li>• Signing</li> <li>• Lighting</li> <li>• Road Markings</li> <li>• T,X,Y-junctions</li> <li>• All roundabouts</li> <li>• Traffic signals</li> </ul>
C4 : Non-Motorised road users Provision	<ul style="list-style-type: none"> <li>• Adjacent land</li> <li>• Pedestrians</li> <li>• Cyclists</li> <li>• Non-motorised vehicles</li> </ul>
C5 : Signs and Lighting	<ul style="list-style-type: none"> <li>• Advanced direction signs</li> <li>• Local traffic signs</li> <li>• Variable message signs</li> <li>• Other traffic signs</li> <li>• Lighting</li> </ul>
C6 : Construction and Operation	<ul style="list-style-type: none"> <li>• Buildability</li> <li>• Operational</li> <li>• Network Management</li> </ul>

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Enclosure-I**

Manning schedule of enclosure-I shall be read as follows:-

**Manning Schedule**

Sl. No.	Key Personnel	Total Project Assignment 4 months for DPR		
		At site (mm)	At design office (mm)	Total Time Period (mm)
1	Team Leader	2	2	4
2	Bridge Engineer	1	1	2
3	Highway Engineer cum pavement specialist	3	1	4
4	Traffic /Transportation Engineer	1	1	2
5	Material-cum-Geo-technical Engineer	2.5	0.5	3
6	Senior Survey Engineer	3	0	3
7	Financial Analyst	0.5	0.5	1
8	Environment Specialist	0.5	0.5	1
9	Resettlement & Rehabilitation Specialist	0.5	0.5	1
10	Quantity Surveyor/Documentation Expert	2	2	4
	<b>Total</b>	<b>16</b>	<b>9</b>	<b>25</b>

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 SHAJ through Central Design Organisation(RCD), GoJ from time to time.

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Team Leader**

<b>i)</b>	<b>Educational Qualification</b>		
	a)	Minimum	Graduate in Civil Engineering
	b)	Desirable	Post Graduation in Transportation Engineering / Highway Engineering Post Graduation in Economics
<b>ii)</b>	<b>Experience</b>		
	a)	Total Professional Experience	Min. 20 years; should have minimum of 15 years experience in the field of Highway Engineering
	b)	Experience in Similar Projects	Min. 15 years in Planning, Project Preparation, DPR of 2 / 4 lane highways/ expressways
	c)	Experience in similar capacity	Experience in Project Preparation, Planning/DPR for at least two 2/4 lane of highway projects more than 20 km in length for individual project
<b>iii)</b>	<b>Age Limit</b>		<b>70 years on the date of submission of proposal</b>

**Enclosure-II(contd.)**

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Sr. Bridge Engineer**

<b>i)</b>	<b>Educational Qualification</b>	
	a) Essential	Graduate in Civil Engineering
	b) Desirable	PG in Structural Engineering.
<b>ii)</b>	<b>Essential Experience</b>	
	a) Total Professional Experience	Min. 15 years
	b) Experience in Bridge projects	Min. 10 years in DPR/Project Preparation and design of bridge projects.
	c) Experience in Similar Capacity	Bridge Engineer in highway design consultancy projects involving design of minimum two <b>major bridges</b> of 2/4 lane(length more than 100m each ).
<b>iii)</b>	<b>Age Limit</b>	<b>65 years on the date of submission of proposal</b>

**Enclosure-II(contd.)**

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Highway Engineer cum pavement specialist**

<b>i)</b>	<b>Educational Qualification</b>	
	a) Essential	Graduate in Civil Engineering
	b) Desirable	PG in Civil/ Highway Engg.
<b>ii)</b>	<b>Essential Experience</b>	
	a) Total Professional Experience	Min. 15
	b) Experience in Highway projects	Min. 12 years in Planning, Project Preparation, DPR of 2 /4 lane highways/expressways
	c) Experience in Similar Capacity	Experience in Project Preparation, Planning/DPR for at least 2/4 of highway projects more than 20 km in length for individual project.
<b>iii)</b>	<b>Age Limit</b>	<b>65 years on the date of submission of proposal</b>

**Enclosure-II(contd.)**

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Traffic/Transportation Engineer**

<b>i)</b>	<b>Educational Qualification</b>	
	a) Essential	Graduate in Civil Engineering
	b) Desirable	PG in Traffic & Transport Engineering
<b>ii)</b>	<b>Essential Experience</b>	
	a) Total Professional Experience	Min. 10 years
	b) Experience in Highway projects	Min. 5 years on similar projects.
	c) Experience in Similar Capacity	Traffic Engineering of 2/4 lane highway projects of length of minimum 40 km
<b>iii)</b>	<b>Age Limit</b>	<b>65 years on the date of submission of proposal</b>

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Material – cum – Geotechnical Engineer**

<b>i)</b>	<b>Educational Qualification</b>	
	Essential	Graduate in Civil Engineering or M.Sc. Geology
	Desirable	PG in Geotechnical Engineering.
<b>ii)</b>	<b>Essential Experience</b>	
	a) Total Professional Experience	Min. 15 years
	b) Experience in Similar type of work in infrastructure projects	Min. 8 years on similar projects in design and/or construction
	c) Experience in Similar Capacity	Material cum Geo-technical Engineer on 2/4 lane highway projects of length of minimum 40 km .
<b>iii)</b>	<b>Age Limit</b>	65 years on the date of submission of proposal

**Enclosure-II(contd.)**

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Senior Survey Engineer**

<b>i)</b>	<b>Educational Qualification</b>		
	a)	Essential	Graduate in Civil Engineering or Diploma in Civil Engg or Diploma in Surveying
	b)	Desirable	Qualification in advance surveying
<b>ii)</b>	<b>Essential Experience</b>		
	a)	Total Professional Experience	Min. 15 years
	b)	Experience in Highway projects	Min. 5 years on similar projects in project preparation, DPR and construction & thorough understanding of modern computer based methods of surveying
	c)	Experience in Similar Capacity	Survey Engineer for projects preparation of at least two 2/4 lane highway project of length of minimum 20km each.
<b>iii)</b>	<b>Age Limit</b>		<b>65 years on the date of submission of proposal</b>

**Enclosure-II(contd.)**

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Environmental Specialist**

<b>i)</b>	<b>Educational Qualification</b>	
	a) Essential	Graduate in Civil Engineering / Graduate in Environmental Engineering or PG in Environmental Sciences
<b>ii)</b>	<b>Essential Experience</b>	
	a) Total Professional Experience	<b>Min. 10 years</b>
	b) Experience in Highway Projects	Min. 5 years in environment impact assessment of infrastructure projects
	c) Experience in Similar Capacity	Environmental Specialist in at least two 2/4 lane highway projects
<b>iii)</b>	<b>Age Limit</b>	<b>65 years on the date of submission of proposal</b>

**Enclosure-II(contd.)**

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Financial Analyst**

<b>i)</b>	<b>Educational Qualification</b>	
	Essential	Post Graduate in Commerce/Chartered Accountant/MBA
	Desirable	Any other higher qualification in relevant field
<b>ii)</b>	<b>Essential Experience</b>	
	a) Total Professional Experience	Min. 7 years
	b) Experience in financial Modeling	Min. 5 years on Financial Modeling in infrastructure projects
	c) Experience in Similar Capacity	Financial Analyst or equivalent in Highway project The personnel should be involved in preparation of Financial Models for at least 2 Highway Projects.
<b>iii)</b>	<b>Age Limit</b>	<b>65 years on the date of submission of proposal</b>

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Rehabilitation & Resettlement Expert**

<b>i)</b>	<b>Educational Qualification</b>	
	a) Essential	Graduate in Civil Engineering or Postgraduate in Social Sciences
	b) Desirable	Master in Civil Engineering or Ph.D. in Social Sciences
<b>ii)</b>	<b>Essential Experience</b>	
	a) Total Professional Experience	Min. 10 years
	b) Experience in Highway Projects	Min. 5 years on highway infrastructure projects
	c) Experience in Similar Capacity	R&R Expert for at least one highway project
<b>iii)</b>	<b>Age Limit</b>	<b>65 years on the date of submission of proposal</b>

**QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PERSONNEL**

**Quantity and Contract Engineer/Documentation Expert**

<b>i)</b>	<b>Educational Qualification</b>	
	Essential	Graduate in Civil Engineering / Certificate course from 'Institution of Quantity Surveying'
<b>ii)</b>	<b>Essential Experience</b>	
	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 two/ four laning
	c) Experience in Similar Capacity	Quantity Surveyor/ Documentation Expert in at least two highway projects involving two/four laning of minimum 20 km length each
<b>iii)</b>	<b>Age Limit</b>	<b>65 years on the date of submission of proposal</b>

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**Enclosure-III**

**Schedule for Submission of Reports and Documents  
Submission Time w.e.f Date of Commencement of Consultancy Services (in months )**

Stage No.	Activity	No. of copies	Time Period for assignment from date of commencement
			<b>4 Months</b>
<b>1</b>	<b>Monthly Reports</b>	3	
<b>2</b>	<b>Inception Report</b>	3	<b>0.25</b>
	(i) Inception Report including QAP Document		
<b>3</b>	<b>F.S. REPORT</b>	4	<b>1.0 0</b>
	i) Draft Feasibility Report including Environmental and Social impact screening Reports		
	ii) Strip Plan		
	iii) Final Feasibility Report along with drawings, cost estimates and document for upgradation and widening/six laning works (within 7 days of receiving comments of Central Design Organisation (RCD) on draft feasibility report)	6	<b>1.25</b>
<b>4</b>	<b>P.P. REPORT</b>	4	<b>2.0</b>
	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 7 days of receiving comments of Central Design Organisation(RCD)on draft PPR)	6	<b>2.25</b>
<b>5</b>	<b>D.P. REPORT</b>	4	<b>2.75</b>
	i) Draft DPR (including drawings and draft bidding (NCB) documents) EMP, RAP		
	ii) Final DPR (including drawings and draft bidding (NCB) documents) EMP, RAP	6	<b>3.00</b>
<b>6</b>	Project clearances from concerned agencies e.g. from MOEF; local municipalities; other local authorities; detail engineering drawing of bridges; underpass; service road etc. Irrigation Dept., Revenue Authorities for LA, local municipalities; Jharkhand Govt. etc.	Original letters from the concerned agencies and 5 photocopies of each.	<b>4.0</b>

## **CONTRACT AGREEMENT**

**Between**

**State Highways Authority of Jharkhand  
Government of Jharkhand  
Ranchi**

**and**

**For**

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for Bypass at .....in Jharkhand (Package no.....)**

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

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**CONTRACT FOR CONSULTANT'S SERVICES**

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**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

**JHARKHAND**

**CONTRACT FOR CONSULTANTS' SERVICES**

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for Bypass-at .....in Jharkhand ( Package no.....)**

This CONTRACT (hereinafter called the "Contract") is made on the ----- day of the month of .....2011, between, on the one hand, State Highways Authority of Jharkhand ( SHAJ), Deen Dayal Nagar, near office of Executive Engineer, NH divison, Booty Road, Ranchi , Pin- 834008 (hereinafter called the "Client") and, on the other hand,..... (hereinafter 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 (hereinafter called the "Services");
- (B) the Consultants, having represented to the Client that they have the required professional skills, personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract;

NOW THEREFORE the parties hereto hereby agree as follows:

1. The following documents attached hereto shall be deemed to form an integral part of this Contract:

- (a) The General Conditions of Contract (hereinafter called "GC");
- (b) The Special Conditions of contract (hereinafter called "SC");
- (c) The following Appendices:

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

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

Appendix C: Hours of work for Consultants' Personnel

Appendix D: Deleted

Appendix E: Cost Estimate

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

Appendix G: Copy of letter of invitation

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

Appendix H: Copy of letter of acceptance

Appendix I: Copy of Bank Guarantee for Performance Security

Appendix-J: Reply to Queries of the Applicants

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

- (a) The Consultants shall carry out the Services in accordance with the provisions of the Contract; and
- (b) Client shall make payments to the Consultants in accordance with the provisions of the Contract.

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

**FOR AND ON BEHALF OF**  
(State Highways Authority of  
Jharkhand)

**Witness**

By  
Authorised Representative

1. Signature  
Name  
Address

2. Signature  
Name  
Address

**FOR AND ON BEHALF OF** Witness  
(Consultant)

By  
Authorised Representative

1. Signature  
Name  
Address

2. Signature  
Name  
Address

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**GENERAL CONDITIONS OF CONTRACT**

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## **1. GENERAL PROVISIONS**

### **1.1 Definitions**

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

- (a) “Applicable Law means the laws and any other instruments having the force of law in the Government’s country as they may be issued and in force from time to time;
- (b) “Contract” means the Contract signed by the Parties, to which these General Conditions of Contract are attached, together with all the documents listed in Clause 1 of such signed Contract;
- (c) “Effective Date” means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1;
- (d) “foreign currency” means any currency other than the currency of the Government;
- (e) “GC” means these General Conditions of Contract;
- (f) “Government” means the Government of India/ Government of Jharkhand, as applicable;
- (g) “local currency” means the currency of the Government;
- (h) “Member”, in case the Consultants consist of a joint venture of more than one entity, means any of these entities, and “Members” means all of these entities;
- (i) “Personnel” means persons hired by the Consultants or by any Subconsultant as employees and assigned to the performance of the Services or any part thereof; “foreign Personnel” means such persons who at the time of being so hired had their domicile outside India; and “local Personnel” means such persons who at the time of being so hired had their domicile inside India;
- (j) “Party” means the Client or the Consultants, as the case may be, and Parties means both of them;
- (k) “Services” means the work to be performed by the Consultants pursuant to this Contract for the purposes of the Project, as described in Appendix A hereto;
- (l) “SC” means the Special Conditions of Contract by which these General Conditions of Contract may be amended or supplemented;
- (m) “Subconsultant” means any entity to which the Consultants subcontract any part of the Services in accordance with the provisions of Clause GC 3.7; and
- (n) “Third Party” means any person or entity other than the Government, the Client, the Consultants or a Subconsultant.

**1.2 Relation between the Parties**

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

**1.3 Law Governing the Contract**

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

**1.4 Language**

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

**1.5 Heading**

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

**1.6 Notices**

1.6.1 Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telex, telegram, email 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. A party may change its address for notice hereunder by giving the other Party notice of such change pursuant to the provisions listed in the SC with respect to Clause GC 1.6.2.

**1.7 Location**

The Services shall be performed at such locations as are specified in **Letter of Acceptance** to and, where the location of a particular task is not so specified, at such locations, whether in India or elsewhere, as the Client may approve.

**1.8 Authority of Member in Charge**

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

**1.9 Authorized Representatives**

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

**1.10 Taxes and Duties**

Unless otherwise specified in the SC, the Consultants shall pay all such taxes, duties, fees and other impositions as may be levied under the Applicable Law.

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

**2.1 Effectiveness of Contract**

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

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

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

**2.3 Commencement of Services**

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

**2.4 Expiration of Contract**

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

**2.5 Entire Agreement**

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

**2.6 Modification**

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

**2.7 Force Majeure**

**2.7.1 Definition**

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

**2.7.2 No Breach of Contract**

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

**2.7.3 Measures to be Taken**

- (a) A party affected by an event of Force Majeure shall take all reasonable measures to remove such Party’s inability to fulfil its obligations hereunder with a minimum of delay.

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

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

**2.7.4 Extension of Time**

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

**2.7.5 Payments**

Deleted

**2.7.6 Consultation**

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

**2.8 Suspension**

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

**2.9 Termination**

**2.9.1 By the Client**

The Client may, by not less than thirty (30) days' written notice of termination to the Consultants (except in the event listed in paragraph (f) below, for which there shall be a written notice of not less than sixty (60) days), such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (f) of this Clause 2.9.1, terminate this Contract:

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

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

**2.9.2 By the Consultants**

The Consultants may, by not less than thirty (30) 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 hereof within forty-five (45) days after receiving written notice from the Consultants that such payment is overdue;
- (b) if the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Consultants may have subsequently approved in writing) following the receipt by the Client of the Consultants' notice specifying such breach;
- (c) if, as the result of Force Majeure, the Consultant are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or

(d) if the Client fails to comply with any final decision reached as a result of arbitration pursuant to Clause 8 hereof.

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

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

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

### **2.9.4 Cessation of Services**

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

### **2.9.5 Payment upon Termination**

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

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

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

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

## **3. OBLIGATIONS OF THE CONSULTANTS**

### **3.1 General**

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

The Consultants shall perform the Services and carry out their obligations hereunder with all due diligence, efficiency and economy, in accordance with generally accepted professional techniques and practices, and shall observe sound management practices, and employ appropriate advanced technology and safe and effective equipment, machinery, materials and methods. The Consultants shall always act, in respect of any matter relating to this Contract or to the Services, as faithful advisers to the Client, and shall at all times support and safeguard the Client's legitimate interests in any dealings with Subconsultants 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 Subconsultants, as well as the Personnel and agents of the Consultants and any Subconsultants, comply with the Applicable Law. The Client shall advise the Consultants in writing of relevant local customs and the Consultants shall, after such notifications, respect such customs.

### **3.2 Conflict of Interests**

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

The remuneration of the Consultants pursuant to Clause 6 hereof shall constitute the Consultants' sole remuneration in connection with this Contract or the Services and the Consultants shall not accept for their own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or to the Services or in the Discharge of their obligations hereunder, and the Consultants shall use their best efforts to ensure that any Subconsultants, 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 Subconsultant and any entity affiliated with such Subconsultant, 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 Subconsultants 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 Subconsultants and the Personnel of either of them shall not, either during the term or within two (2) years after the expiration of this Contract, disclose any proprietary or confidential information relation to the Project, the Services, this Contract or the Client's business or operations without the prior written consent of the Client.

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

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

### **3.5 Insurance to be taken out by the Consultants**

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

No insurance shall be cancelled, modified or allowed to expire or lapse during the terms of this contract. If the Consultant fails to effect and keep in force any such insurances for which it is responsible pursuant hereto, the Client shall apart from having other recourse available under this contract have the option without prejudice to the obligations of the Consultant, to take out the aforesaid insurance, to keep in force any such insurances, and pay such premia and recover the costs thereof from the Consultants, and the Consultants shall be liable to pay such amounts on demand by the Client. The insurance policy so procured shall mention the Client as the beneficiary of the Consultants and the Consultants shall procure an undertaking from the insurance company in this regard.

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

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

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**3.7 Consultants' Actions requiring Client's prior Approval**

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

- (a) appointing such members of the Personnel as are listed in Appendix B;
- (b) entering into a subcontract for the performance of any part of the Services, it being understood (i) that the selection of the Subconsultant and the terms and conditions of the subcontract shall have been approved in writing by the Client prior to the execution of the subcontract, and (ii) that the Consultants shall remain fully liable for the performance of the Services by the Subconsultant 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**

Deleted

**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.

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

**4.3 Approval of Personnel**

The Key Personnel and Sub consultants listed by title as well as by name in Appendix B are hereby approved by the Client. In respect of other Key Personnel which the Consultants propose to use in the carrying out of the Services, the Consultants shall submit to the Client for review and approval a copy of their biographical data. If the Client does not object in writing (stating the reasons for the objection) within twenty-one (21) calendar days from the date of receipt of such biographical data, such Key Personnel shall be deemed to have been approved by the Client.

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

- (a) Working hours and holidays for Key Professional / Sub Professional Personnel are set forth in Appendix C hereto.
- (b) The Key Professional / Sub Professional Personnel shall not be entitled to be paid for overtime nor to take paid sick leave or vacation leave except as specified in Appendix C hereto, and except as specified in such Appendix, the Consultants' remuneration shall be deemed to cover these items. All leave to be allowed to the Personnel is included in the staff-months of service set for in Appendix B. Any taking of leave by Personnel shall be subject to the prior approval of the Client by the Consultants, who shall ensure that absence for leave purposes will not delay the progress and adequate supervision of the Services.

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

- (a) During an assignment, if substitution is inevitable, the consultants shall forthwith provide as a replacement a person of equivalent or better qualification and experience.
- (b) If the Employer (i) finds that any of the Personnel has committed serious misconduct or has been charged with having committed a criminal action or (ii) has reasonable ground to be dissatisfied with the performance of any of the Personnel, then the consultant shall, at the Employer's written request specifying the grounds therefore, forthwith provide a replacement with qualifications and experience acceptable to him.
- (c) For the reason other than death/ extreme medical ground (i) for replacements upto 33% of key personnel, remuneration shall be reduced by 5% (ii) for replacements between 33% to 50%, remuneration shall be reduced by 10% (iii) for replacements between 50% to 66%, remuneration shall be reduced by 15% (iii) for replacements beyond 66% of the total key personnel, the Client may initiate action for debarment of such consultant for future projects of SHAJ/RCD, GoJ for a period of 6 months to 24 months. In this regard, it is clarified that for calculating the number of key personnel for replacement, any fraction more than a whole number shall be rounded off to next higher number.

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- (d) If the team leader or any other key personnel/ specialist considered pivotal to the project is replaced, the substitute may be interviewed by Central Design Organisation(RCD), GoJ to assess their merit and suitability.
- (e) If any member of the approved team of a consultant engaged by SHAJ 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 SHAJ / RCD (GoJ) projects.
- (f) Deleted

### **4.6 Resident Project Manager**

Deleted

## **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) Deleted
- (b) Deleted
- (c) Deleted
- (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 Project area in respect of which access is required for the performance of the Services. The Consultant or Sub Consultants or the Personnel of either of them will be responsible for any damage to such land or any property thereon resulting from such access and will indemnify the Client in respect of liability for any such damage, if caused by the default or negligence of the Consultants or any Subconsultants 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 Service tax which increases or decreases the cost then this Contract shall be increased or decreased accordingly by agreement between the Parties hereto,

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

Deleted

### **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.

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**6 PAYMENT TO THE CONSULTANTS**

**6.1 Cost Estimates ; Ceiling Amount**

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

**6.2 Currency of Payment**

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

**6.3 Mode of Billing and Payment**

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

- (a) Deleted
- (b) Payment Schedule

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

<b>S. No.</b>	<b>Description</b>	<b>Payment</b>
1	On submission of Inception Report	10%
2	On Submission of draft feasibility report including strip plan and utility relocation plan.	15%
3	On Submission of draft preliminary project report and land acquisition report	15%
4	On Submission of Draft Detailed Project Report and Bidding Documents	30%
5.	On approval of Final Detailed Project Report and Bidding Documents including estimates from client departments for shifting of utilities, cost of L.A. etc.	5%
6.	Submission of revenue plans with L.A. draft notifications	5%
7.	On submission of required project clearances from the concerned agencies	5%
	<b>Total</b>	<b>100%</b>
	<i>Note: Consultants have to provide a certificate that all the key personnel as envisaged in the Contract Agreement have been actually deployed in the projects. They have to furnish the certificate at the time of submission of their bills to SHAJ through Central Design Organisation(RCD), GoJ from time to time.</i>	

- (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.
- (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.

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- (e) The final payment under this Clause shall be made only after the final report and a final statement, identified as such, shall have been submitted by the Consultants and approved as satisfactory by the Client. The Services shall be deemed completed and finally accepted by the Client and the final report and final statement shall be deemed approved by the Client as satisfactory ninety (90) calendar days after receipt of the final report and final statement by the Client unless the Client, within such ninety (90) day period, gives written notice to the Consultants specifying in detail deficiencies in the Services, the final report or final statement. The Consultants shall thereupon promptly make any necessary corrections, and upon completion of such corrections, the foregoing process shall be repeated. Any amount which the Client has paid or caused to be paid in accordance with this Clause in excess of the amounts actually payable in accordance with the provisions of this Contract shall be reimbursed by the Consultants to the Client within thirty (30) days after receipt by the Consultants of notice thereof. Any such claim by the Client for reimbursement must be made within twelve (12) calendar months after receipt by the Client of a final report and a final statement approved by the Client in accordance with the above.
- (f) All payments under this Contract shall be made to the account of the Consultants specified in the SC.

### **7. Responsibility for Accuracy of Project Documents**

#### **7.1 General**

The Consultant shall be responsible for accuracy of the data collected, by him directly or procured from other agencies/authorities, the designs, drawings, estimates and all other details prepared by him as part of these services. He shall indemnify the Client 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.

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

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

#### **7.2. Retention Money**

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

#### **7.3 Penalty**

**7.3.1. Penalty for Error/Variation**

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

**7.3.2 Penalty for delay**

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

**7.4 ACTION FOR DEFICIENCY IN SERVICES**

**7.4.1 Consultants liability towards the Client**

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

**7.4.2 Warning / Debarring**

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

**8. FAIRNESS AND GOOD FAITH**

**8.1 Good Faith**

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

**8.2 Operation of the Contract**

The Parties recognize that it is impractical in this Contract to provide for every contingency which may arise during the life of the Contract, and the Parties hereby agree that it is their intention that this Contract shall operate fairly as between them, and without detriment to the interest of either of them, and that, if during the term of this Contract either Party believes that this Contract is operating unfairly, the Parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with Clause 9 hereof.

**9. SETTLEMENT OF DISPUTES**

**9.1 Amicable Settlement**

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

**9.2 Dispute Settlement**

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

10. **Legal Jurisdiction:** In case of any legal dispute, the matter shall be dealt within the jurisdiction of the Hon'ble High Court of Jharkhand at Ranchi.

**SPECIAL CONDITIONS OF CONTRACT**

**Number of**

GC Clause

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

1.1(a) The words “**in the Government’s country**” are amended to read “**in INDIA**”

1.4 The language is: **English**

1.6.1 The addresses are:

**For the Client:** The Chief Executive Officer  
State Highways Authority of Jharkhand  
Deen Dayal Nagar  
Near office of Executive Engineer,  
NH division Ranchi  
Booty Road, Ranchi  
Jharkhand, Pin-834008

**Attention :** Member (Technical)(as mentioned in Annex-I )  
State Highways Authority of Jharkhand (SHAJ)  
Deen Dayal Nagar  
Booty Road, Ranchi  
(near office of Executive Engineer, NH division,  
Ranchi)  
Telefax 1: 0651-2360428

**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 : ( -- )**  
Member (Technical)( -- )

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**For the Consultant:**

1.10 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) 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 SHAJ .

b) Performance security shall be for a total of 10% of the contract price to be submitted in manner of (i) 5% of the contract price in form of unconditional Bank Guarantee & (ii) remaining 5% of contract price shall be deducted from running bills. The Bank Guarantee from the Bank (From SBI or its subsidiaries or any Indian nationalized bank) for an amount equivalent to **5%** 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 shall be furnished within 10 days of the issue of Letter of Acceptance (LOA) by the Consultant. The Client shall have the right to encash and appropriate proceeds of the said Bank Guarantee and the performance security from running bill ,realised in whole or in part, without notice to the Consultant in the following situation-

- (ii) Non completion of the Services within the agreed time frame;
- (iii) Non-compliance with Standards of Service performance and requirements, in accordance with the terms hereof;
- (iv) Failure to provide adequate insurances in terms of the Contract;
- (v) Shortfall in the performance of Services by the Consultant;
- (vi) Any other breach or non-performance of its obligation by the Consultants under this Contract.

In the event that any portion of the Bank Guarantee is encashed pursuant by the Client, then immediately following such encashment, the Consultant shall replenish the Bank Guarantee and that amount realised from the running within one(1) month of its encashment; the Client shall have the right to encash the entire Bank Guarantee, or take such steps that may deem necessary.

**Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven nos. Bypasses at various locations in Jharkhand**

The Performance security will be released by SHAJ after a period of 3 years upon successful completion of services and rectification of errors if any, found during implementation of services.

- 2.2 The time period shall be “seven days” or such other time period as the parties may agree in writing.
- 2.3 The time period shall be “ fifteen ” or such other time period as the Parties may agree in writing.
- 2.4 The time period shall be four months or such other time period as the parties may agree in writing.
- 3.4 Limitations of the Consultant’s Liability towards the Client (Ref. para 8 )
  - a) Except in case of negligence or willful misconduct on the part of the Consultants or on the part of any person or firm acting on behalf of the Consultants in carrying out the Services, the Consultants, with respect to the damage caused by the Consultants to the Client’s property, shall not be liable to the Client:
    - (i) for any indirect or consequential loss or damage; and,
    - (ii) For any direct loss or damage that exceeds;
      - (A) the total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder, or
      - (B) the proceeds the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of (A) or (B) is higher.

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

3.5 The risks and the 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 SHAJ Professional Liability Insurance (PLI) for a

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period of five years beyond completion of Consultancy services or as per Applicable Law, whichever is higher.

(ii) The Consultant will maintain at its expense PLI including coverage for errors and omissions caused by Consultant’s negligence in the performance of its duties under this agreement, **(A)** For the amount not exceeding total payments for Professional Fees and Reimbursable Expenditures made or expected to be made to the Consultants hereunder OR **(B)** the proceeds, the Consultants may be entitled to receive from any insurance maintained by the Consultants to cover such a liability, whichever of **(A) or (B) is higher**.

iii) The policy should be issued only from an Insurance Company operating in India.

iv) The policy must clearly indicate the limit of indemnity in terms of “Any One Accident” (AOA) and “Aggregate limit on the policy” (AOP) and in no case should be for an amount less than state in the contract.

v) If the Consultant enters into an agreement with SHAJ in a joint venture or ‘in association’, the policy must be procured and provided to SHAJ by the joint venture/in association entity and not by the individual partners of the joint venture/ association.

vi) The contract may include a provision whereby the Consultant does not cancel the policy midterm without the consent of SHAJ. 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 Deleted

6.1(b) The ceiling amount is **Rs..... Excluding Service Tax)**

6.3(a) No advance payment will be made.

6.3(e) Deleted

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

**9.2 Disputes shall be settled in accordance with the following provisions:**

**9.2.1 Selection of Arbitrators**

Any dispute between the parties shall be submitted by the aggrieved party to the Engineer-in-Chief, RCD, GoJ who will after hearing both the parties and perusing such documents as he may consider necessary, declare his finding and appropriate course of action.

9.2.2: The time for conveying the decision by Engineer-in-Chief, RCD, GoJ within 30 days of referral.

9.2.3 Appeal or Review: The aggrieved party within 30 days of receipt of decision may appeal to the Secretary, RCD, GoJ against the decision. The decision of the the Secretary, RCD, GoJ shall be final and binding on the all the parties.

**Appendix A**

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

**Appendix B**

Consultants' Subconsultants, Key Personnel and Sub Professional Personnel

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Task assignment, Work Programme, Manning schedule, Qualification requirement of key personnel, schedule for submission of various reports

**Appendix C**

Hours of work for Consultants' Personnel

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Consultant's Working Hour

**Appendix D**

Duties of the Client

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**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  
Member (Technical)  
State Highways Authority of Jharkhand (SHAJ)  
,Deen Dayal Nagar  
(Near Office of Executive Engineer, Ranchi NH division), Booty Road  
Jharkahnd, Pin-834008

In consideration of “ State Highways Authority of Jharkhand (SHAJ)” (hereinafter referred as the “Client”, which expression shall, unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s..... having its office at ..... (Hereinafter 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 Preparation of Detailed Project Report for Bypasses at .....&.....in Jharkhand** (Hereinafter called the “Contract”), and the Consultant having agreed to furnish a Bank Guarantee to the Client as “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 .....(hereinafter referred to as the Bank), which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the client immediately on demand any or, all money payable by the Consultant to the extent of Rs. ....(Rupees.....) as aforesaid at any time up to .....without any demur, reservation, contest, recourse or protest and/or without any reference to the consultant. Any such demand made by the client on the bank shall be conclusive and binding notwithstanding any difference between the Client and the Consultant or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We agree that the Guarantee herein contained shall be irrevocable and shall continue to be enforceable till the Client discharges this guarantee.

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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 forbear to enforce any covenants, contained or implied, in the Contract between the Client and the Consultant any other course or remedy or security available to the Client. The bank shall not be relieved of its obligations under these presents by any exercise by the Client of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Client or any other indulgence shown by the Client or by any other matter or thing whatsoever which under law would but for this provision have the effect of relieving the Bank.

The Bank also agrees that the Client at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Consultant and notwithstanding any security or other guarantee that the Client may have in relation to the Consultant's liabilities.

The Client shall be entitled to make unlimited number of demands under this Bank Guarantee, provided that the aggregate of all sums paid shall not exceed the guaranteed amount.

The Bank shall make the payment hereunder against the receipt of a demand without any proof for document, notwithstanding any dispute by the Consultant, and such a demand shall be a conclusive evidence of the Banks liability to pay the Client.

The Bank Guarantee shall be continuing irrevocable obligation. Any waivers, extensions of time or other forbearance given or variations required under the Contract or any invalidity, unenforceability or illegality of the whole or any part of the Contract or rights, of any Party thereto, or amendment or other modification of the Contract, or any other fact, circumstance, provision of statue of law which might, entitle the Bank to be released in whole or in part from its undertaking, were its liability to be secondary and not primary, shall not in any way release the Bank from its obligations under this Bank Guarantee.

This Bank Guarantee shall be governed by and construed in accordance with the laws of the Republic of India and the parties to this Bank Guarantee hereby submit to the jurisdiction of the Courts of Ranchi for the purposes of settling any disputes or differences which may arise out of or in connection with this Bank Guarantee, and for the purposes of enforcement under this Bank Guarantee.

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Notwithstanding anything contained herein,

- a) Our liability under this Bank Guarantee is limited to Rs.....  
(Rupees.....) and it shall remain in force up to and including .....and 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 thereof 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 Authorised Official)

(Name & Designation with Bank Stamp)

**NOTE:**

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

**Appendix J:  
Reply to Queries of the Bidder**

**Format for Bank Guarantee for Bid Security**

**BID SECURITY (BANK GUARANTEE)**

To,  
**Member (Technical)**  
State Highways Authority of Jharkhand,  
Deen Dayal Nagar,  
Near Office of Executive Engineer,  
Ranchi NH division, Booty Road  
Jharkhand, Pin-834008

WHEREAS, \_\_\_\_\_ [name of Bidder] (hereinafter called "the Bidder") has submitted his Bid dated \_\_\_\_\_ [date] for the **"Consultancy Services for Feasibility study and Preparation of Detailed Project Report for seven no. Bypasses of 2-lane/2-lane with paved Shoulders configuration in Jharkhand"** Package No..... [name of Contract hereinafter called "the Bid"].

KNOW ALL PEOPLE by these presents that we \_\_\_\_\_ [name of Bank] of \_\_\_\_\_ [name of country] having our registered office at \_\_\_\_\_ (hereinafter called "the Bank") are bound unto **"State Highways Authority of Jharkhand (SHAJ)"** (hereinafter referred as the **"Client"**, which expression shall, unless repugnant to the context or meaning thereof include its successors, administrators and assigns) for the sum of \_\_\_\_\_ \*for which payment well and truly to be made to the said Client the Bank itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this \_\_\_\_\_ day of \_\_\_\_\_ 2011

THE CONDITIONS of this obligation are:

- f) if the consultant withdraws the Bid after its submission during the period of Bid validity;
- g) if the Bidder does not accept the correction of the bid price, pursuant to Clause 5.3.2; or
- h) in the case of a successful consultant, if the consultant fails within the specified time limit to:
  - i. sign the Agreement; and/or
  - ii. furnish the required Performance Security.

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We undertake to pay to the Client up to the above amount upon receipt of his first written demand, without the Client having to substantiate his demand, provided that in his demand the Client will note that the amount claimed by him is due to him owing to the occurrence of one or any of the aforementioned conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date \_\_\_\_\_ \*\* days from the date of opening of bid or as it may be extended by the Client, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

Date \_\_\_\_\_

Signature \_\_\_\_\_

Witness \_\_\_\_\_

Seal \_\_\_\_\_

[Signature, name and address]

- \* *The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in para 5.5 of LOI.*
- \*\* *4 months from date of opening of Bid. Date should be inserted by the Client before the Bidding documents are issued.*