ODISHA BRIDGE & CONSTRUCTION CORPORATION LIMITED
(A Government of Odisha Undertaking)
VIKASH BHAWAN, NAYAPALLI, BHUBANESHWAR-751012
PHONE NO. 0674- 2394093, 2396309, 2390043 FAX-2396326

REQUEST FOR PROPOSAL

Selection of Consulting firm for preparation of Masterplan, Detail Design and DPR for Development of Acharya Vihar to Airport including underpasses at AG square and Capital hospital to Airport square.".

Tender ID: 50 /Tender/OBCC/2026-2027

Chief General Manager-II
OB & CC Ltd.

DISCLAIMER

The information contained in this Request for Proposal document ("RFP") or any other information subsequently provided to Bidders, whether verbally or in documentary or any other form by or on behalf of the Client or any of its employees or advisers, is provided to the Bidders 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 Client to the prospective Bidders or any other person. The purpose of this RFP is to provide interested Bidders with information that may be useful to them in the formulation of their Proposals pursuant to the RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the Client in relation to the Services. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This RFP may not be appropriate for all persons, and it is not possible for the Client, 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 Bidder 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 Bidders 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 Client accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on the law expressed herein.

The Client, its employees and advisers make no representation or warranty and shall have no liability to any person including any Bidder 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 Client also accepts no liability of any nature whether resulting from negligence or otherwise however caused or arising from reliance of any Bidder upon the statements contained in this RFP.

The Client 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 Client is bound to select a Bidder or to appoint the selected Consultant, as the case may be, to provide the Services. The Client reserves the right to reject all or any of the Proposals without assigning any reasons whatsoever.

The Bidder 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 Client or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses will remain with the Bidder and the Client shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Proposal, regardless of the conduct or outcome of the selection process.

ଓଡ଼ିଶା ସେତୁ ଓ ନିର୍ମାଣ ନିଗମ ଲିଃ
(ଓଡ଼ିଶା ସରକାରଙ୍କ ପୂର୍ତ୍ତ ବିଭାଗ ଅଧିନର ଏକ ଉଦ୍ୟୋଗ)

ODISHA BRIDGE & CONSTRUCTION CORPORATION LIMITED
(A Government of Odisha Undertaking under Works Department)

ବିକାଶ ଭବନ, ନୟାପଲ୍ଲୀ, ଭୁବନେଶ୍ୱର – ୭୫୧୦୧୨, ଦୂରଭାଷ – ୦୬୭୪ – ୨୩୯୦୦୪୩, CIN: U45203OR1983SGC001153
Vikash Bhavan, Nayapalli, Bhubaneshwar – 751012, Tel: 0674-2390043, Website: www.obcc.in, Email: md@obcc.in; info@obcc.in

No. 7962 **Date:** 23.10.2026
File: SMT- 2105

NOTICE INVITING TENDER

Bid Identification: 50/Tender/OBCC/2026-27

The Chief General Manager-II Odisha Bridge & Construction Corporation Limited, Vikash Bhawan, Bhubaneshwar on behalf of the Governor of Odisha, invites bids from the Empanelled Agencies with OB&CC Ltd. for providing Comprehensive Architectural Services for the following assignment, to be received online.

Sl. No.	Name of the Work	Concerned Nodal Officer with Headquarters	Bid Security Fee/ EMD (Online bank transfer)	Bid Processing Fee (Online bank transfer)	Class of Contractor	Time for completion
1	2	3	4	5	6	7
1	Selection of Consulting firm for preparation of Masterplan, Detail Design and DPR for Development of Acharya Vihar to Airport including underpasses at AG square and Capital hospital to Airport square.	Chief General Manager-II	₹ 2,40,000.00	₹ 11,800.00 (Including GST)	Empanelled Agency	**03** (Three) Calendar Months

1. The Bid document shall be available in the website https://tendersodisha.gov.in, from **dt. 28.10.2026 to 5.00 P.M. of dt. 16.11.2026** for online bidding.
2. The bidder must possess compatible Digital Signature Certificate (DSC) of Class – III. The online bidding procedure is indicated in the document.
3. Pre-bid queries will be received up to **5.00 P.M of 05.11.2026** through email queries@obcc.in and circle2@obcc.in
4. The Pre-bid meeting will be held on **06.11.2026 at 12.00 P.M** through video conferencing in the following link: https://meet.google.com/wyy-xjdr-jug
5. Pre-bid clarification shall be available in e-procurement portal on **10.11.2026.**
6. The bids shall be received only on **"online"** on or before **05.00 P.M. of dt. 16.11.2026.**
7. The technical bids received online shall be opened on **dt. 17.11.2026 at 11.30 A.M** in the office of the

Managing Director, Odisha Bridge & Construction Cooperation Ltd, Vikash Bhavan, Bhubaneswar, Odisha in the presence of the bidders, who wish to attend. Bidders who participated in the bid can witness the opening of bids after logging on to the site through their DSC. If the office happens to be closed on the scheduled date of opening, then the bid will be opened on the next working day at the same time and venue.

8. Bids submitted other than the e-procurement platform shall not be considered.

9. The authority reserves the right to cancel any or all bids without assigning any reason thereof.

10. Further details with any addendum, corrigendum, cancellation can be seen from the website https://tendersodisha.gov.in.

Thontaray
23/10/26

Chief General Manager-II

C.C. to:

1. The PS to The Hon'ble Minister, Law, Works, Excise Government of Odisha for kind information of Hon'ble Minister.
2. The PS to The Principal Secretary to Government of Odisha, Works Department, Bhubaneswar, for kind information of the Principal Secretary.
3. The Engineer-in–Chief (Civil), Odisha, Bhubaneswar
4. The Chief Engineer (Buildings), Odisha/ Chief Engineer (DPI & Roads), Odisha/ Chief Engineer (NHs), Odisha/ Chief Manager (Technical), State e-Procurement Cell, O/o E.I.C., Nirman Soudha, Bhubaneswar/ Chief Engineer, NIC office, Bhubaneshwar.
5. The Chief Finance Officer (CFO), OB & CC Ltd., Bhubaneswar

DATA SHEET

Sl. No.	Particulars	Details
1.	Name of the Client	Odisha Bridge & Construction Corporation Limited (OBCC)
2.	Method of Selection	Quality & Cost Based Selection (QCBS)
3.	Proposal Validity	120 Days
4.	Date of Issue of RFP	23.10.2026
5.	Deadline for Submission of Pre-Proposal / Pre-Bid Queries	05.11.2026, 05:00 PM
6.	Issue of Pre-proposal Clarifications	10.11.2026
7.	Proposal Due Date	16.11.2026, 05:00 PM
8.	Date of opening of Technical Proposal	17.11.2026, 11:30 AM
9.	Date of opening of Financial Proposal	To be intimated later
10.	Expected Date of Commencement of Assignment	To be intimated later
11.	Pre-proposal meeting	The pre-bid queries shall be mailed at queries@obcc.in, circle2@obcc.in in word format. The meeting will be held through video conferencing in the linkshttps://meet.google.com/wyy-xjdr-jug
12.	Bid Processing Fee (Non-Refundable)	**Rs. 11,800/- (Rupees Eleven Thousand Eight Hundred)** only (including GST) through online mode only as prescribed in the e-procurement procedure annexed as Section 8.
13.	Earnest Money Deposit (EMD)	**Rs. 2,40,000/- (Rupees Two Lakh Forty Thousand)** only online as prescribed in the e-procurement procedure annexed as Section 8.
14.	Performance Bank Guarantee (PBG)	5 % of the Consultancy Fee
15.	Contact Person	Chief General Manager-II Odisha Bridge & Construction Corporation Limited E-mail ID: circle2@obcc.in, queries@obcc.in
16.	Place of Opening of Proposal:	Odisha Bridge & Construction Corporation Limited, Vikash Bhawan, Nayapalli, Bhubaneswar, Khurda, Odisha. Pin - 751012
RFP can be downloaded from: **www.tendersodisha.gov.in**		

SECTION: 1

LETTER OF INVITATION

LETTER OF INVITATION

Name of the Assignment: Selection of Consulting firm for preparation of Masterplan, Detail Design and DPR for Development of Acharya Vihar to Airport including underpasses at AG square and Capital hospital to Airport square.".

The **Chief General Manager- II,** Odisha Bridge & Construction Corporation Limited, Odisha (the "**Authority/Employer/Client**"), in accordance with the provisions under the Guidelines for Engagement of Consultants and Outsourcing of Services issued in the Office Memorandum No. 37323/F Dt. 30.11.2018 of the Finance Department, now invites empaneled agencies **(DPR for Road Projects)** to prepare DPR for the work "Improvement of Road from Acharya Vihar to Airport Square in Bhubaneshwar".

1. A bidder will be selected under **Quality Cost Based Selection (QCBS)** procedure as prescribed in the RFP Document in accordance with the procedures prescribed herewith circulated vide *Office Memorandum No. 37323/F, Dated: 30.11.2018* of Finance Department, Govt. of Odisha.

2. This is an e-tendering process by the Government of Odisha in Odisha Bridge & Construction Corporation Limited. The proposal must be submitted online only. In online mode, the electronic files are to be uploaded to the tender portal **www.tendersodisha.gov.in.**

3. The empaneled agency should submit the proposal online in two parts. The two parts of the proposal shall be as follows: -

   PART 1: TECHNICAL PROPOSAL
   PART 2: FINANCIAL PROPOSAL

   The proposals shall be evaluated according to the evaluation criteria mentioned in the RFP prior to opening the financial proposal.

4. The two parts of the Proposal (Technical proposal and Financial proposal) must be submitted online, with all pages numbered serially and an index of submission. The Financial Proposal must be submitted online only. Submission in any other form shall not be acceptable. In the event any of the instructions mentioned herein have not been adhered to, the Client may reject the Proposal.

5. The proposal, complete in all respect as specified in the RFP Document, must be accompanied by a **non-refundable** amount of **Rs. 11,800/- (Rupees Eleven Thousand Eight Hundred)** only towards the **Bid Processing Fee** and **Rs. 2,40,000/- (Rupees Two Lakh Forty Thousand)** Only towards **EMD** through online as prescribed in the RFP failing which the bid will be rejected.

6. The Consultants must possess compatible Digital Signature Certificate (DSC) of Class-II or Class-III. The online bidding procedure is indicated in the Section-8 of the RFP document.

7. Physical proposals will not be accepted, as the applicant must submit the proposal through on-line mode within the stipulated date and time as mentioned in the RFP.

8. The last date and time for submission of proposal, complete in all respects, on the tender portal, is as per the Bidder Data Sheet, and the date of opening of the technical proposal is as

mentioned in the Data Sheet, which will be done in the presence of the bidder's representative at the specified address as mentioned in the Bidder Data Sheet (Sl. no.16). Representatives of the bidders may attend the meeting with due authorization letter on behalf of the bidder.

9. This RFP includes following sections:

a) Letter of Invitation **[Section – 1]**
b) Information to the Bidder **[Section – 2]**
c) Terms of Reference **[Section – 3]**
d) Technical Proposal Submission Forms **[Section – 4]**
e) Financial Proposal Submission Forms **[Section –5]**
f) Annexures **[Section –6]**
   - **Bid Submission Checklist**
   - **Performance Bank Guarantee Format**
g) Standard Form of Contract **[Section –7]**
h) Procedure under E-Tendering **[Section –8]**

10. While all information/data given in the RFP are accurate within the consideration of scope of the proposed assignment to the best of the Client's knowledge, the Client holds no responsibility for the accuracy of information, and it is the responsibility of the bidder to check the validity of information/data included in this RFP. The Client reserves the right to accept/reject any / all proposals / cancel the entire selection process at any stage without assigning any reason thereof.

Chief General Manager-II

Odisha Bridge & Construction Corporation Limited

SECTION: 2

INFORMATION TO BIDDERS

1. Pre-Qualification Criteria:

Before opening and evaluation of the technical proposals, each bidder will be assessed based on the following pre-qualification criteria. The bidder is required to produce copies of the required supportive documents/information as part of their technical proposal failing which the proposals will be rejected.

S.No.	Eligibility Criteria	Supportive Documents
1	Bidder *must be* empaneled with OB&CC Ltd. before the last date of submission of the bid for providing '**Consultancy services for preparation of Detailed Project Report for Road Projects'**	Letter / Notice of Empanelment with OB&CC
2	*The bidder must have experience in at least one similar assignment* with a minimum fee realization of Rs.65 lakhs*	TECH-5
3	Bidder shall furnish an affirmative statement as to the existence of any potential conflict of interest on the part of the bidder due to prior, current, or proposed agreements, engagements, or affiliations with the Client.	Self-Declaration from the Bidder as per the format (TECH - 6)
4	The bidders shall submit a Power of Attorney in favor of the bidder's representative.	Copy of power of attorney.

**** Consortiums / Joint Ventures are not allowed. In case, any proposal is received from Consortium/ Joint Venture, the same shall be rejected.***

2. Documents / Formats need to be submitted along with TECHNICAL PROPOSAL:

The bidders have to furnish the following documents duly signed along with their Technical Proposal:

- Filled in Bid Submission Check List in Original **(Annexure-I).**
- Covering letter (TECH– 1) on bidder's letterhead requesting to participate in the selection process.
- Letter of Empanelment with OBCC Ltd for the relevant category.
- Bid Processing Fee & Earnest Money Deposit (EMD), as applicable.
- Copy of Certificate of Incorporation/ Registration or partnership deed or any other relevant document
- Copy of PAN
- Copy of Goods and Services Tax Registration Certificate (Form GST Reg-06)
- Copies of IT Return for the last three financial years **(FY 2024-25, 2023-24, 2022-23)**
- General Details of the Bidder (TECH – 2).
- Financial Details of the bidder (TECH – 3) along with all the supportive documents as applicable duly signed as per the instruction
- Power of Attorney (TECH – 4) in favor of the person signing the bid on behalf of the bidder.

- List of completed assignments of similar nature (Past Experience details, TECH – 5) along with copies of contracts/work orders with completion certificates from Clients.
- Affidavit regarding Conflict of Interest (TECH - 6)
- Description of Approach & Methodology to undertake the assignment (TECH - 7)
- CV of Key Personnel (TECH - 8)
- Proposed work plan to carry out the assignment (TECH - 9)
- No Relation Certificate with the department in standard format
- Undertaking for not having been blacklisted by any Central / State Government / Any other Autonomous Bodies/ International & National Organization in the last three (3) years from the bid submission due date.
- Declaration of No involvement in any legal conflicts or any pending legal issues with the Client during last 3 years from the date of Bid submission due date. (on the letterhead of the bidder)

Bidders should submit the required supporting documents as mentioned above. Bids not conforming to the eligibility criteria and non-submission of required documents as listed above may lead to rejection of the bid. Submission of forged documents will also result in rejection of the bid. Bidders are advised to study all instructions, forms, terms & conditions and other important information as mentioned in the RFP Document. The proposal must be complete in all respect, indexed. Each page should be numbered and signed by the authorized representative. No hard copy is to be submitted.

3. Bid Processing Fee:

The bidder must furnish as part of the technical proposal, the required bid processing fee amounting to Rs. 11,800/- (Rupees Eleven Thousand Eight Hundred Only) through online mode of transaction as prescribed in the RFP failing which the bid will be rejected.

4. Earnest Money Deposit:

The Bidder must furnish, as part of the technical proposal, an Earnest Money Deposit (EMD) for an amount of **Rs. 2,40,000/- (Rupees Two Lakh Forty Thousand)** only online as prescribed in the RFP.

The EMD of unsuccessful bidders shall be refunded after the finalization of selection process and award of contract. The EMD of the successful bidder will be released only after furnishing of the required Performance Bank Guarantee (PBG) and signing of the contract. The EMD will be forfeited on account of the following reasons:

- Bidder withdraws its proposal during the bid validity period as specified in RFP.
- Bidder does not respond to requests for clarification of its proposal.
- Bidder fails to provide required information during the evaluation process or is found to be non-responsive or has submitted false information in support of its qualification.
- If the bidder fails to
  - provide any clarifications to the Client
  - agrees to the decisions of the contract negotiation meeting
  - sign the contract within the prescribed time period
  - furnish required Performance Bank Guarantee in time.
- Any other circumstance which holds the interest of the Client during the overall selection process.

5. Validity of the Proposal:

Proposals shall remain valid for a period of **120 (One Hundred and Twenty) days** from the date of opening of the technical proposal. The Client reserves the right to reject a proposal valid for a shorter period as non-responsive and will make the best efforts to finalize the selection process and award of the contract within the bid validity period. The bid validity period may be extended on mutual consent.

6. Pre -Proposal Queries / Pre-Proposal Meeting:

Bidders are allowed to submit their queries in respect of the RFP and other details if any to **OBCC** through e-mail at **queries@obcc.in** till the timeline as per Data Sheet. Clarifications to the above will be either uploaded on the tender portal of the Government of Odisha **www.tendersodisha.gov.in** or clarified through email to the respective bidders for the purpose of preparation of proposal.

Pre-proposal meeting will be held through VC as per the schedule mentioned in Bidder Data Sheet. The bidders will have to ensure that their queries for pre-proposal meeting should reach one day before the pre-proposal meeting to the **point of contact: Chief General Manager -II, Odisha Bridge & Construction Corporation Limited.**

7. Preparation and Submission of Proposal:

(i) Detail RFP may be downloaded from **www.tendersodisha.gov.in** and the Application should be submitted online only. The procedure for E-Tendering is enclosed in this RFP at Section 8.

(ii) The following shall be the form of various documents in the Application:

A. Only Electronic Form (to be uploaded on the Tender Portal)

(a) Technical proposal as per format prescribed in SECTION-4 of RFP including documents.

(b) Financial proposal in the Excel format template uploaded by the Authority for the assignment based on SECTION-5 of RFP.

(iii) The Applicant shall upload scanned copies of the Technical Proposal as specified in Clause 7(ii)A(a) above on the Tender Portal before the Proposal Submission due date & time as specified in Data Sheet. Financial Proposal as specified in clause 7(ii)A(b) is to be submitted online only & **no hard copy is to be submitted**.

(iv) It may be noted that the scanned copies can be prepared in PDF file format for Technical Proposal and in Excel format for Financial Proposal, uploaded by the Authority in the designated locations.

(v) Each page of the two parts should be page numbered and in conformation to the eligibility

qualifications and clearly indicated using an index page. The Client will not consider any proposal that arrives after the deadline as prescribed in the Bidder Data Sheet. Any Proposal received after the deadline will be outrightly rejected by the Client.

Any deviation from the prescribed procedures / information / formats / conditions shall result in out-right rejection of the proposal. All the pages of the proposal have to be sealed and signed by the authorized representative of the bidder. Bids with any conditional offer shall be out rightly rejected.

8. Opening of the proposal:

(i) Completed proposal must be submitted online on or before the time and date stated in the Data Sheet.

(ii) Opening of Proposals will be done through online.

(iii) For participating in the tender, the authorized signatory holding Power of Attorney shall be the Digital Signatory. In case the authorized signatory holding Power of Attorney and Digital Signatory are not the same, the bid shall be considered non-responsive.

(iv) The Financial Proposal 7 (ii) A (b) will be opened for the shortlisted applicants who qualify for financial opening as per RFP. The date of opening of the Financial Proposal will be notified later.

9. Evaluation of Proposal:

A Three stage evaluation process will be conducted as explained below for evaluation of the proposals:

- **Preliminary Evaluation (1st Stage):** Preliminary evaluation of the proposals will be done to determine whether the proposal comply with the prescribed eligibility condition and whether the requisite documents / information have been properly furnished by the bidder or not, in accordance with Clause 1 & Clause 2 of this Section. Submission of following documents / information will be verified:
    - Filled in Bid Submission Check List in Original **(Annexure-I).**
    - Covering letter (TECH– 1) on bidder's letterhead requesting to participate in the selection process.
    - Letter of Empanelment with OBCC Ltd for the relevant category.
    - Bid Processing Fee & Earnest Money Deposit (EMD), as applicable.
    - Copy of Certificate of Incorporation/ Registration or partnership deed or any other relevant document
    - Copy of PAN
    - Copy of Goods and Services Tax Registration Certificate (Form GST Reg-06)

- Copies of IT Return for the last three financial years **(FY 2024-25, 2023-24, 2022-23)**
- General Details of the Bidder (TECH – 2).
- Financial Details of the bidder (TECH – 3) along with all the supportive documents as applicable duly signed as per the instruction
- Power of Attorney (TECH – 4) in favor of the person signing the bid on behalf of the bidder.
- List of completed assignments of similar nature (Past Experience details, TECH – 5) along with copies of contracts/work orders with completion certificates from Clients.
- Affidavit regarding Conflict of Interest (TECH - 6)
- Description of Approach & Methodology to undertake the assignment (TECH - 7)
- CV of Key Personnel (TECH - 8)
- Proposed work plan to carry out the assignment (TECH - 9)
- No Relation Certificate with the department in standard format
- Undertaking for not having been blacklisted by any Central / State Government / Any other Autonomous Bodies/ International & National Organization in the last three (3) years from the bid submission due date.
- Declaration of No involvement in any legal conflicts or any pending legal issues with the Client during last 3 years from the date of Bid submission due date. (on the letterhead of the bidder)

**** Bids not complying with any of the above requirement will be out rightly rejected at the discretion of the Client's authority.***

- **TECHNICAL EVALUATION (2nd Stage):** Technical proposal will be opened and evaluated for those bidders who qualify the preliminary evaluation stage. Detailed evaluation process as per the following parameters will be adopted for evaluation of the proposals.

S.N.	Bid Evaluation Parameters	Total / Maximum Marks
1	**Specific experience of consultant relevant to the assignment**	**40**
1. a.	The bidder must have experience with a similar assignment/project* as specified below: * Similar assignment/project means *"Preparation of feasibility study and Detailed Project Report (DPR) of an urban road 6/8 lane carriage width road of a minimum length of 10 Km (Continuous stretch) with Grade Separators/Vehicular Underpass/Subways in the last 7 years preceding the proposal due date for state government/ central government/ PSU , having a minimum fee realization of Rs.65 lakhs"*	

	For the experience of 1 similar assignment – 10 marks For every additional experience thereafter – 5 marks for each similar assignment (maximum 15 marks)	25
1.b.	The bidder should have a minimum average annual turnover of Rs. 164 lakhs in the last 3 (Three) Financial Years ending 31st March 2025.	15
	Average Annual turnover of at least Rs. 164 lakhs – 9 marks Average Annual turnover greater than Rs. 164 lakhs – 3 mark for every additional Rs. 164 lakhs (maximum 6 marks)	
2	**Adequacy of the proposed 'approach and methodology' and work plan in response to ToR- To be submitted in Technical Proposal as well as Presentation** *(date, time & venue of presentation will be intimated later to the bidders)*	**20**
2.a.	Understanding of Scope, Objectives and Completeness of response	5
2.b.	Description of Approach and Methodology:	5
2.c.	Methodology to be adopted:	5
2.d.	Staffing and Study Management Plan:	5
3	**Qualification and relevant experience of key staff:**	**40**
	1. Senior Road/ Highway Engineer cum Team Leader – 12 marks 2. Bridge Design Expert– 8 marks 3. Highway Engineer– 8 marks 4. Material –cum –Geotechnical Engineer – 6 marks 5. Traffic and Safety Expert – 6 marks	
	The marks assigned to each of the 'key staff' will be in consideration of the following sub-criteria and percentages: 1. Minimum qualifications (Fulfilling minimum education criteria mentioned in the ToR): **20%** 2. Minimum Experience (Fulfilling Minimum Years of total experience criteria as mentioned in the ToR): **30%**	

	3. Relevant Sector Experience (Fulfilling experience criteria of relevant sector and projects/assignments as mentioned in the ToR): **50%**	

(i). The total score obtained by the bidder above shall be the technical score (T) of the bidder.

(ii). Applicants should satisfy basic criteria of experience and other requirements as mentioned in pre-qualification criteria. Applicants should score **at least 80 marks** for being considered for opening of financial bid. The financial offers of unsuccessful applicants will be returned without opening.

(iii). If presentations form a part of the Technical evaluation, then bidders who qualify for pre-qualification stage, will be intimated the date, time and venue of such presentation at an appropriate date.

- **FINANCIAL EVALUATION (3rd Stage):** The financial proposals of the bidders qualifying the technical evaluation (2nd Stage) only shall be opened at this stage in the presence of the bidder's representative who wishes to attend the meeting with proper authorization letter. The name of the bidder along with the quoted financial price will be announced during the meeting.

10. Evaluation Process:

Quality and Cost Based Selection (QCBS) method will be followed during the overall process. Minimum qualifying marks to qualify the Technical Proposal will be **80** out of 100. During evaluation, a score is assigned out of the maximum 100 marks to each of the responsive bids as per the scheme laid out in the RFP.

Financial proposals are then opened for only eligible and responsive offers and are also given a cost-score based on relative ranking of prices, with 100 for the lowest and pro-rated lower marks for higher priced offers.

For each Technical Proposal, the total points that can be awarded for each Bidder are 100, and the minimum technical score (T) that a Bidder requires to qualify for evaluation of the Financial Proposal is **80**.

1) **The total score obtained by the bidder in the Technical evaluation shall be the technical score (Ts) of the bidder.**

The applicant getting the highest technical score shall be given a relative score of 100 points (TM1). The relative technical scores of other proposals will be computed as follows:

Ts=100x T1/ TM1

(T1=amount of Technical Proposal as quoted by the bidder; TM1= Highest Technical Score)

2) ***Opening of Financial Proposal***

Financial Score: The lowest financial proposal will be given a financial score (Fs) of 100 points. The financial scores of other proposals will be computed as follows:

Fs=100xFM1/F1

(F1=amount of Financial Proposal as quoted by the bidder; FM1= Lowest financial quote)

3) ***Combined and Final Evaluation***

Proposals will finally be ranked according to their combined Score (S) calculated based on technical (Ts) and financial (Fs)scores as follows:

S=Ts x Tw+Fs x Fw

(Where **Tw** and **Fw** are weights assigned to Technical proposal and Financial Proposal as **0.8** and **0.2** respectively)

The Selected Applicant shall be the First Ranked Applicant (having the highest combined score). The Second and third Ranked Applicant shall be kept in reserve and may be invited for negotiations in case the first ranked Applicant withdraws or fails to comply with the requirements specified in the RFP document.

The bidder shall quote financial charges as a lump sum cost as the consultancy fee. The CEC (Consultant Evaluation Committee) will correct any computational errors. When correcting computational errors, in case of a discrepancy between the partial amount and the total amount, or between words and figures the former will prevail. All required items must be priced accordingly in the financial bid.

For the purpose of evaluation, the quoted amount by the bidder shall be inclusive of all taxes & duties (except GST which shall be paid extra at prevalent rates by the client).

11. Performance Bank Guarantee (PBG):

Within 7 days of notifying the acceptance of a proposal for award of contract, each qualified bidder shall have to furnish a Performance Bank Guarantee amounting to 5% of the contract value from a scheduled commercial bank situated in Bhubaneswar in favour of **Managing Director,**

OB&CC Ltd., as per the format at Annexure-II, for a period of three months beyond the entire contract period (i.e. PBG must be valid to a period of <3> months beyond the contract period) as its commitment to perform services under the contract. Failure to comply with the terms & conditions of the contract agreement shall constitute sufficient grounds for the forfeiture of the PBG. The PBG shall be released immediately after three months of expiry of contract provided there is no breach of contract on the part of the qualified bidder. No interest shall be paid on the PBG.

12. Contract Negotiation

Contract negotiation, if required will be held at a date, time and address as intimated to the selected bidder/s. The bidder will, as a pre-requisite for attendance at the negotiations, confirm availability of all the proposed staff for the assignment. Representative conducting negotiations on behalf of the bidder must have written authority to negotiate and conclude a contract. Negotiation will be performed covering technical and financial aspects, if any and availability of proposed professionals etc.

13. Award of Contract:

After completion of the contract negotiation stage, the Client will notify the successful bidder in writing by issuing an offer letter for signing the contract and promptly notifying all other bidders about the result of the selection process. The successful bidders will be asked to sign the contract after fulfilling all formalities within 15 days of issuance of the offer letter. After signing of the contract, no variation or modification of the terms of the contract shall be made except by written amendment signed by both the parties. The contract will be valid for **03 months** from the date of effectiveness of the contract and may be extended on mutual consent, if required and approved by the Authority.

14. Conflict of Interest:

Conflict of interest exists in the event of:

(i). Conflicting assignments, typically monitoring and evaluation of the same project by the empaneled bidder;

(ii). Consultants, agencies or institutions (individuals or organizations) who have a business or family relation with the Client directly or indirectly; and

(iii). Practices prohibited under the anti-corruption policy of the Government of India and Government of Odisha. The bidders are to be careful so as not to give rise to a situation where there will be any conflict of interest with the Client as this would amount to their disqualification and breach of contract.

15. Disclosure:

a) Bidders have an obligation to disclose any actual or potential conflict of interest. Failure to do so may lead to disqualification of the bidder or termination of its contract.

a.1 Bidders must disclose if they are or have been the subject of any proceedings (such as blacklisting) or other arrangements relating to bankruptcy, insolvency, or the financial standing of the Bidder, including but not limited to the appointment of any officer such as a receiver in relation to the Bidder's personal or business matters or an arrangement with creditors, or of any other similar proceedings.

b) Bidders must disclose if they have been convicted of, or are the subject of any proceedings relating to:

b.1 a criminal offence or other serious offence punishable under the law of the land, or where they have been found by any regulator or professional body to have committed professional misconduct;

b.2 corruption including the offer or receipt of an inducement of any kind in relation to obtaining any contract;

b.3 failure to fulfill any obligations in any jurisdiction relating to the payment of taxes or social security contributions.

16. Anti-corruption Measure:

(i). Any effort by Bidder(s) to influence the Client in the evaluation and ranking of financial proposals, and recommendation for award of contract, will result in the rejection of the proposal.

(ii). A recommendation for award of Contract shall be rejected if it is determined that the recommended bidder has directly, or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the contract in question. In such cases, the Client shall blacklist the bidder either indefinitely or for a stated period of time, disqualifying it from participating in any related bidding process for the said period.

17. Language of Proposals:

The proposal and all related correspondence exchanged between the bidder and the Client shall be written in the English language. Supporting documents and printed literature that are part of the proposal may be in another language provided they are accompanied by an accurate translation of the relevant passages in English with self-certification for accuracy, in which case, for the purposes of interpretation of the Proposal, the translated version shall govern.

18. Cost of Bidding:

The Bidder shall bear all costs associated with the preparation and submission of its proposal. The Client shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process. A bidder is not allowed to submit more than one proposal under the selection process. Alternate bids are also not allowed.

19. Legal Jurisdiction:

All legal disputes are subject to the jurisdiction of civil court of Bhubaneswar only within Odisha.

20. Governing Law and Penalty Clause:

The schedule given for delivery is to be strictly adhered to in view of the strict time schedule. Any unjustified and unacceptable delay in delivery shall render the bidder liable for liquidated damages and thereafter the Client holds the option for cancellation of the contract for pending activities and completes the same from any other agency. The Client may deduct such sum from any money from their hands due or become due to bidder. The payment or deduction of such sums shall not relieve the bidder from his obligations and liabilities under the contract. The rights and obligations of the Client and the bidder under this contract will be governed by the prevailing laws of Government of India / Government of Odisha. Failure on bidder's part to furnish the deliverables as per the agreed timeline / milestone will enforce a penalty **@ 1% per week of subject to maximum of 10% of the total contract value**. The amount will be deducted from the subsequent payment. In addition, the PBG amount may also be forfeited. The decision of the authority placing the contract, whether the delay in development has taken place on account of reasons attributed to the bidder shall be final. In such situations, the firm will be debarred from participation in future bids of this organization / department for next five years from the date of this occurrence and notifications.

21. Confidentiality:

Information relating to evaluation of proposals and recommendations concerning awards shall not be disclosed to the bidders who submitted the proposals or to other persons not officially concerned with the process, until the publication of the award of contract. The undue use by any Consultant of confidential information related to the process may result in rejection of its proposal and may be subject to the provisions of the Client's antifraud and corruption policy. During the execution of the assignment except with prior written consent of the Client, the consultant or its personnel shall not at any time communicate to any person or entity any confidential information acquired in the course of the contract.

22. Amendment of the RFP Document:

At any time before submission of proposals, the Client may amend the RFP by issuing an addendum at https://tendersodisha.gov.in. Any such addendum will be binding on all the bidders. To give bidders reasonable time in which to take an addendum into account in preparing their proposals, the Client may, at its discretion, extend the deadline for the submission of the proposals.

23. Client's right to accept any proposal and to reject any or all proposal(s):

The Client reserves the right to accept or reject any proposal, and to annul or amend the bidding / selection / evaluation process and reject all proposals at any time prior to award of contract award, without assigning any reason there of and thereby incurring any liability to the bidders.

24. Copyright, Patents and Other Proprietary Rights:

Odisha Bridge & Construction Corporation Limited shall be entitled to all intellectual property and other proprietary rights including but not limited to patents, copyrights and trademarks, with regard to documents and other materials which bear a direct relation to or are prepared or collected in consequence or in the course of the execution of this contract. At the Client's request, the Consultant shall take all necessary steps to submit them to the Client in compliance with the requirements of the contract.

25. Force Majeure:

For purpose of this clause, ''Force Majeure'' means an event beyond the control of the agency and not involving the agency's fault or negligence and not foreseeable. Such events may include, but are not restricted, wars or revolutions, fires, floods, riots, civil commotion, earthquake, epidemics or other natural disasters and restriction imposed by the Government or other bodies, which are beyond the control of the agency, which prevents or delays the execution of the order by the agency If a force Majeure situation arises, the agency shall promptly notify Client in writing of such condition, the cause thereof and the change that is necessitated due to the condition. Until and unless otherwise directed by the Client in writing, the Agency shall continue to perform its obligations under the contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. The agency shall advise Client in writing, the beginning and the end of the above causes of delay, within seven days of the occurrence and cessation of the Force Majeure condition. In the event of a delay lasting for more than one month, if arising out of causes of Force Majeure, Client reserve the right to cancel the contract without any obligation to compensate the agency in any manner for any reason.

26. Settlement of Dispute:

Deleted.

27. Disqualification of Proposal:

The proposal is liable to be disqualified in the following cases as listed below:

- Proposal submitted without Bid Processing Fee & EMD, as applicable
- Proposal not submitted in accordance with the procedure and formats as prescribed in the RFP
- During validity of the proposal, or its extended period, if any, the bidder increases his quoted prices
- Proposal is received in incomplete form
- Proposal is received after due date and time for submission of bid
- Proposal is not accompanied by all the requisite documents / information
- A commercial bid submitted with assumptions, conditions or uncertainty.
- Bids with any conditional technical and financial offer
- If the bidder provides any assumptions in the financial proposal or qualifies the commercial proposal with its own conditions, such proposals will be rejected even if the commercial value of such proposals is the lowest / best value
- Proposal is not properly sealed or signed
- Proposal is not conforming to the requirement of the scope of the work of the assignment.
- Bidder tries to influence the proposal evaluation process by unlawful/corrupt/ fraudulent means at any point of time during the bid process
- If, any of the bid documents (including but not limited to the hard and soft/electronic copies of the same, presentations during evaluation, and clarifications provided by the bidder), excluding the commercial bid, submitted by the bidder is found to contain any information on price, pricing policy, pricing mechanism or any information indicative of the commercial aspects of the bid;
- Bidders or any person acting on its behalf indulges in corrupt and fraudulent practices
- Any other condition/situation which holds the paramount interest of the Client during the overall section process.

28. Liability:

The Liability of the selected agency under this agreement in any case shall not be beyond the amount of fees payable to the selected agency under this agreement.

29. Indemnity:

The Agency at all times during the pendency of this agreement, keep the Government/ Authority Indemnified to an amount not exceeding the total fees payable to the agency under this agreement.

SECTION: 3

TERMS OF REFERENCE (ToR)

1. Background

Odisha Bridge & Construction Corporation Limited (OB&CC) was incorporated on 01.01.1983 under Companies Act, 1956 as a Govt. Company. It is a Government Company sponsored by Odisha State Government within the meaning of section 617 of the Companies Act. Since its inception, it is working as a Govt. of Odisha undertaking Organization. Construction projects are undertaken by the Corporation based on the working procedure approved by the Works Dept. Govt. of Odisha vide Resolution No.9133 Dt.06.09.2012 & No.6120 Dt.29.05.2015.

The main objectives of OB&CC is to construct, improve, restore & develop all types of Bridges, Buildings, Heritage & other Infrastructures, and Conveniences pertaining to them.

2. Objective

Background

The Government of Odisha, under the Bhubaneswar Decongestion Plan, intends to undertake road improvement works from Acharya Vihar Square to Airport Square. Accordingly, a tender has been invited for engagement of a DPR Consultant, who shall be responsible for preparation of the Detailed Project Report (DPR) for the said corridor.

The preliminary objective of the project is to develop a 6-lane main carriageway with service roads on both sides to enhance traffic capacity and improve urban mobility. Grade-separated structures in the form of underpasses/elevated corridors are proposed for through traffic movement at major junctions such as Nicco Park Square, AG Square, Capital Hospital Square, and Airport Chaka, among others.

Pedestrian safety shall be given due importance through provision of wide sidewalks, seating areas, parking spaces, and user-friendly access measures to footpaths. Pedestrian facilities such as Foot Over Bridges (FOBs), underpasses, and safe crossing points shall be planned as per site requirements.

The project envisages development of a dedicated corridor with flyovers/underpasses/parking/subways along with comprehensive junction development designed to decongest the entire corridor and eliminate conflict zones, thereby minimizing accident risks. Reduction in travel time to the Airport shall be an additional benefit to the users.

The project road presently has commercial establishments, authorized and unauthorized shops/kiosks on both sides. All junctions along the corridor are proposed to be comprehensively designed with the objective of achieving signal-free movement, improved traffic management, and enhanced safety provisions.

Major Junctions enroute are

a) Acharya Vihar Square
b) Nicco Park Square
c) Institutions of Engineers Square
d) Housing Board Square
e) Rabindra Mandap Square
f) Secretariat Entry
g) AG Square
h) Capital Hospital Square
i) Airport Chaka

Brief Objective

The brief objectives of the study of the proposed corridor includes:

- Site feasibility Assessment
- Reconnaissance Surveys of Road, Structure and other Project Components
- Engineer Surveys & Investigations including Topo Survey, GPR Survey, Traffic Studies, Axle Load, OD Survey, Pedestrian Surveys, Demand Forecasting, Soil Investigation etc.
- Geotechnical and hydraulic investigations
- Highway Geometric Design
- Pavement Investigation, Residual Life and Pavement Design
- Structural design of Structures/ Flyovers/ Underpasses/ Subways/FOBs/ Cross Drainage Structure and other project components
- Design of Road Marking, Signages other Road Furniture.
- Parking Design
- Pedestrian Safety including Designing streets for people, enhancing mobility, safety, and livability and providing multiple mobility choices.
- Drainage Design
- Environmental and Social Impact Assessment
- Utility Shifting and Land Acquisition
- Landscaping and Beautification of project stretch
- Detailed Cost Estimation
- Preparation of Feasibility Report and Detailed Project Report
- Preparation of all Design and Drawings
- Tender Document Preparation, Prebid Queries reply and onboarding of Contractor.

- All Project Clearances and Approvals
- The primary objective is to ensure hindrance-free movement towards the Airport, with particular emphasis on traffic flow to & from Secretariat to Airport Square.

Brief Scope

The general scope of services is given in the sections. However, the entire scope of services would, inter-alia, include the items mentioned in the Letter of Invitation and the TOR. The consultant will also make suitable proposals for widening and improvement of existing roads and strengthening of carriageways as required. The scope of services shall include, but not be limited to, the following:

1. The main objective of the Consultant is to establish the technical. viability of the project and prepare detailed project report (DPR) for rehabilitation/ upgrading of the existing proposed corridor to required lane configuration.
2. Identification of congestion causes such as pedestrian conflicts, parking issues, junction delays, turning movements, and non-lane driving.
3. Review of all available reports and published information about the project road and the project influence area and integrate in the Master Plan/ Design for comprehensive planning.
4. Preliminary surveys, alignment studies, and identification of improvement options.
5. Concept plan shall be prepared for the entire road stretch with multiple options for the each junctions for decongestion. The concept plan presentation shall be done by the Consultant to the Employer/ Government for approval. Observation for the concept plan shall be incorporated by the Consultant. Junctions/ Underground Underpass/ Elevated Junctions/ 3 Tier Elevated Junctions/ System Interchange etc. options shall also be presented in the concept plan for approval and further detailing.
6. Detailed engineering surveys and investigations required for DPR preparation.
7. Traffic surveys including Classified Counts, Turning Movement, Axle load survey, OD survey, pedestrian survey, and demand forecasting. Survey for Public Amenities shall also be conducted.
8. Inventory and condition surveys of bridges, drainage structures, and other infrastructure.
9. Social and Environmental impact assessments with mitigation planning.
10. Preparation of rehabilitation and resettlement plans as per applicable policies.
11. ROW mapping on revenue records and land acquisition planning.

12. Detailed geometric and Pavement design including generation of detailed cross section @50m interval.
13. Design of elevated corridors, underpasses, junctions, and cross-drainage structures with GAD and construction drawings.
14. Topographic surveys using LiDAR/Total Station/GPS/DGPS with required accuracy as per IRC standards.
15. Strip plans indicating utilities, trees, widening scheme, and land acquisition requirements.
16. Pavement investigations and material source identification.
17. Preparation of Feasibility Study Report, Detailed Project Report, Detailed Cost Estimates, BOQs, Rate analysis, and Bid documents.
18. Development of 3D terrain models and 3D project visualization including walk-through animation.
19. Integration with ongoing/sanctioned projects of NHAI/MoRTH/R&B/Metro and other agencies.
20. Drainage system design and stormwater management planning.
21. Value engineering, and project costing.
22. Contract packaging and implementation scheduling.
23. Design of pedestrian facilities including FOBs, subways, and crossings.
24. Landscaping and urban design elements. Pedestrian Friendly.
25. Preparation of land acquisition proposals and statutory documentation.
26. Utility relocation planning including joint measurement with line departments.
27. Assistance in preparation of tender documents under EPC/Turnkey/DBFOT/HAM modes.
28. Coordination of engineering, social, and environmental inputs.
29. Study and Integration with Comprehensive Development Plan (CDP) Bhubaneswar 2030 and Existing/ Future plans.
30. Road safety planning and safety audit during DPR stage.
31. Adoption of modern technologies and international best practices for sustainable design.
32. Planning widening within available ROW as far as practicable to minimize land acquisition.

33. Provision of complete street elements including footpaths, cycle tracks, bus stops, medians, signage, furniture, utilities, and green infrastructure. The streets to reduce impact on natural and built environment should have green elements like plantation, utility and services, storm water management, garbage disposal system and public amenities.
34. Planning for vending/kiosk zones for livelihood support within the ROW where feasible.
35. Parking planning to eliminate on-street parking from carriageway lanes.
36. Environment Impact Assessment, Social impact assessment etc. needs to be carried out with public consultations and shareholder meetings to provide mitigation measures for rehabilitation and resettlement, if required. Public consultations and stakeholder engagement during planning stages.
37. Approval of all drawings including GAD and detailed engineering drawings will be got done by the consultant from the relevant Authorities. Consultant will also require final approval for all applicable clearances including shifting of utilities of all types from relevant authorities.
38. Liaison with authorities for approvals, clearances, and utility shifting permissions. There are existing utility lines along the existing main carriageway. The consultant should make the planning proposal with minimum effect on the utilities. However, if shifting is necessary, consultant to prepare shifting plans and relocation proposals. They shall carry out joint measurement survey with the line departments and obtain estimates for shifting.
39. Deployment of latest software, survey equipment, and NABL/Government-approved laboratories.
40. Preparation of bid documents based on approved DPR.
41. Adherence to applicable IRC standards, MoRTH specifications, and model agreements.
42. Tree relocation/ transplantation for the project stretch.
43. Consultants shall be required to obtain all clearances required for the implementation of the project on ground from the concerned authorities. The Authority shall provide necessary supporting letters and official fees as per the demand notice issued by such concerned agencies from whom clearances are being sought.
44. The Consultant shall at all times ensure a high level of co-ordination of engineering, social and environmental inputs.

General Provisions

The Consultant shall obtain all required statutory clearances and approvals from concerned authorities

with necessary support from the Employer. All scope of services performed by the Consultants shall be guided in its assignments by Modal agreements applicable and Manual of Specifications and stands for highways published by IRC (as applicable and updated from time to time).

The Employer reserves the right to terminate the assignment at any stage with payment for work

3. Scope of Work

3.1 General

- Entire scope of work would, inter-alia, include the items mentioned in the Letter of Invitation, Terms of Reference, General Contract and any supplements and appendices to these documents.
- The Consultant shall perform all necessary planning, engineering and economic analysis, field investigations and related works as mentioned in Terms of Reference with due care and diligence to attain the objectives of the study. In the conduct of his work, the Consultant shall contact the Authority and other Government Departments and agencies responsible for planning and development.
- The Authority may provide the Consultant with available reports, data, and services, if any, appropriate to achieving the objectives of the study. The Consultant shall be responsible, however, for the analysis and interpretation of all data received, undertake other studies to validate the data and give conclusions and recommendations derived from these data.
- As soon as possible, after being awarded the Contract, the Consultant shall support the Authority in preparing the timetable required for the technical and financial implementation of the project.

3.2 Standards and Codes of Practices

- All activities related to field studies, design and documentation shall be done as per the latest guidelines/ circulars of MORTH and relevant publications of the Indian Roads Congress (IRC) and Bureau of Indian Standards (BIS). For aspects not covered by IRC and BIS, international standards practices, may be adopted. The Consultants, upon award of the Contract, may finalize this in consultation with OB & CC Ltd. and reflect the same in the inception report.
- All notations, abbreviations and symbols used in the reports, documents and drawings shall be as per IRC:71.

3.3 Quality Assurance Plan (QAP)

- The Consultants should have detailed Quality Assurance Plan (QAP) for all field studies including topographic surveys, traffic surveys, engineering surveys and investigations, design and

documentation activities. The quality assurance plans/procedures for different field studies, engineering surveys and investigation, design and documentation activities should be presented as separate sections like engineering surveys and investigations, traffic surveys, material geo-technical and sub-soil investigations, road and pavement investigations, investigation and design of bridges & structures, environment and R&R assessment, economic & financial analysis, drawings and documentation, preparation, checking, approval and filing of calculations, identification and tractability of project documents etc. Further, additional information as per format shall be furnished regarding the details of personal who shall be responsible for carrying out/preparing and checking/verifying various activities forming part of feasibility study and project preparation, since inception to the completion of work. The detailed Draft QAP Document must be discussed and finalized with the concerned Authority officers immediately upon the award of the Contract and submitted as part of the inception report.

- It is imperative that the QAP is approved by Authority before the Consultants start the field work.

3.4 Detailed Scope of Work

- Within the scope of this study, the Consultant shall conduct all necessary Reconnaissance Survey, topographical surveys, hydrological/ hydraulic studies, soils, sub-soils and materials surveys, traffic surveys, and all other field and laboratory investigations required for the Project.
- The Consultant shall collect all available relevant data and information for finalizing a suitable and viable alignment and concerning road and bridge inventories (if any), historic traffic data, socio-economic data, climate, geology, materials, traffic accidents, social and environmental data, utilities.
- Consultant shall obtain all types of necessary clearances required for implementation of the project on the ground from the concerned agencies. The client shall provide the necessary supporting letters and any official fees as per the demand note issued by such concerned agencies from whom the clearances are being sought to enable implementation.

3.4.1 Reconnaissance Survey

- 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, geological maps, catchment area maps, contour plans, flood flow data and seismological data 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. Greater use of technology for LA be adopted by the consultant at the DPR stage so as to have a precise land acquisition

process.

- 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.
    - topographical features of the area.
    - typical physical features along the existing alignment within and outside ROW i.e. land use Pattern.
    - possible alignment alternatives, vis-a-vis, scheme for the construction of additional lanes parallel to the existing road.
    - realignment requirements including the provision of bypasses, ROBs /Flyovers and via-duct for pedestrian crossings with possible alignment alternatives.
    - preliminary identification of improvement requirements including treatments and measures needed for the cross-roads.
    - traffic pattern and preliminary identification of traffic homogenous links;
    - sections through congested areas.
    - 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:
    - critical areas requiring detailed investigations; and,
    - Requirements for carrying out supplementary investigations.
    - soil (textural classifications) and drainage conditions
    - Type and extent of existing utility services along the alignment (within ROW).
    - 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.

- The data derived from the reconnaissance surveys shall be utilized 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.
- 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.

- 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 Authority's comments. The data and the charts should also accompany the rationale for the selection of traffic survey stations.

3.4.2 Topographic Surveys

- 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 survey may be initiated based on the Reconnaissance Survey adopting LIDAR or Similar technology for the project.
- Technologies which can meet the following accuracy levels shall be adopted. For land-based surveys (a) Fundamental horizontal accuracy of 5cm or better (b) Fundamental vertical accuracy of 5cm or better (c) More than 50 points shall be measured per sq. m and for aerial based surveys (a) Fundamental horizontal accuracy of 5 cm or better (b) Fundamental vertical accuracy of 5 cm or better (c) More than 10 points shall be measured per sq. m. To establish accuracy, a check point survey using DGPS (for horizontal accuracy) and Auto Level (for vertical accuracy) shall be carried out to establish the fundamental horizontal and vertical accuracy. A minimum of 25 check points, or check points once every 4 km should be established, and these should be strictly different from any geo-referencing or control network points.
- The survey shall be based on a closed traverse, which, if possible, shall be tied up to permanent control points. Benchmarks shall, if at all possible, be tied up to permanent points.
- The following accuracy shall be applicable to the topography survey:
    - Survey of Concrete Control Pillars:
        - Traverse (co-ordinate close): Fractional misclosure of 1/10,000 or better
        - Levelling: Limit of accuracy to be 10 mm*(K)1/2-(where K is the circuit distance levelled in kilometres)
    - Other Surveys:
        - Traverse (co-ordinate close): Fractional misclosure of 1/5,000 or better-
        - Levelling: Limit of accuracy to be 20 mm*(K)1/2-(where K is the circuit distance levelled in kilometers).
- Longitudinal section levels along center line shall be taken at every 10 m interval. The levels shall be taken at closer intervals at the curve points, small streams, and intersections and at the locations of change in elevation. 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.

- Longitudinal and cross sections for major and minor streams shall cover Cross section of the channel at the site of proposed crossing and few cross sections at suitable distance both upstream and downstream, bed level up to top of banks and ground levels to a sufficient distance beyond the edges of channel, nature of existing surface soil in bed, banks & approaches, longitudinal section of channel showing site of bridge etc. These shall be as per recommendations mentioned in IRC Special Publication No. 13 (Guidelines for the Design of Small Bridges and Culverts) and provisions of IRC:5.
- Longitudinal section for crossroads for length adequate for design and quantity estimation purposes.
- The width of the survey corridor will be increased to collect data such as existing road junctions and stream beds, where the adjoining road/ stream bed will be surveyed for a distance of 100 m to a width of 50 m from centerline on either side. Building outlines will be surveyed where they encroach into the ROW as defined in the data sheet.
- The items to be picked up during the survey will include, and not be limited to, the following:
    - Levels along the alignment shall be taken at every 50m intervals and at all intermediate breaks along the center line of the alignment. The interval will reduce to 25m in built up areas and Rolling Terrain. Spot levels shall be recorded at critical points.
    - River/Channel cross-sections shall be taken at every 10m interval up to a distance of 20m on u/s and d/s from the centerline of bridge.
- Consultants shall also develop an as-is map of the road including:
    - Trees (position, species and girth measured 1.2 m from ground level) and Tree Species.
    - Building fronts or outlines where they encroach within the corridor 25 m on either end (to be classified by construction type). Building Plinth height shall also be recorded.
    - Electric transformers, mast, tower, cables along with their lowest level etc.
    - All telephone lines, OFC lines, Private OFC lines, Water Pipes above and below the ground belonging to Towns, Villages, Zilla Panchayats and other bodies, Electricity lines. For this purpose, it is the responsibility of consultant to get details from concerned authorities.
- The surveyed alignment shall be transferred on to the ground as under:
    - Reference Pillar and Benchmark / Reference pillar of size 15 cm X 15 cm X 45cm shall be cast in RCC of grade M-15 with a nail fixed in the center of the top surface. The reference pillar shall be embedded in concrete up to a depth of 30cm with CC

M10 (5 cm wide all around). The balance 15 cm above ground shall be painted yellow. The spacing shall be 250m apart, incase Benchmark Pillar coincides with Reference Pillar, only one of the two needed be provided.

- Details of utility Services and Other Physical Features
    - The Consultants will collect details of all important physical features along the alignment. These features affect the project proposals and should normally include buildings and structures, monuments, burial grounds, cremation grounds, places of worship, railway lines, stream / river / canal, water mains, sewers, gas/oil pipes, crossings, trees, plantations, utility services such as electric, and telephone lines (O/H & U/G) and poles, optical fibre cables (OFC) etc. The survey would cover the entire right-of-way of the road on the adequate allowance for possible shifting of the central lines at some of the intersections locations.
    - Consultant shall also map out sub-surface utilities. Accurate mapping and resolution of all sub-surface utilities up to a depth of 4 m shall be carried out. Differentiation between sub-surface utilities such as live electric cables, metallic utilities and other utilities shall be indicated and sub-surface utilities radargrams further processed into utility maps in formats such as PDF, JPEG and AutoCAD shall be furnished. To meet the accuracy levels, consultant shall use Ground Penetrating Radar, Induction Locator or better technologies.
    - 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 LA 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 Authority.
- The following are the set of deliverables which should be submitted after completion of survey:
    - Raw DGPS data for the entire highway length and adjoining areas of interest.
    - Point cloud data or equivalent for the entire highway length and adjoining areas of interest in a format/ platform as per industry good practice.
    - Topographic map of scale as per IRC SP 19 of the entire highway length and adjoining areas of interest.
    - Contour map of 50 cm of entire highway length and adjoining areas of interest
    - Cross section of the highway at every 50 m in drawing format.
- The width of the survey corridor should take into account the layout of the existing alignment including the extent of embankment and cut slopes and the general ground profile. While carrying out the field surveys, the widening scheme (i.e. right, left or symmetrical to the centre

line of the existing carriageway) should be taken into consideration so that the topographic surveys cover sufficient width beyond the centre line of the proposed divided carriageway. Normally the surveys should extend to a minimum of 30 m beyond either side of the centre line of the proposed divided carriageway or land boundary, whichever is more.

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.

Where existing roads cross the alignments, the survey will extend a minimum of100 m either side of the road centre line and will be of sufficient width to allow improvements, including at grade intersection to be designed.

3.4.3 Road Inventory Survey

- 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:
    - Terrain (flat, rolling, mountainous).
    - Land-use (agricultural, commercial, forest, residential etc.) every kilometer.
    - Carriageway width, surfacing type @ every 500m and every change of feature whichever is earlier.
    - Shoulder surfacing type and width @ every 500m and every change of feature whichever is earlier.
    - Sub-grade / local soil type (textural classification) every 500m and every change of feature whichever is earlier.
    - Horizontal curve; vertical curve
    - Road intersection type and details, at every occurrence.
    - Retaining structures and details, at every occurrence.
    - Location of water bodies (lakes and reservoirs), at every occurrence.
    - Height of embankment or depth of cut @ every 200m and every change of feature whichever is earlier.
    - Land width i.e. ROW
    - Culverts, bridges and other structures (type, size, span arrangement and location)
    - Roadside arboriculture
    - Existing utility services on either side within ROW. There shall be a provision of

utility corridor for appropriate categories / combination of utilities in the construction of new 4/6 laning of National Highways. Such structures shall be located at appropriate location preferably as close to the extreme edge of Right of Way (RoW). In this connection, guidelines contained in IRC:98 shall be followed.

- General drainage conditions
- Design speed of existing road

- 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.

3.4.4 Pavement Investigation

Pavement Composition

- Consultants shall make trial pits to ascertain the pavement composition. The test pit interval will be as per the value mentioned in the Pavement Structural Strength section below.
- For each test pit, the following information shall be recorded:
  - Test pit reference (Identification number, location):
  - Pavement composition (material type and thickness); and
  - Subgrade type (textural classification) and condition (dry, wet)
  - Embankment (composition and geometry)

Road and Pavement Condition Surveys

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.

- 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, Cracking, Raveling %, Pothole%, Edge Break, rut depth etc.)
  - Shoulder condition (Same as above including material loss, rut depth, corrugation, Edge Break etc.)
  - Embankment condition.
  - Drainage condition

Pavement Roughness

- The roughness surveys shall be carried out using a network survey vehicle mounted laser profilometer or better technology.
- Roughness measurement with outputs of both raw longitudinal profiles and IRI calculation

shall be reported at 100m referenced to the preceding LRP. The roughness must meet ASTM-E950 (equivalent to Class I road profiler).

- The IRI shall be determined for both wheelpaths over a minimum length of 250m for a minimum of 6 calibration sites with a roughness range between 2m/km and 8m/km. Calibration shall be made for speeds of 20, 30, 40, 50, 60 km/h.
- 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 direction.
- The results of the survey shall be expressed in terms of BI and IRI and shall be presented in tabular and graphical forms. The processed data shall be analyzed using the cumulative difference approach to identify road segments homogenous with respect to surface roughness.

Pavement Structural Strength

- The Consultants shall carry out structural strength surveys for existing pavements using Falling Weight Deflectometer (FWD) in accordance with IRC 115 or IRC 117 as the case may be.
- 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.
- 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.
- Falling weight deflectometre 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 the scheme describing the testing schedule including the interval. The testing scheme shall be supported by data from detailed reconnaissance surveys.
- It is mandatory for the consultant to use Falling weight deflectometre or alternative better technique for the evaluation of pavement strength, details of such methods or innovative features for deflection testing using Falling weight deflectometre 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 approved. The sources of such methods should be properly referenced.

Subgrade Characteristics and Strength

- Based on the data derived from condition (surface condition, roughness) and structural strength surveys, the project road section should be divided into homogenous segments with respect to pavement condition and strength. The delineation of homogenous segments with respect to roughness and strength should be done using the cumulative difference approach.
- 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.
- The testing for subgrade soil shall include:
    - in-situ density and moisture content at each test pit (ii). Field CBR using DCP at each test pit
    - Characterization (grain size and Atterberg limits) at each test pit and,
    - Laboratory moisture-density characteristics (modified AASHTO compaction);
    - Laboratory CBR (unsoaked and 4-day soak compacted at three energy levels) and swell.
- 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 finalized in consultation with the Authority after the problematic soil types are identified along the road sections.

3.4.5 Investigations for Bridges and Structure

Inventory & Condition Survey of Bridges, Culverts and Structures

- The Consultants shall make an inventory of all the structures (bridges, viaducts, ROBs/RUB and other grade separated structures, 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. The inventory of culverts shall be presented in a tabular form covering relevant physical and hydraulic parameters.
- 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. The condition and structural assessment survey of the bridges / culverts / structures shall be carried out by senior experts of the Consultants.
- 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.

Hydrology and Drainage Investigations

- The hydrological and hydraulic studies shall be carried out in accordance with IRC Special Publication No. 13 ("Guidelines for the Design of Small Bridges and Culverts") and IRC:5 ("Standard Specifications & Code of Practice for Road Bridges, Section I General Feature of Design"). These investigations shall be carried out for all existing drainage structures along the road sections under the study.
- The consultant shall also collect information on observed maximum depth of scour.
- In respect of major bridges, history of hydraulic functioning of existing bridge, if any, under flood situation, general direction of river course through structure, afflux, extent and magnitude of flood, effect of backwater, if any, aggradation/degradation of bed, evidence of scour etc. shall be used to augment the available hydrological data. The presence of flood control/ irrigation structures, if affecting the hydraulic characteristics like causing obliquity, concentration of flow, scour, silting of bed, change in flow levels, bed levels etc. shall be studied and considered in design of bridges. The details of any future planned work that may affect the river hydraulics shall be studied and considered.
- The Consultants shall make a desk study of available data on topography (topographic maps, stereoscopic aerial photography), storm duration, rainfall statistics, topsoil 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.
- The Consultants shall collect information on high flood level (HFL), low water levels (LWL), high tide level (HTL), low tide level (LTL) where applicable, 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.
- The Consultant shall conduct and provide a complete description of the features of the area. Such features shall at least include:
- Information about soils in vegetation and drainage pattern along the Bridge flooding in respective terrains etc.;
- All necessary hydrological and rainfall data for storm water and sub-surface drainage systems design;
- Position of nearby bridges in U/s and D/s with bridge details.
- Characteristics of water crossings and hydrological structures
- Fixing of Designs, Discharge, HFL, vertical clearances etc.,

a) Linear water way and regime width.
b) Afflux calculation

3.4.6 Geo-Technical Investigations and Sub-Soil Exploration

- The Consultant shall carry out geo-technical investigations and sub-surface explorations for the proposed Bridges / Road over bridges/ tunnels/ viaducts/ interchanges etc., along with 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:

Description	Borehole Locations
Overall Length= 6-30m	One abutment location and at least one intermediate location between abutments for structures having more than one span
Overall Length= 30-60m	One abutment location and at least one intermediate location between abutments for structures having more than one span.
Overall Length >60m	Each abutment and each pier locations.

- The deviation(s), if any, by the Consultant from the scheme presented above should be approved by Authority.
- Geotechnical Investigations and Sub soil Exploration shall be carried out to determine the nature and properties of existing strata 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 strata, proneness of site to artesian conditions, seismic disturbance and other engineering properties of soil etc. Geotechnical investigation and Sub-soil Exploration will be done as per IRC 78.
- The scheme for the boring's locations and the depth of boring shall be prepared by the Consultants and submitted to Authority for approval.
- The sub-soil exploration and testing should be carried out as per IS 1892. The soil testing reports shall be in the format prescribed in relevant IRC Codes.
- For the approach 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 in NABL accredited laboratory to determine the suitability of various materials for use in widening of embankments or in parts of new pavement structure.

3.4.7 Material Investigations

- 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.

3.4.8 Traffic Survey and Analysis

- The Consultant shall determine the total traffic volume and volume of divertible traffic by analyzing all existing statistical data, and by conducting and analysing traffic counts and origin - destination studies. Other field traffic investigations shall be undertaken by the Consultant as required. The Consultant shall determine appropriate growth rates per vehicle group (i.e. Cars, buses light and heavy commercial vehicles) using appropriate methods. Slow moving traffic shall also be registered.
- The methodology of collection and analysis of data, number and location of traffic survey stations shall be finalized in consultation with Authority prior to start of the traffic survey.
- Based on the above analysis, the Consultant shall conduct and provide:
    - No and location of Survey stations
    - Classified Traffic volume count surveys
    - Origin-Destination and Commodity Movement Characteristics
    - Intersection Volume Count
    - Speed-Delay Characteristics
    - Turning movement surveys
    - Axle Load Surveys
    - Pedestrian / animal cross traffic surveys:
    - Traffic Demand Estimates
    - Detailed annual traffic forecasts for a period of 30 years after the completion of the Bridge, and more general projections of future traffic for the following 15 years.
    - All traffic forecasts shall be given at two growth rates, namely low and high, for the above traffic groups.

- Consultant shall make use of traffic survey done by Indian Highways Management Company Limited (IHMCL) using ATCC systems. However, in isolated locations where there are site constraints, manual counting can be done. If required, especially in cases where a particular stretch is not covered by IHMCL, DPR consultant should carry out classified traffic volume count survey using ATCC systems or latest modern technologies.
- **Traffic Count** (TVC) : 7 days 24 Hrs. in general or 3 days 24 Hrs. shall be done in extreme case upon approval from Authority. 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.
- **OD Survey**: The consultants shall carry out 1-day (24 hour, both directions) O-D and commodity movement surveys at locations finalized in consultation with <Authority>.These will be essentially required around congested towns to delineate through traffic. The road side interviews shall be carried out on random sample basis and cover all four-wheeled vehicles. The location of the O-D survey and commodity movement surveys shall normally be same as for the classified traffic count.

  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.

  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.

  The data derived from surveys shall also be analyzed 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.

  The distribution of lead and load obtained from the surveys should be compared. 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 with those derived from the axle load studies.

  The commodity movement data should be duly taken into consideration while making the traffic demand estimates.
- **Turning Movement Surveys:** 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.

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 Authority 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.

The data derived from the survey should be analyzed to identify requirements of suitable remedial measures, such as construction of underpasses, flyovers, 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.

3.4.9 Social Impact Assessment

The social analysis study shall be carried out in accordance with the MORT&H/World Bank/ADB Guidelines. 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, health, child labor, land acquisition and resettlement.

3.5 Detailed Design of Road and Pavements, Bridges, Structures

3.5.1 General

Preliminary Design

- Based on the surveys, Hydrological and geotechnical investigations, the Consultant shall develop all possible preliminary designs.
- The Consultant shall carry out the following activities:
    - Analyze all data collected and all available field survey data.
    - Prepare preliminary designs for:
    - General arrangement Drawing of Bridges
- Alignment for design of Approaches.

  This will inter alia include:
    - Definition of geometric design criteria and typical cross sections.
    - New bridge design and approaches shall be in accordance with relevant and latest IRC / MORT&H guidelines

The Consultants are to carry out detailed designs and prepare working drawings for the project component but not limited to:

- Project highway with divided carriageway configuration complete in all respects with service roads at appropriate locations.
- Design of pavement for the additional lanes and overlay for the existing road, paved shoulders, medians, verges.
- Bridges, viaduct/subways/ Elevated Corridor and other grade separate structures ~~including ROBs/RUBs~~ etc.
- At Grade Junction Design
- ROB for railway crossings as per the requirement and the standards of the Indian Railways.
- Prepare alignment plans, longitudinal sections and cross-sections@ 50m intervals.
- Designs for road furniture and road safety/traffic control features.
- Designs and drawings for service road/under passes/overpass / cattle passes tree planting/fencing at locations where necessary / required
- Drainage Design
- Bridges and structures rehabilitation plan with design and drawings
- Traffic amenities (Parking Areas, ~~Weighing Station and Rest Areas~~, etc.).
- Design of pavement for approach road
- Design of riverbank protection / training works. Innovative type of structures with minimum joints, aesthetically, pleasing and appropriate to the topography of the region shall be designed wherever feasible.
- Highway Illuminations, Plantations, Footpaths, FOBs, Pedestrian Subways, Junction Design, Land Acquisition, Signal Design, Utility Shifting Plan, Typical Cross Section, Service Road, Slip Road, Parking Areas etc.

3.5.2 Design Standards

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

3.5.3 Geometric Design

- The design of geometric elements shall, therefore, take into account the essential requirements of such facilities.
- 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.

- 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.
- The detailed design for geometric elements shall cover, but not be limited to the following major aspects:
    - Horizontal Alignment.
    - longitudinal Profile.
    - Cross-Sectional elements, including refuge lane (50m) at every 2kms.
    - Junctions, intersections and interchanges.
    - Service roads/ Slip Roads
- The design of the alignment 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.
- The consultants shall make detailed analysis of traffic flow and level of service for the existing road and workout the traffic flow capacity for the improved project road. The analysis should clearly establish the widening requirements with respect to the different horizon periods taking into account special problems such as road segments with isolated steep gradients.
- 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.
- The Consultant shall also prepare design of grade separated pedestrian crossings (viaducts) for large cross traffic of pedestrians and / or animals on the basis of passenger and animal cross traffic surveys conducted.
- 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.

- 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.
- The consultant shall prepare complete road and pavement design including drainage for new bypass option identified around congested town en-route.

3.5.4 Pavement Design

- The detailed design of pavement shall involve:
    - 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 beyond the land available.
    - Pavement design for bypasses; and,
    - Design of shoulders.
- The design of pavement shall primarily be based on IRC publications.
- The design of pavement shall be rigorous and shall make use of the latest Indian and International practices. The design alternatives shall include Rigid/ Flexible or Composite design options. The most appropriate design, option shall be established on life-cycle costing and techno-economic consideration.
- 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 flowcharts indicating the various steps in the design process, their interaction with one another and the input parametre required at each step.
- For the design of overlays, 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.

- For rehabilitation and strengthening, consultant shall consider the alternatives of rehabilitating the existing pavement, overlaying with the same or alternate pavement type (e.g. white/black topping) and also the option of removal and replacement of existing pavement layers and chose the best alternative basis lifecycle costing, and any local considerations such as material availability, time available for construction etc.
- Latest techniques of pavement strengthening like provision of geo-synthetics and cold/hot pavement recycling should be duly considered by the consultant for achieving economy. The use of technology particularly environment friendly technology viz. recycling of bituminous mixes, warm mixes and soil stabilization etc. should be adopted wherever feasible. Clause 519 of the "Specifications for Road and Bridge Works" (Fifth Revision) covers specifications for recycling of existing bituminous pavement materials to upgrade the pavements. These provisions notwithstanding, recycling of existing bituminous materials is yet to be implemented in most of the projects. The reclaiming and reprocessing of pavement materials involve both design (how the pavement should be designed using reclaimed materials with the given properties) and technology (the methods to reclaim and reprocess, equipment, knowhow and quality) issues. After addressing these issues, the recycling of pavements will be environmentally and economically better option for rehabilitation, repair or reconstruction compared to the use of fresh or virgin materials. Indian Road Congress has published IRC: 120-2015 on "recommended practice for recycling of bituminous pavements" giving a detailed procedure for its implementation
- 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.
- The pavement design task shall also cover working out the maintenance and strengthening requirements and periodicity and timing of such treatments.

3.5.5 Design of Embankments

- The embankments design should provide for maximum utilization of locally available materials consistent with economy. Use of fly ash wherever available with in economical leads must be considered. In accordance with Government instructions, use of fly ash within 300 km from Thermal Power Stations is mandatory as per extra ordinary Gazette Notification No. S.O. 254 (E) Part Section – III – Sub Section (ii) dated 25th January, 2016 and subsequent amendment, if any of Ministry of Environment, Forest and Climate change, New Delhi.
- The Consultants shall carry out detailed analysis and design for all embankments of height

greater than 6 m based on relevant IRC publications.

- The design of embankments should include the requirements for protection works and traffic safety features.

3.5.6 Design of Bridges and Structures

- The data collected and investigation results shall be analyzed to determine the following:
    - HFL
    - LWL
    - LBL
    - Erodibility of bed/scour level
    - Design discharge
    - Linear waterway and effective linear waterway
    - Likely foundation depth
    - Safe bearing capacity
    - Engineering properties of sub-soil
    - Artesian conditions
    - Settlement characteristics
    - Vertical clearance
    - Horizontal clearance
    - Free board for approach road
    - Severity of environment with reference to corrosion
    - Data pertaining to seismic and wind load
    - Requirement of model study etc.
- 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. 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 Authority to approve the best alternative. After approval of alignment and GAD the Consultant shall prepare detailed design as per IRC codes /guidelines and working drawings for all components of bridges and structures.
- 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.

- GAD for bridges/structures across irrigation/water way channels shall be got approved from the concerned Irrigation/Water way Authorities. Subsequent to approval of GAD and alignment plan by Authority, the Consultants shall prepare detailed design as per IRC codes/guidelines for all components of the bridges and structures.
- Subsequent to the approval of the GAD and Alignment Plan by Authority and Railways, 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.
- 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.
- 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.
- Subsequent to the approval of the GAD and the alignment plan by Authority, detailed design shall also be carried out for the proposed underpasses, overpasses and interchanges.
- The Consultants shall also carry out the design and make suitable recommendations for protection works for bridges and drainage structures.
- In case land available is not adequate for embankment slope, suitable design for RCC retaining wall shall be furnished. However, RES wall may also be considered depending upon techno-economic suitability to be approved by Authority.
- All the bridge structures having a length of 100 m or less can be used for tapping of water for serving dual purpose i.e., to cross the water body or to store water, if technically feasible. Therefore, such structures shall be designed as bridge cum barrage structures (bridge cum bandhara). Ministry's guidelines in this regard issued vide letter no. RW/NH-34066/89/2015-S&R(B) dated 18.04.2017 may be referred.

3.5.7 Drainage System

- 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.

Consultant should study the existing drainage for the project stretch and proposed modifications.

- 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.
- The designed drainage system should show locations of turnouts/outfall points with details of outfall structures fitting into natural contours.
- The project highway shall be designed to have well designed efficient drainage system, which shall be subsurface, as far as possible. While constructing the underpasses, the finished road level shall be determined so as to ensure that the accumulation of rain water does not take place and run-off flows at the natural ground level. The drains, wherever constructed, shall be provided with proper gradient and connected to the existing outlets for final disposal.
- The rain water harvesting requirements be assessed taking into consideration the Ministry of Environment & Forest Notification Dt. 14.01.1997 (as amended on 13.01.1998, 05.01.1999 & 06.11.2000). The construction of rainwater harvesting structure is mandatory in and around water scarce / crisis areas notified by the Central Ground Water Board. The provisions for rainwater harvesting be executed as per the requirements of IRC:SP:42-2014 (Guidelines for Road Drainage) and IRC:SP:50-2013 (Guidelines on Urban Drainage).
- All the bridge structures having a length of 100m or less can be used for tapping of water for serving dual purpose i.e. to cross the water body and to store water, if technically feasible. Therefore, such structures should be designed as bridge cum barrage structures (bridge cum bandhara). Ministry's guidelines in this regard issued vide letter no. RW/NH-34066/59/2015-S&R(B) dated 18.04.2017 may be referred.
- The locations of the culverts should be planned in such a way that the proposed culvert covers optimum catchment area & the location shall be decided on the basis of topographical survey, local rainfall data, gradient of natural ground and enquiry from the local habitants. All culverts should preferably be box culverts as pipe culverts get filled up with silt, which is rarely cleared.

3.5.8 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.
- The Consultant should make the provisions for "the overhead (gantry-mounted) signs on roads with two or more lanes in the same direction" as per provisions of IRC-67. The minimum height of gantry mounted sign be 5.5 m above the highest point at the carriageway.

- Road safety shall be the focus of design. The roads shall be forgiving, having self- explaining alignment, safe designed intersections / interchanges segregation and safe crossing facilities for VRUs with crash barriers at hazardous locations. The details of traffic signs and pavement markings with their locations, types and configuration shall be shown on the plan so that they are correctly provided.
- DPR shall undergo the exercise of Road Safety Audit through the Road Safety Auditor and recommendations mentioned be incorporated.
- Road markings and proper signage constitute another important aspect of the Road safety. The DPR shall contain a detailed signage plan, indicating the places, directions, distances and other features, duly marked on the chainage plan. It shall specify the suitable places where FoBs are to be provided. Road marking and signage plan shall be included in DPR and shall be specifically approved by the <Authority>.
- Advanced Traffic Management System (ATMS) shall be in place for all 4/6 lane roads of Authority being put to tolling. This would provide real time information, guidance and emergency assistance to users. ATMS would include outdoor equipment including emergency call boxes, variable message sign systems, meteorological data system, close circuit TV camera (CCTV) system in addition to any other equipment required to meet the objective. Indoor equipment would include large display board, central computer with Network Management System, CCTV monitor system and management of call boxes system with uninterrupted power supply, all housed in a central control centre. In this connection, policy circular no.11041/218/2007-Admn dated 15.09.2016 may be referred.
- As availability of suitable sight distance has a large effect on road safety, the alignment of all the NHs should be finalized in such a way so as to have double the stopping sight distance available to the road users at all locations.

3.5.9 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. These activities should be included in the TOR for contractor/concessionaire and the cost of these activities shall also be added to the total project cost for civil works. The existing trees / plants shall be retained to the extent possible. The Transplantation of trees shall also be proposed wherever feasible.

3.5.10 Miscellaneous Works

- The Consultants shall make suitable designs and layout for miscellaneous works including rest areas, bus bays, vehicle parking areas, telecommunication facilities etc. wherever

appropriate.

- The Consultants shall prepare the detailed scheme and lay out plan for the works mentioned above.
- The Consultants shall prepare detailed plan for the traffic management and safety during the construction period.

3.5.11 Environment and Social Impact Assessment

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

3.5.12 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 /World Bank Guidelines / Government of India Guidelines, as applicable
- The consultant should carry out the preliminary environmental screening to assess the direct and induced impacts due to the project.
- The consultant shall ensure to document baseline conditions relevant to the project with the objective to establish the benchmarks.
- The consultant shall assess the potential significant impacts and identify the mitigation measures to address these impacts adequately.
- 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.
- 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.
- 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.

- 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.
- The consultant shall provide the cost of mitigation measures and ensure that environmental related staffing, training and institutional requirements are budgeted in project cost.
- The consultant shall prepare the application forms and obtain forestry and environmental clearances from the respective authorities including the SPCBs and the MOEF on behalf of Authority. The consultants will make presentation, if required, in defending the project to the MOEF Infrastructure Committee.
- The consultant shall identify and plan for plantation and Transplantation of the suitable trees along the existing highway in accordance with IRC guidelines.
- The consultant shall assist in providing appropriate input in preparation of relevant environment and social sections of BPIP.
- Provision should be made for Noise Barriers wherever (especially where project highway passes through dense habitation) required as a mitigation measure against noise pollution and nuisance. Their location, dimension, type, material and shapes should be determined and defined in environment impact assessment studies forming part of DPR.
    - **Reporting Requirements of EIA**
      The consultant would prepare the stand-alone reports as per the requirement of the ADB/World Bank, 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 , till the acceptance of the reports by the ADB/ World Bank, 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 measure would be incorporated.
- Enhancement measures would include items described in the scope of work and shall be complete with plans, designs, BOQ and technical specifications.
- Environmental monitoring plans during and after construction including
- scaling and measurement techniques for the performance indicators selected for monitoring.
- The EMP should be amendable to be included in the contract documents for the works.
- Incorporating any other as per the suggestions of the ADB/ World Bank/ till the acceptance of the reports by the ADB/ World Bank as applicable.

3.5.13 Social Assessment

- 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 stakeholder discussions, issue raised and how the project design was developed to meet stakeholders need would be prepared.
- The consultant shall prepare Land Acquisition Plan and assist Authority in acquisition of land under various Acts.

3.5.14 Resettlement and Rehabilitation Plan

- The consultant would prepare Resettlement and Rehabilitation Plan and 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 in to the project area. All consultations with affected persons (to include list of participants) should be fully documented and records made available to <Authority>.
- 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, labourers 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/ <Authority>, till the acceptance of the reports by the ADB/ World Bank/ <Authority>
- 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

3.5.15 Land Acquisition Proposal

- Overall program management of all activities pertaining to Land Acquisition including but not limited to the following
    - Coordinate all activities necessary for accurate and timely publication of notifications as per NH Act

- Liaison with relevant state departments throughout land acquisition process
- Facilitate communication between <Authority> and CALA throughout land acquisition process
- Support CALA and PIU with manpower and resources CALA throughout land acquisition process
- Assist CALA and <Authority> (PIU) in the publication of notifications
- Conduct enquiry at Village Administrative Office along approved alignment to ensure inclusion of all villages
- Ensure correct spelling of taluks and villages according to local revenue records (Jamabandi) or State Government land record website. The same should be done for English and Odia
- Assist CALA and <Authority> (PIU) in the publication of 3A to 3G notification
- Ensure collection of geo referenced control points capable of being imported into appropriate GIS system
- Ensure accurate digitization and projection of village maps on GIS system
- Assist in Publication of Gazette Notifications relating to Land Acquisition
- Assist <Authority> in obtaining possession of land

3.5.16 Utility shifting proposal and estimates

- Identify type and location of all existing utilities within the proposed ROW
- Consultant will review information available with all utilities agencies in the region, consult maps/plans available with <Authority>, MoRTH and state road agencies, consult with locals and municipal bodies to ascertain the presence and location of utilities , including but not limited to water-mains, gas, telephone, electricity and fiber-optic installations in and around the project road
- Deploy ground penetrating radar, inductor locators or better technology to accurately map the location, type and size of utilities in the ROW of the project road as required in the section of this TOR
- Develop a detailed strip plan and digitized maps showing:
    - type, size and current location of all the utilities identified
    - relative offset from the centerline
    - existing right of way
- Plan for utilities in future road design
    - Consultants need to identify utilities that will require shifting to enable construction of the proposed project road
    - Incorporate space required for elevated and under-ground utilities corridors and utilities crossings as required for existing and future utilities in consultation with user departments
- Develop a utilities relocation plan
    - Consultants need to develop and submit a utilities relocation plan in consultation with <Authority> and user departments clearly identifying current

utilities and suggested relocations along with crossings as required

- Plan and conduct discussions, consultations and joint site visits required for the planning of utilities shifting and the development of required drawings and proposals
- Prepare necessary details, documents and suggested relocation plan to be submitted to user department
- Develop initial cost estimates based on suggested relocation plan and the latest available schedule of rates for inclusion in the cost of the project at the time of approval

- Estimates and approvals
  - Consultants need to obtain draft utilities shifting proposal from user departments for all utilities identified for shifting along project road
  - Prepare utility shifting cost estimates using latest schedule of rates and obtain approval from user departments
  - Review final designs submitted, cost estimates, complete checklist, obtain required declarations and submit to <Authority> for approval
  - Work with user department, <Authority> as required to incorporate any changes requested in shifting proposal and cost estimate
  - Obtain all required utilities shifting proposal estimates and required approvals from both user departments and <Authority> within the time stipulated in DPR contract

3.5.17 Cost Estimates

- The Consultant shall prepare preliminary estimates of quantities with an accuracy of +/- 10% of the works. The estimates shall be prepared, showing separately the quantity required and estimated cost of each item.
- Preliminary cost estimates with an accuracy of +/- 10% shall be based on locally derived unit prices (Schedule of rates applicable to the state of Odisha/CPWD), but shall consider actual lead distances for materials, as appropriate for the previously estimated quantities. The estimates will also indicate tax and duty components of the costs of works, and provision shall be made for unforeseen contingencies and for costs of consultant's fees and project administration. All cost estimates shall be expressed in Indian Rupees at current rates as applicable in relevant guidelines issued by the State/Central Government.
- 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

and market rate for the inputs. The estimation of quantities shall be based on detailed design of various components of the projects. The estimation of quantities and costs would have to be worked out separately for civil work Package as defined in this TOR.

- 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.
- The Consultant should work out the quantity of Bitumen, Steel and Cement likely to be used in the project and indicate in the summary sheet.

3.5.18 Economic Benefits

Economic benefits shall be expressed primarily in terms of.

a) savings in vehicle operating costs (reduction in fuel consumption etc.);
b) savings in bridge maintenance expenditure.
c) value of time savings (savings resulting from reduction in journey times);
d) reduction in accident costs, if any.

3.5.19 Bidding process

- Consultant shall assist the authority in preparing the required bid documents (EPC/ Turnkey) and support the authority throughout the bidding process.
- Consultant shall assist the authority in preparing reply to the queries of the bidders.
- Consultant shall assist the authority in preparing the Corrigendum and modification in the Contract Documents for Construction Tender.

3.5.20 Project Reports and Drawings

The Consultant shall prepare the following:

- Comprehensive plan and profile drawings on A1 paper to the scale of 1:1,000 and longitudinal profiles 1:1000 / 1:100 for Bridge proper and indicating relevant landmarks, reference points, benchmark locations.
- General Arrangement Drawings (GAD)
- Bill of Quantities, rough cost estimates and updated economic evaluation for the Bridge.
- Reports of all field investigations, traffic and other data collected during the study.
- The results of the study shall be presented in the form of;

- Main Report comprising i.e., the methodology adopted for improvements, design, cost
- estimation and project evaluation.
- Soils and Materials Report.
- Drawings as described above
- Data collected.

4 Deliverables & Timeline

The project preparation activities will be split into stages as brought out below. Each stage will covet a set of activities and shall be followed with a detailed report in respect of each stage. Time schedule in respect of all such activities is indicated. Consultant shall be required to complete, to the satisfaction of the client all the different stages of study with the time frame indicated in the schedule of submission.

Sl. No.	Description of Items
1	**Stage-1:** Inception Report and Quality Assurance Plan (QAP)
2	**Stage-2:** Concept Plan and Draft Feasibility Report
3	**Stage-2:** Final Feasibility Report
4	**Stage–3:** Project Clearances, Land Acquisition and Shifting of utilities Report-I
5	**Stage-4:** Draft Detailed Project Report.
6	**Stage-5:** Project Clearances, Land Acquisition and Shifting of utilities Report-II
7	**Stage-6:** Final Detailed Project Report.

4.1 Stage – 1- Inception Report and Quality Assurance Plan (QAP)

i. Inception Report

- The report shall cover the following major aspects:
  - Project appreciation.
  - Detailed methodology to meet the requirements of the TOR finalized in consultation with the Client; 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.
  - Task Assignment and Manning Schedule.
  - Work programme.
  - Proforma for data collection.
  - Design standards and proposed cross-sections.

- Key plan and Linear Plan.
- 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.
- Draft design standards; and
- The requirements, if any, for the construction of bypasses/Realignment should be identified on the basis of data derived from reconnaissance and traffic studies. The available alignment options should be worked out on the basis of available maps. The most appropriate alignment option for bypasses should be identified on the basis of site conditions and techno-economic considerations. Inception Report should include the details regarding these aspects concerning the construction of bypasses for approval by concern authority.

ii. Quality Assurance Plan (QAP)

- Immediately upon the award, the Consultants shall submit four copies of the QAP document covering all aspects of field studies, investigations design and economic financial analysis. The quality assurance plans/procedures for different field studies, engineering surveys and investigation, design and documentation activities should be presented as separate sections like engineering surveys and investigations, traffic surveys, material geo-technical and sub-soil investigations, road and pavement investigations, investigation and design of bridges &structures, environment and R&R assessment, economic & financial analysis, drawings and documentation; preparation, checking, approval and filing of calculations, identification and traceability of project documents etc. Further, additional information as per format shall be furnished regarding the details of 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 field and design activities shall start after the QAP is approved by Authority.
- The proposed data forms will need to be submitted for the approval of <Authority> after the commencement of services.

4.2 Stage – 2- Concept Plan & Feasibility Stage Report

i. Alignment Option Report:

- Basis review of the existing project road, local traffic patterns and initial reconnaissance surveys, the consultant shall present possible alignment

alternatives (Bypasses/Re alignments/Green Field Alignments) for the project road

- Alignment options should include but not be limited to:

    a) Greenfield sections of the road
    b) New alignments due to lack of RoW, opportunity to shorten road etc.
    c) New/Re-alignment to cater to local traffic and o-d points
    d) Re-alignment due to changes in local network and/or surrounding road network
    e) Bypasses as suggested and approved in alignment report
    f) Re-alignment due to need to improve road geometry
    g) Provision of ROBs, flyovers, Tunnel and other cross drainage structures

- The alignment report shall contain:

    a. Drivers for re-alignment of road and re-alignment needed as discussed in para 2 above
    b. Alignment alternatives for each section where re-alignment of road is needed
    c. Analysis of alignment alternatives bringing out the pros and cons of each alternative including, but not limited to new construction required, land acquisition requirements, environmental impact, utilities and structures affected, cost of construction, road geometry and road safety aspects, input from local consultation, the Client views. Concept plan shall be prepared for the entire road stretch with multiple options for the each junctions for decongestion.
    d. Recommendations from among the alignment options presented for the authority to consider

        - Consultant will enable authority to visualize and compare alignment options by providing alignment options in a GIS environment that should include, but not be limited to:

        i. Road alignment alternative centerlines
        ii. Digital elevation model of the region
        iii. Land use / land cover information
        iv. Hydrology information

v. Surrounding road network including key NH, SH, MDR and ODRs

vi. Key O/D points and urban settlements

vii. High resolution satellite/airborne imagery of the region

ii. Feasibility Report:

- The consultant shall commence the Feasibility Study of the project in accordance with the accepted Inception Report and the report shall contain the following:

a. Executive summary
b. Overview of Client organization and activities, and project financing and cost recovery mechanisms
c. Project description including possible alternative alignments/ bypasses and technical/engineering alternatives
d. Methodology adopted for the feasibility study
e. Socioeconomic profile of the project areas
f. Indicative design standards, methodologies, and specifications
g. Traffic surveys and analysis
h. Environmental screening and preliminary environmental assessment
i. Initial social assessment and preliminary land acquisition/resettlement plan
j. Cost estimates based on preliminary rate analysis and bill of quantities,
k. Cost analysis of all alternate identified alignments
l. Economic and financial analysis
m. Conclusions and recommendations
n. The basic data obtained from the field studies and investigations shall be submitted in a separate volume as an Appendix to Feasibility Report.

iii. Technical Specifications:

- Technical Specifications shall contain the special technical specifications which are not covered by MORT&H Specifications for Roads and Bridges (latest edition / revision) and also specific quality control norms for the construction of works.

iv. 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, and machine charges as considered in arriving at unit rates will be included in this volume.
- The Rate analysis shall contain quarry chart and details of source of material and Lead to project site and work site.
- The rate analysis shall be based on Analysis of rates 2006, Works Department, Government of Odisha.
- In case of Items not covered by above mentioned document, latest Standard Data Book for analysis of rates, published by IRC shall be followed.
- In case of Items not covered by above mentioned document, the CPWD (Central Public Works Department) Rate Analysis shall be followed.
- The Items (Non SOR) for which Market rate has been considered, three supporting quotations preferably from prime /main/original producer shall be included in this volume

v. Cost Estimates:

i. This volume will present each item of work as well as a summary of total cost.

vi. Bill of Quantities:

i. This volume shall contain the detailed Bill of Quantities for all items of works.
ii. Supporting Documents /Drawings (Plan Profile, TCS, GAD etc) for basis of quantity calculation shall be included in this volume

vii. Drawing Volume:

- All plan and profile drawings will be prepared in scale 1:250V and 1:2500 H scale to cover one km in one sheet. In addition, this volume will contain 'good for construction' drawings for the following:

i. Horizontal Alignment and Longitudinal Profile.
ii. Cross-section @ 50m interval along the alignment within ROW
iii. Typical Cross-Sections with details of pavement structure.
iv. Detailed Drawings for individual Culverts and Cross Drainage Structures.
v. Detailed Drawings for individual Bridges, tunnels, and Structures.
vi. The GAD shall be submitted 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 the Client to approve the best alternative. After approval of alignment and GAD, the Consultant shall prepare detailed design as per IRC codes /guidelines and working drawings for all components of bridges and structures.

vii. Detailed Drawings for Improvement of At-Grade Junctions.

viii. Detailed Drawings for Improvement of Grade-Separated Intersections and Interchanges.

   a. Drawings for Road Sign, Markings, Toll Plazas, and other Facilities.
   b. Schematic Diagrams (linear chart) indicating but be not limited to be following:
   c. Widening scheme.
   d. Locations of median openings, intersections, interchanges, underpasses, overpasses, bypasses.
   e. Locations of service roads.
   f. Location of traffic signals, traffic signs, road markings, safety features; and,
   g. Locations of toll plaza, parking areas, weighing stations, bus bays, rest areas, if any.

ix. Drawings for toll plaza, Bus Bays, Parking areas, Rest areas, weighing stations etc.

x. All drawings will be prepared in A2 size sheets. The format for plan, cross section and profile drawings shall be finalized in consultation with the concerned authority or Client's representative.

xi. 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.

xii. 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.

xiii. 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.

xiv. The consultant shall also provide digital versions pdf and Auto CAD of all drawings

viii. 3D engineered model/ walkthrough/Animation:

- The consultant shall deliver the final road alignment geometry, proposed roadway model and

all proposed structures in a 3D engineered model/ walkthrough/Animation with all the required features .

ix. The Final Feasibility Study Report:

- The Final Feasibility Study Report incorporating comments, revisions and modifications suggested by concerned authority shall be submitted within 15 days of receipt of comments from authority on draft feasibility study report.

4.3 Stage – 3- Project Clearances, Land Acquisition and Shifting of utilities Report-I

i. Strip Plan and Clearances

1. The Consultants shall submit the following documents:

    i. Details of the center 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 clearly indicating the position of their relocation.

    iv. Details for various clearances such as Railway (ROB/RUB), environment, forest, wildlife, CRZ, IWAI 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 shall be prepared after digitization of cadastral / land revenue maps. The digitized map shall exactly match the original map, like a contact print, since the dimensions and area of plots, or the whole village is to be extracted from the map itself. An accuracy of 1mm or higher in a map of scale as per IRC SP 19 shall be ensured.

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 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 authority should be duly taken into account while working out the widening scheme (left, right or symmetrical). The widening scheme shall be finalized in consultation with authority.

5. Kilometre-wise Strip Plans for section (Package) shall be prepared separately for each concerned Authority and suggested by Authority.

ii. Land Acquisition Report

1. Consultant shall submit a detailed land acquisition plan that provides details on kilometre- wise land acquisition requirements, all required details and draft notifications made.

2. The Land acquisition plan and report shall be prepared and submitted for each section (package). Details shall also be submitted in land acquisition proforma to be supplied by concern authority, in both Odia and English languages.

3. The Land Acquisition Plan shall be prepared after digitization of cadastral/land revenue maps .Land parcels identification should be verified by superimposing the proposed road corridor RoW on the geo-located cadastral map to ensure all affected land parcels have been accounted for and land area to be acquired is accurately determined

4. The land acquisition plan shall present details concerning the land area to be acquired in conjunction with the strip plan:

i. Kilometer-wise existing and proposed RoW on either side of the proposed centerline

ii. Detail schedules of additional land to be acquired, land ownership and other required details as per revenue records

iii. Details of properties, such as buildings and structures falling within the right-of way

iv. Costs of acquisition as per revenue authorities and also based on realistic market derived rates

v. Detail schedules for acquisition of additional land and additional

properties in consultation with the revenue authorities.

5. The land acquisition plan shall report the progress of the land acquisition process under the State Land Acquisition act

   i. All required details on land parcels to be acquired

   ii. Copies LA notifications.

   iii. Copies of published notifications, communication with Concern Authority and current status land acquisition process

   iv. Village, district and t e h s i l wise summary of land to be acquired current status of process and notifications published

6. The estimated cost of land acquisition shall invariably be worked out realistically for all projects before finalization of LA notifications for publication so as enable taking a conscious decision regarding the feasibility of acquiring the land or exploring of other alternatives (such as following alternative alignments, etc.).

7. 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 estimated costs of resettlement and rehabilitation of affected persons.

iii. Utility relocation plan

1. The consultant shall prepare a kilometre-wise Utility Relocation Plan (URP) and costs for relocation per civil construction package as per estimates from concerned authorities
2. The utility relocation shall contain details regarding:

   i. All utilities identified in the existing and proposed road RoW such as water- mains, telephone, ofc, gas pipeline, HT line, LT line, Underground utilities, Overhead Utilities a n d electricity poles

   ii. Those utilities that will require shifting to enable construction of the project road

   iii. All necessary details required for submission of utilities shifting proposals to the concerned user agencies

   iv. Copies of utilities shifting proposals made to the concerned user agencies along with suggested relocation of services along with their crossings across the project road at designated locations as required

   v. Details of consultations made with local people and user agencies

   vi. Preliminary scheme for shifting and cost estimates for shifting as per the concerned authorities

   vii. Separate strip plan showing shifting/relocation of each utility services prepared in consultation with the concerned local authorities

   viii. Draft map and plans showing road centerline, existing right of way, proposed right of way, pertinent topographic details and existing and proposed location of utilities

iv. Clearances report

1. The consultant shall prepare a report regarding all other clearances required to enable the construction of the project road such as environment, forest, tree cutting and railways clearances

2. The clearances report shall include kilometre-wise requirement of all clearances required presented along with the strip plan including, but not limited to:

   - Requirements for environmental clearances along the project corridor
   - Requirements for forest clearances including type of forest affected, extent of land area needing diversion
   - Account of required felling of trees of different type and girth and value estimate of such trees based on realistic rates obtainable from concerned District forest office
   - Plan of compensating afforestation, its land requirement with specific locations and cost involved for undertaking all activities in this regard.
   - Requirements for wildlife clearances
   - Requirements for CRZ clearances
   - ROB/RUBs along the project corridor to be constructed, widened or modified in anyform requiring clearances from the railways
   - Clearances from Irrigation Authorities regarding Irrigation structures, etc.
   - Requirement of IWAI Clearances

3. The clearances report shall also include:

   - Details of proposals made to concerned agencies and departments
   - Date of submission of clearances proposals, Environmental impact assessment report to the competent authority
   - Copies of all actual clearance proposals made or drafts of proposals yet to be submitted
   - Information regarding points of contact, current status of proposals made, key issues raised and clear next steps to obtaining clearances

4. The consultant shall also assist in attending to queries raised/ furnishing of clarifications towards securing applicable clearances from concern authority.

4.4 Stage – 4- Draft Detailed Project Report

- 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.

- The Documents and Drawings shall be submitted for the Package and shall be in the following format:

Reports

i. **Volume-I, Main Report:**

- This report will present the project background, social analysis of the project, details of surveys and investigations carried out, analysis and interpretation of survey and investigation data, traffic studies and demand forecasts designs, cost estimation, environmental aspects, economic and commercial analyses and conclusions. The report shall include Executive Summary giving brief accounts of the findings of the study and recommendations.
- The Report shall also include maps, charts and diagrams showing locations and details of existing features and the essential features of improvement and upgrading. The Environmental Impact Assessment (EIA) Report for contract package shall be submitted as a part of the main report.
- The basic data obtained from the field studies and investigations and input data used for the preliminary design shall be submitted in a separate volume as an Appendix to Main Report.

ii. **Volume - II, Design Report:**

- This volume shall contain design calculations, supported by computer printout of calculations wherever applicable. The Report shall clearly bring out the various features of design standards adopted for the study.
- The design report will be in two parts. **Part-I shall primarily deal with the design of road features and pavement composition while Part-II shall deal with the design of bridges, retaining structures 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.

Volume - II, Design Report, Part-I shall include the following (but not limited to):

a) **Highway Design Report- Geometry**
b) **Pavement Design Report**

c) Drainage Design Report

d) Embankment Design Report:

Highway Design Report- Geometry

- The design of geometric elements shall, therefore, take into account the essential requirements of such facilities.
- 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.
- 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.
- The detailed design for geometric elements shall cover, but not be limited to the following major aspects:
    - horizontal alignment;
    - longitudinal profile;
    - cross-sectional elements, including refuge lane (50m) at every 2kms.
    - junctions, intersections and interchanges;
    - bypasses; and,
    - service roads as and when require i.e built up area.
- 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.
- The consultants shall make detailed analysis of traffic flow and level of service for the existing road and workout the traffic flow capacity for the improved project road. The analysis should clearly establish the widening requirements with respect to the different horizon periods taking into account special problems such as road segments with isolated steep gradients.
- 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.

- The Consultant shall also prepare design of grade separated pedestrian crossings (viaducts) for large cross traffic of pedestrians and / or animals on the basis of passenger and animal cross traffic surveys conducted.
- 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.
- 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.
- The consultant shall prepare complete road and pavement design including drainage for new bypass option identified around congested town en-route.

Pavement Design Report

- The detailed design of pavement shall involve:
    - 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 beyond 2lane undivided carriageway standard;
    - pavement design for bypasses; and,
    - design of shoulders.
- The design of pavement shall primarily be based on IRC publications.
- 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.
- 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 flowcharts indicating the various steps in the design process, their interaction with one another and the input parameter required at each step.

- For the design of overlays for the existing 2-lane pavement, the strengthening requirement shall duly take into account the strength of the existing pavement vis-à-vis the remaining life. The overlay thickness requirements shall be worked out for each road segment homogenous with respect to condition, strength and sub- grade characteristics. The rehabilitation provisions should also include the provision of regulating layer. For existing pavement with acceptable levels of cracking, provision of a crack inhibiting layer should also be included.
- For rehabilitation and strengthening, consultant shall consider the alternatives of rehabilitating the existing pavement, overlaying with the same or alternate pavement type (e.g. white/black topping) and also the option of removal and replacement of existing pavement layers and chose the best alternative basis lifecycle costing, and any local considerations such as material availability, time available for construction etc.

Drainage Design Report

- 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.
- 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.
- 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.
- The project highway shall be designed to have well designed efficient drainage system, which shall be subsurface, as far as possible. While constructing the underpasses, thefinished road level shall be determined so as to ensure that the accumulation of rain water does not take place and run-off flows at the natural ground level. The drains, wherever constructed, shall be provided with proper gradient and connected to the existing outlets for final disposal.
- The rain water harvesting requirements be assessed taking into consideration the Ministry of Environment & Forest Notification Dt. 14.01.1997 (as amended on 13.01.1998, 05.01.1999 & 06.11.2000). The construction of rainwater harvesting structure is mandatory in and around water scarce / crisis areas notified by the Central

Ground Water Board. The provisions for rainwater harvesting be executed as per the requirements of IRC:SP:42-2014 (Guidelines for Road Drainage) and IRC:SP:50-2013 (Guidelines on Urban Drainage).

- All the bridge structures having a length of 100m or less can be used for tapping of water for serving dual purpose i.e. to cross the water body and to store water, if technically feasible. Therefore, such structures should be designed as bridge cum barrage structures (bridge cum bandhara). Ministry's guidelines in this regard issued vide letter no. RW/NH-34066/59/2015-S&R(B) dated 18.04.2017 may be referred.
- The locations of the culverts should be planned in such a way that the proposed culvert covers optimum catchment area & the location shall be decided on the basis of topographical survey, local rainfall data, gradient of natural ground and enquiry from the local habitants.

Embankment Design Report:

- The embankments design should provide for maximum utilization of locally available materials consistent with economy. Use of fly ash wherever available with in economical leads must be considered. In accordance with Government instructions, use of fly ash within 300 km from Thermal Power Stations is mandatory as per extra ordinary Gazette Notification No. S.O. 254 (E) Part Section – III – Sub Section (ii) dated 25th January, 2016 and subsequent amendment, if any of Ministry of Environment, Forest and Climate change, New Delhi.
- The Consultants shall carry out detailed analysis and design for all embankments of height greater than 6 m based on relevant IRC publications.
- The design of embankments should include the requirements for protection works and traffic safety features.

Volume - II, Design Report Part-II shall include the following (but not limited to):

a. **Structural Design Report (Bridges with Foundation, substructure & superstructure, bearing, expansion joints and seismic arrestors).**
b. **Structural Design Report (Cross-Drainages)**
c. **Structural Design Report (Retaining Structures)**

- The data collected and investigation results shall be analyzed to determine the following:
  - HFL
  - LWL
  - LBL
  - Erodibility of bed/scour level
  - Design discharge
  - Linear waterway and effective linear waterway

- Likely foundation depth
- Safe bearing capacity
- Engineering properties of sub soil
- Artesian conditions
- Settlement characteristics
- Vertical clearance
- Horizontal clearance
- Free board for approach road
- Severity of environment with reference to corrosion
- Data pertaining to seismic and wind load
- Requirement of model study etc.

- 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 the Client to approve the best alternative. After approval of alignment and GAD the Consultant shall prepare detailed design as per IRC codes /guidelines and working drawings for all components of bridges and structures.
- The location of all at-grade level crossings shall be identified falling across the existing level crossings for providing ROB at these locations. The Consultant 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.
- GAD for bridges/structures across irrigation/water way channels shall be got approved from the concerned Irrigation/Water way Authorities. Subsequent to approval of GAD and alignment plan by the Client, the Consultants shall prepare detailed design as per IRC codes/guidelines for all components of the bridges and structures.
- Subsequent to the approval of the GAD and Alignment Plan by the Client and Railways, 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.

- 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.
- 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.
- Subsequent to the approval of the GAD and the alignment plan by the Client, detailed design shall also be carried out for the proposed underpasses, overpasses and interchanges.
- The Consultants shall also carry out the design and make suitable recommendations for protection works for bridges and drainage structures.
- In case land available is not adequate for embankment slope, suitable design for RCC retaining wall shall be furnished. However, RES wall may also be considered depending upon techno-economic suitability to be approved by the Client.
- The detailed design for all features should be carried out as per the requirements of the Design Standards for the project. However, there may be situations wherein it has not been possible to strictly adhere to the design standards due to the existing site conditions, restrictions and other considerations. The report should clearly bring out the details of these aspect and the standards adopted.

iii. **Volume - III, Materials Report:**

- The Materials Report shall contain details concerning the proposed borrow areas and quarries for construction materials and possible sources of water for construction purposes. The report shall include details on locations of borrow areas and quarries shown on maps and charts and also the estimated quantities with mass haul diagram including possible end use with leads involved, the details of sampling and testing carried out and results in the form of important index values with possible end use thereof.
- The materials Report shall also include details of sampling, testing and test results obtained in respect physical properties of subgrade soils. The information shall be presented in tabular as well as in graphical representations and schematic diagrams. The

Report shall present soil profiles along the alignment.

- The material Report should also clearly indicate the locations of areas with problematic soils. Recommendations concerning the improvement of such soils for use in the proposed construction works, such as 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.

v. **Volume-V, Technical Specifications:**

- Technical Specifications shall contain the special technical specifications which are not covered by MORT&H's Specifications for Roads and Bridges (latest edition / revision) and also specific quality control norms for the construction of works**.**

vi. **Volume - VI, Rate Analysis:**

- This volume will present the analysis of rates for all items of works. The details of unit rate of materials at source, carriage charges, any other applicable charges, labour rates, machine charges as considered in arriving at unit rates will be included in this volume.

vii. **Volume - VII, Cost Estimates:**

- This volume will present the contract package wise cost of each item of work as well as a summary of total cost.

viii. **Volume - VIII, Bill of Quantities:**

- This volume shall contain the package- wise detailed Bill of Quantities for all items of works.

ix. **Volume - IX, Drawing Volume:**

- All drawings forming part of this volume shall be 'good for construction' drawings.
- All plan and profile drawings will be prepared in scale 1:250V and 1:2500 H scale to cover one km in one sheet. In addition, this volume will contain 'good for construction' drawings for the following:
    - Horizontal Alignment and Longitudinal Profile.
    - Cross-section @ 50m interval along the alignment within ROW
    - Typical Cross-Sections with details of pavement structure.
    - Detailed Working Drawings for individual Culverts and Cross Drainage Structures.
    - Detailed Working Drawings for individual Bridges, tunnels and Structures.

- Detailed Drawings for Improvement of At-Grade and Grade-Separated
- Intersections and Interchanges.
- Drawings for Road Sign, Markings, Toll Plazas, and other Facilities.
- Schematic Diagrams (linear chart) indicating but be not limited to be following:
- Widening scheme;
- Locations of median openings, intersections, interchanges, underpasses, overpasses, bypasses;
- Locations of service roads;
- Location of traffic signals, traffic signs, road markings, safety features; and,
- Locations of toll plaza, parking areas, weighing stations, bus bays, rest areas, if any.
- Drawings for toll plaza, Bus Bays, Parking areas, Rest areas, weighing stations etc.
- All drawings will be prepared in A2 size sheets.
- The format for plan, cross section and profile drawings shall be finalized in consultation with the concerned Client or Client's representative. 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, busbays, parking areas etc.
- 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.

- The consultant shall deliver the final road alignment geometry, proposed roadway model and all proposed structures in a 3D engineered model/ walkthrough/Animation with all the required features
- The consultant shall also provide digital versions of all drawings

(x) **Volume X, Drainage Plan:**

- The DPR should have proper drainage plan prepared on basis of contours of the area, outlet availability and discharge requirements including discharge at the outfall from drains of local bodies.
- Preferably underground drains with well sized and well-spaced manholes may be provided to take care of cleaning. Wherever possible self- cleaning cross-section of drains

may be adopted.

- Drainage Plan in DPR will be checked through a joint inspection with the engineers of local body/ Development Authority etc. so that Drainage Plan is totally integrated with the local body Drainage Plan.
- The drain covers should be strong enough to withstand the weight of Light commercial vehicles, wherever required.
- Stretch of the NH passing through a town can have multiple drainage plans/ sub plans due to different contours or due to having different outlets.

(xi) **Volume XI, (Tender Documents)**

a. <u>Bid documents</u>

- The consultant shall prepare bid documents for EPC or Turnkey modes of contracting as suggested by the Client.
- Individual bid documents will be submitted for each mode suggested and for each individual package or section identified for execution
- Consultant shall assemble and provide all supporting documents from the DPR assignment that will be required for the bid, in the format required by the contracting SOP in force at the time of bidding or as maybe required by the authority

b. <u>Technical Schedules</u>

- The consultant shall submit a Draft Contract Agreement derived from the Master Contract Agreement maintained by the authority with all required modifications and inclusions made with relevant references
- The agreement submitted shall contain all required technical schedules updated with the pertinent project details and data required
- Draft agreement and schedules shall be finalized in consultation with the authority and submitted for further processing and use with the contractor awarded the bid packages

4.5 Stage – 5- Project Clearances, Land Acquisition, and Shifting of utilities Report-II

i. <u>Land acquisition report: -</u>

i. Land Acquisition Filing Digitization of revenue plots and notified areas along the alignment.
ii. Generation of village wise plot schedule for RoR (Bhulekh data) collection.
iii. Digitization and linking of RoR data with digitized cadastral maps.
iv. Generation of District, Tahsil and village wise land schedule.

v. Authentication of Land schedules from concerned Tahsildars.

vi. Preparation of village wise land-class maps for land acquisition/ alienation proposal (Leasable, Gochar, Communal, Departmental, Forest).

vii. Filling of land acquisition/ alienation proposals.

viii. Submission of land acquisition proposal in hard copies, as e-filed by Works department, Govt. of Odisha.

ix. **Deliverables: -**

- Land acquisition proposal filing for Govt. and Private land.
- Soft copies of land acquisition/ alienation plan (composite cadastral map) in geo-referenced .SHP file, .DWG file and .PDF document.
- Soft copy of village-wise land acquisition/ alienation plan (in .SHP file, .DWG file and .PDF document).
- Filing, scrutiny and forwarding of land acquisition and land alienation proposals from Works department, Govt. of Odisha to District Administrator

ii. <u>Project Clearances Report: -</u>

1. The consultant shall obtain all the necessary project related clearances such as environment, forest and wildlife clearance from MOEF, Railways in respect of ROB/ RUBs, Irrigation Dept, IWAI, CRZ clearances from concerned authorities, and any other concerned agencies by the end of this stage

2. The final approvals shall be obtained and submitted to the Client so that project implementation can begin straight away

3. The accompanying report on clearances shall include:

   i. An updated list of all clearances required, current status, expected completion detain case the clearance is pending, key issues and suggested next steps

   ii. Details of all public hearings, consultations and meetings conducted in the process of obtaining the required clearances

   iii. Date/details of proposals submitted and estimated date for issue of clearances

   iv. Date and details of all joint measurement and site inspection surveys completed

   v. Date of final approval of clearances if any

   vi. Copies of all clearances obtained

iii. <u>Forest Clearance: -</u>

Technical support for survey, documentation, filing of Forest Diversion Proposal (FDP) of forestland, processing of proposal at various levels of State Govt. for onward forwarding of the proposal to MoEF & CC, Govt. of India; and presentation/ technical compliances to MoEF & CC, Govt. of India for obtaining In-principle (Stage-I) and Final (Stage-II) Forest Clearance, involving the following:

1 Formulation and E-filing of Forest Diversion Proposal (Part -1 of FDP)

i. Collection of land acquisition/ alienation details (land schedules, ROR and cadastral map/ topo maps showing road alignment).

ii. Finalization of village-wise forest / non-forest and notified area involvement.

iii. Certification of land schedules from all concerned RIs, Tahsildars, forest rangers and DFOs

iv. Establishment of Primary Control Points (PCPs) along the road alignment linked to ORSAC control points.

v. DGPS survey of geo-referencing of revenue sheets (village wise)

vi. DGPS survey of alignment passing within notified forest areas

vii. Generation of geo-referenced forest land maps of the entire alignment

viii. Authentication of geo-referenced forestland maps from user agency, R.Is, tahsildars, range officers and DFOs

ix. Certification of geo-referenced forest land map from ORSAC

x. Identification of compensatory afforestation land (non-forest/ degraded revenue forest land)

xi. Revenue-forest join inspection and certification for suitability, non-encroachment and non-encumbrances including village consent.

xii. Collection and geo-referencing of CA land patches in revenue cadastral maps through DGPS survey

xiii. Authentication of geo-referenced CA land maps from user agency, R.Is, tahsildars, range officers and DFOs

xiv. Certification of geo-referenced CA land patches from ORSAC

xv. Formulation of CA scheme by concerned DFO

xvi. Preparation of Site-specific wildlife conservation plan (SWLCP)

xvii. Incorporation of DFOs recommendation in the SWLCP and forwarding to RCCFs concerned.

xviii. Site visit and incorporation of RCCFs recommendation and forwarding of SWLCP to PCCF (wildlife)

xix. Presentation, incorporation of PCCF-WL's suggestion and finalization of SWLCP

xx. Demarcation of Forest Land in each forest division

xxi. Tree enumeration in each forest division

xxii. Demarcation of compensatory afforestation land for inspection by DFO/RCCF

xxiii. Net Present Value (NPV) computation

xxiv. E-Filling of Forest Diversion Proposal

xxv. Presentation to Project Scrutiny Committee / PCCF and Nodal Officer (FC Act)

xxvi. Compliance of queries of Project Scrutiny Committee / PCCF and Nodal Officer (FC Act)

xxvii. Forwarding of FDP by PCCF & Nodal officer to DFOs concerned for field verification.

2 Processing of Forest Diversion Proposal (Part 2 to Part 4 of FDP)

i. Assistance to all forest divisions in completion of field assessments in their jurisdictions & transmission of FDP with DFO's recommendation to concerned RCCFs (Part 2).

ii. Field inspection of RCCFs, compliance to observations & transmission of FDP to PSC-II.

iii. Incorporation of FRA certificates from concerned Collectors. User agency shall facilitate need-based Gram sabhas, and SDLC/ DLC meetings.

iv. Scrutiny, compliance and recommendation of Nodal officer/ PCCF (Part 3) to Govt of Odisha in FE&CC department

v. Scrutiny, compliance and recommendation of FE&CC dept. Govt of Odisha (Part 4) to MOEF&CC, Govt. of India

3 Final Forest Clearance

i. Presentation to MOEF&CC and technical compliances for Stage-I (in-principle) Forest Clearance

ii. Assistance to user agency for technical compliance of Stage-1 Clearance for Stage-Il (Final) Forest Clearance.

4 Deliverables

i. DGPS survey and ORSAC certification of geo-referenced forest land boundary proposed for diversion including certification and authentication of forest land schedule by concerned Tahsildar and Divisional Forest Officer.

ii. Demarcation and DGPS survey of CAF land patches as certified by concerned Tahsildar and DFO and ORSAC certification of geo-referenced CAF land parcels.

iii. All other documentation, e-filing of FDP, its scrutiny at Project Screening Committee (PSC) and forwarding to concerned DFO, for field verification.

iv. Tree enumeration, NPV computation, CAF scheme formulation and its authentication by DFO.

v. Completion of field verification and authentication of FDP by DFO, incorporation of FRA certificate form Collector (to be provided by Works Dept. Govt. of Odisha) and recommendation of FDP including all supporting plan proposals by DFO to RCCF (completion of Part-II by DFO on-line).

vi. Site inspection, scrutiny of FDP, technical compliances and recommendation of FDP and supporting plan proposal by RCCF, Bhubaneswar to Nodal Officer, Forest Conservation Act.

vii. Scrutiny and recommendation of FDP by Forest Environment & Climate Change, Govt. of Odisha to MoEF & CC, Govt. of India.

viii. Presentation to MoEF & CC including coordination for technical compliances for obtaining In-Principle (Stage-I) Forest Clearance.

ix. Obtaining final (Stage-II) Forest Clearance.

iv. <u>Utilities Relocation Report: -</u>

1. Consultant shall obtain final utility clearances from the relevant user agencies to enable shifting of the utilities from project road

2. A report shall be submitted on the final completion status and costs of utilities shifting along with other final clearances and land acquisition report

3. The final utilities clearances report shall contain a summary view of utilities shifting: type and extent of utility, length of road affected, chainage, user agency, point of contact and approver at agency, date of approval at agency and the Client, shifting estimate, agency/super vision fees, executing agency – user agency or the Client.

4. In addition, for each utility to be shifted, the report shall contain:

   i. Copies of actual approvals granted at user agency and the Client

   ii. Cost estimates and shifting plans approved, demand note from agency

   iii. Approved utilities shifting proposal including strip plan showing scheme of shifting

   iv. Map and design/engineering drawings of existing utility and shifting to be executed

   v. Details of approved contractors, schedule of rates for state and bank account/deposit details for agency

vi. Finance pro-forma, utilities checklist, no upgradation certificate and other documentation as maybe required by the Client at the time of approval

v. <u>Environmental Clearance Report:-</u>

a) Scope of Work

- The Consultant shall carryout Site Screening, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) studies etc needed for obtaining Environmental Clearance (EC) from the competent authority MoEF&CC/SEIAA for the proposed ORR. The broad outline for scope of work to be carried out by the consultant is outlined below. This need not be in complete/exhaustive. The consultant is expected to provide complete services as specified by MoEF&CC/SEIAA from time to time so that the objective of obtaining Environmental Clearance (EC) is achieved.
- The Consultant(s) will have to attend each and every work till the issuance of Environmental Clearance (EC) from competent authority, including preparation and submission of Environmental Impact Assessment (EIA)/ Environmental Management Plan (EMP) or any other reports etc., in hard and soft copy and providing all technical assistance in obtaining Environmental Clearance, Public Hearing etc.

b) Conducting Environmental Impact Assessment

- Step-1: Baseline Studies: Baseline Environmental Status in respect of different environmental components need to be determined. Generation of Environmental Baseline Data as specified by Mo EF&CC/SPCB of the proposed ORR. The number of stations, total number of samples, list of parameters, sampling period and frequency for each activity for generation of environmental baseline data to be done as stipulated in approved /proposed ToR. The monitoring locations shall be identified scientifically keeping in view of the guidelines of Mo EF&CC/SPCB as well as site specific sensitive aspects. Past and existing data/information as may be available from various sources to be collected, compiled and analyzed. Local enquiries shall also be undertaken to obtain the relevant details. A field monitoring/study programme would be drawn up to supplement the past data.
- Step-2: Estimation of Impact Loads: Different activities/sub-activities during the construction and the operation phase of the project and the associated facilities that may have an effect on one or several parameters of the environment to be identified. The quantum and the character of the pollutant loads of such activities/sub-activities has to be estimated.
- Step-3: Assessment of Environmental Impacts: The impact of such pollution on different parameters or aspects of the environment due to the operation of the project to be assessed.
- Step-4: Formulation of Management Plans: Mitigation measures necessary to control the adverse Environmental Impacts to acceptable levels to be identified and recommended. To abate/control all the environmental impacts, suitable Environmental Management Plan (EMP)

to be formulated. The EMP will also include post study monitoring programme.

- Step-5: Preparation of Reports: Based on the above steps, the EIA document inclusive of EMP to be prepared comprising the accepted data, charts, tables, drawings, etc.

c) Study Area

The environmental aspects will be looked into in detail within a Study Area the project. Land use/land cover mapping shall be done for the study area using latest satellite imagery.

d) Monitoring Procedures

All the procedures/methods of field study/monitoring should be in line with the standard methods, specifications or prescriptions as stipulated by the Central Pollution Control Board (CPCB), or by the Bureau of Indian Standards (BIS), or by the US-EPA, whichever is applicable.

e) Suggestive Work Methodology

- **Stage-A:** Project Appraisal: A questionnaire would be prepared detailing the different data required. This information will form the data base for the estimation of Impact loads as well as prerequisites for recommending remedial measures. The project shall be assessed on various issues including the following: -
    - Present land use of the site
    - Ownership status of the site as per details provided by the department
    - Land use and Development Plan of the area
    - Consultant needs to study the Master Plan &suggest the modifications/alterations if any needed according to the Environmental Point of view.
    - Proposed Land use plan (of the site) with special reference to built-up area, paved area, green space, open area, water body etc.
    - Proposed construction technology & good construction practices.
    - Landscaping plan
    - Water requirement during construction & operation phases and water availability
    - Wastewater generation, treatment and its re-use / disposal proposal.
    - Site drainage plan.
    - Solid waste management proposal.
    - Rainwater harvesting proposal.
    - Proposal on energy conservation and use of non-conventional energy
    - Greening program.
    - Energy Conservation Plan
    - Employment generation.
    - Occupational safety.
    - Proposal on Community development.

- Plans for mitigation of adverse impacts and inconvenience to the local population from the negative impacts of the construction phase.

- **Stage-B:**

  Determination of Existing Baseline Conditions: The past and the existing data as may be available from various Government, Educational and Institutional sources would be collected, compiled and analysed. Broad features presenting themselves from such data would be noted, studied and any missing gaps identified. A field sampling program would then be drawn up to supplement the past data as also to fill up the missing gaps.

- **Stage-C:**

  Analysis of Data, Impact Assessment, drawing up of Recommendations and Establish Post Study Monitoring Program

  - **c.1 ESTIMATION OF IMPACT LOADS:** The next section of the EIA would establish the impact/pollution loads based on the project features. The emissions and effluents from the project would be characterized and other factors such as layout of project, would be defined.
  - **c.2 ASSESSMENT OF ENVIRONMENTAL IMPACTS:** In this stage, the data analysis and impact assessment would be performed. Wherever possible and practicable, a quantitative analysis would be performed.
  - **c.3 RECOMMENDING MITIGATORY MEASURES:** Once the adverse effects are identified, alternative mitigative measures would be formulated and evaluated. The recommendations would be thoroughly site specific.
  - **c.4 ENVIRONMENTAL MANAGEMENT PLAN (EMP):** As an integrated part of the EIA Study an Environmental Management Plan (EMP) will be formulated, which will comprise critical areas of impacts, recommendations on mitigation/remedial measures.
  - **c.5 Environmental Monitoring Program:** A detailed plan for post project monitoring will be included in the EIA report. It will inter-alia include parameters to be monitored and their frequency. The parameters /data to be put in public domain and their frequency of updating will also be specified. Formulation of environmental quality monitoring programs for construction and operational phases to be undertaken by the project proponent. It will inter-alia include parameters to be monitored and their frequency.

- **Stage-D:**

  ENVIRONMENTAL MANAGEMENT PLAN (EMP): Formulation of Environmental Management Plan (EMP) shall be done so as to maximize the beneficial impacts and outline the preventive and control strategies for minimizing adverse impacts during construction and

operational stages of the proposed project and disaster management. EMP will also include various programs/plans such as waste management plan, resource conservation plan, green belt development plan, R & R plan, Traffic management plan and corporate social responsibilities (CSR) etc. The EMP will also include the budget requirements/provisions for its implementation.

Plan for Water Conservation: A suitable plan will be prepared for water conservation measures such as rainwater harvesting. Considering soil characteristics and permeability rainwater harvesting proposals shall be made with due safeguards for ground water quality. Emphasis will be given on recycling of water and utilization of rainwater.

Waste Management Plan: Arrangements for Waste Management will be described and also the common facilities for waste collection, treatment, recycling and disposal of all effluent, emission and refuse including municipal solid waste. Identification of recyclable wastes and provision for waste utilization arrangements will also be made. Provision should be made for guard pond and other provisions for safety against failure in the operation of wastewater treatment facilities keeping in view the provisions made under Master Plan in industrial zone.

R&R Plan: Based on the assessment of social impact due to the project identification of social impacts and concerns will be made and an outline of Rehabilitation and Resettlement (R&R) Framework will be prepared. Besides R&R, details of the activities to be undertaken with financial outlays for the activities to be taken up in the area as part of Corporate Social Responsibilities (CSR) will also be provided.

Greenbelt Development Plan: A green belt development plan will be made based on the local tree species/vegetation.

- Risk Assessment Studies & Disaster Management Plan:
- Hazard identification through computation of hazard indices and inventory analysis
- Generation of scenarios for accidental release of flammable chemicals based on the proposed storage/existing activities.
- Computation of damage distances based on consequence analysis for credible and worst-case scenarios
- Assessment of risk and delineation of risk mitigation measures

f) <u>Scope under Different Environmental Attributes</u>

a) Air Environment

- AMBIENT AIR QUALITY: A monitoring network for ambient air quality with required number of monitoring locations within the study area shall be done. The monitoring & analysis shall be conducted for the relevant parameters as per the latest Gazette Notification.
- Meteorology: Background meteorological data for the past decade as available would

be collected from the nearest full-fledged observatory of India Meteorological Department (IMD). Data to be collected would generally cover Temperature, Barometric Pressure, Relative Humidity, Wind Speed and Direction and Rainfall.

- A meteorological observatory will be set up and operated at the Project Site during the study period. The meteorological parameters which will be monitored routinely (daily or hourly whichever is applicable depending on the parameter) will include Wind Speed and Direction, Temperature, Barometric Pressure, Relative Humidity, Rainfall and cloud cover.
- In addition to collection of decadal data, the IMD's climatological tables may also be referred.
- Prediction of the Impact on Air Quality: The Gaussian Dispersion Model as per CPCB Guidelines (PROBES/70/1997-98) will be applied for the prediction of the impact of the pollutants on the air environment. An evaluation of the impacts predicted will be made thus, recommending mitigation measures

b) Water Environment

- Surface & Ground Water: An assessment of the surface and the ground water quality will be made at the relevant locations within the study area throughout the period of the field study. The samples will be collected from the relevant locations with the frequency of once in a month. All the samples will be analyzed for physical, Chemical and biological parameters including toxic organics and metals.
- Effluent Water: An assessment of the quality, quantity, types and characteristics of each type of effluent to be generated from the project operation will be made.
- Prediction of Impact: Prediction of impact will be made on receiving water body due to discharge of treated effluent. An evaluation of the impacts predicted will be made thus, recommending mitigation measures.

c) Land Environment:

- An assessment of the baseline status of the soil characteristics, existing land use pattern and cropping pattern including irrigation practices within the study area will be done.
- The characterization and the quantification of the different types of solid wastes to be generated in the project will be made.
- Prediction of impacts will be made on land use pattern w.r.t agriculture and forestry after the setting up of the proposed project due to discharge of treated effluents, emissions and solid wastes.
- An evaluation of the impacts predicted will be made recommending suitable mitigation measures.

d) Ecology & Biodiversity

- The information on flora and fauna will be collected within the study area.
- The prediction of impact will be made on flora & fauna particularly vulnerable, restricted endemic or other important species due to effluents and emissions to be discharged from the proposed project. In addition to collection of secondary data (authentic sources) primary data shall also be collected using appropriate techniques within study area as per standard procedures.
- Recommendation will be made on green belt development in the project site, with the identification of project species (indigenous & exotic) for attenuation of fugitive emissions & noise along with post project monitoring requirement for evaluating efficacy of green belt.

e) Noise

- A noise monitoring survey for industrial, commercial, residential and sensitive zones in the Study Area would be carried out to characterize the noise environment. The monitoring locations will be selected so as to represent various land uses as decipher in the National Ambient Noise Quality Standards.
- The monitoring in the study area would be carried out at a frequency of once in the study period. The monitoring at each location will be conducted on 24-hourly basis to monitor instantaneous sound pressure level (SPL) at uniform interval (preferably 1 hour). The continuous equivalent sound pressure level (Leq) during day and night time will then be determined to compare with the standards.
- Prediction of the impact of the noise-level on the surrounding environment and the working personnel will be made. Consequently, an evaluation of the predicted impacts will be made recommending mitigation measures.

f) Socio Economic Environment

- An assessment of the baseline status on human settlements, population, male/female ratio, percentage of children, age distribution pattern, education, health, mortality, income, no. of houses etc. within the study area will be made.
- The information on places of historical importance and/or notified sensitive areas within or near the study area will be gathered.
- A prediction of socio-economic benefits to community due to setting up of the proposed project will be made.
- The data for socio economic condition should be analyzed covering the project area around the project site as per the following plan:
- Collection of baseline data related to socio-economic profile of the study area with

reference to:

- Human settlement, male / female ratio, occupational pattern, employment status and per capita income.
- Infrastructure resource base, viz., medical, educational, water resource, power supply, transport etc.
- Economic resource base, viz. Agriculture, industry, forest, trade and commerce.
- Health status, viz., morbidity pattern with reference to prevalent diseases
- Cultural and aesthetic attributes in the study area including places of archeological importance.
- Socio-economic survey in the study area and their perception about the projects.
- Assessment of economic benefits to the community and environment due to proposed Project
- Assessment of impacts on places of historical/archaeological importance and aesthetic impairment, if any
- Assessment of the possible use of Renewable Energy / Alternate energy source such as solar and wind energy for the conservation of resources during the construction and implementation phase of the project
- Projection of anticipated changes due to the proposed development activities and delineation of measures to minimize the adverse impacts
- Assessment of occupational health management system and socio-economic impacts on community arising out of the proposed project
- Projection of anticipated changes in proposed developmental scenario and delineation of guidelines to minimize adverse impacts and maximize the beneficial impacts
- Delineation of regional socio-economic environment management plan

g) Waste Management Plan

- Arrangements for Waste Management will be described and also the common facilities for waste collection, treatment, recycling and disposal of all effluent, emission and refuse including construction solid waste. Identification of recyclable wastes and provision for waste utilization arrangements will also be made.
- Provision should be made for guard pond and other provisions for safety against failure in the operation of wastewater treatment facilities keeping in view the provisions made under Master Plan in industrial zone.

h) Other Scope of Work

In addition to conducting EIA study, the CONSULTANT will be undertaking the following activities.

- Preparation & submission Form-1, draft ToR and PFR to the MoEF&CC/SPCB.

- Presenting the ToR before the SEAC/EAC of the MoEF&CC/SPCB
- Conducting EIA (as per the scope mentioned above) based on the proposed/additional/approved ToR by the MoEF&CC/SPCB.
- Organizing the Public Hearing as per the procedure stipulated.
- Preparation and supply of required number of executive summary report for the said project in local language and English during Public Hearing including defending the authority during Public hearing / consultation.
- Preparing Final EIA document based on the outcome of the Public Hearing.
- Presenting the Final EIA before the SEAC/EAC of the MoEF/SPCB for grant of Environmental Clearance (EC).
- The consultant shall make his own arrangements for all the equipment needed for conducting requisite tests at project site.

g) <u>Terms and Conditions</u>

- All the tasks related in obtaining prior Environmental Clearance (EC) for the proposed ORR would be in accordance with the procedure laid down in Environment (protection Act) 1986, EIA notification 2006 and amendments thereon issued by MoEF. The broad tasks for the consultant bidder would be as per the scope of work as indicated above, in addition to the following: -
- Collection of Baseline data & Identification of Potential target sectors, suggesting type of industries that can be accommodated in the textile and apparel park based on various factors and CPCB guidelines. Site screening study of EIA based on the TOR approved by competent Authority and suggested EMP, study of alternatives, sites etc.
- Collection of the Baseline data, conducting required tests on Air, Water, Soil etc., preparation of Form-1, draft ToR related to proposed project.
- Power point presentation before the committee at different stages of appraisal of project.
- Supply of required number of documents for Environmental Public Hearing/consultation, including defending the Authority during Public Hearing/consultation.
- Incorporation of the minutes of Public Hearing/consultation and clarifications there on in the final EIA report to submit to the committee for appraisal.
- The Consultant must submit/upload the documents to SPCB/MOEF&CC.
- The services of consultant will be treated as complete only after such services carried out by the Consultants are approved by Department and accepted by the Competent Authority. Work shall be completed by the Consultants according to the time schedule agreed. The works throughout the stipulated period of contract will be carried out with due diligence.

- The Consultants shall supply required copies of reports from time to time that are needed in connection with the obtaining Environmental clearance from time to time on free of cost.
- The consultant has to provide services for attending the additional TOR, related with this project, if ordered by the competent authority without any extra cost.
- The consultant has to do the Liaison with competent authority without any extra cost.
- Identifying existing data availability/ secondary data gathering/ literature survey and acquisition of maps, aerial photos & GIS images as per need.

h) Deliverables

Sr No	Name of Document
1	Form I
2	Environmental Baseline Monitoring (EBM) Report
3	Executive summary of EIA/EMP report in English & local language.
4	Presentation for Public Hearing meeting.
5	EIA/EMP Report and relevant Forms for EC
6	Presentation for final technical appraisal meeting

4.6 Stage – 6- Final Detailed Project Report

- Final detailed project report consisting of Main Report, Design Report, Drainage Design Report and Materials Report, etc. incorporating all revisions deemed relevant following receipt of the comments from the Client on the **Stage-4 (Draft DPR)** and **Stage-5** deliverable shall be submitted.

5 Timelines for Submission of Deliverables

Sl. No.	Description of Items	Corresponding time frame	Copies of Report
	Commencement of the Services	T0*	
1	**Stage-1:** Inception Report and Quality Assurance Plan (QAP)	T0+ 7 Days	4 Sets
	Monthly Progress Report	Every Month	4 Sets
2	**Stage-2:** Concept Plan and Draft Feasibility Report	T0+ 30 Days	4 Sets
3	**Stage-2:** Final Feasibility Report	T0+ 45 Days	4 Sets

4	**Stage–3:** Project Clearances, Land Acquisition and Shifting of utilities Report-I	T0+ 60 Days	4 Sets
5	**Stage-4:** Draft Detailed Project Report.	T0+ 75 Days	4 Sets
6	**Stage-5:** Project Clearances, Land Acquisition and Shifting of utilities Report-II	T0+ 80 Days	4 Sets
7	**Stage-6:** Final Detailed Project Report.	T0+ 90 Days	4 Sets

 # All submittals (Hard copies 4 sets) shall be submitted as per clause 4 (Deliverables) of TOR along with softcopies in relevant format (Format for submission of report deliverables) ((DWG, Excel, word, pdf, std, .mid etc.) otherwise submittals shall be treated as incomplete.

**** TO-from the date of Issuance of Notice to Proceed (NTP)***

Format for submission of report deliverables

- **Printed hard copies of reports**
    - All reports and documents shall be submitted in both printed hard copy and digital formats
    - For hard copies, the consultant shall submit bound volumes after completion of each stage of work as per the schedule and in the number of copies.
    - Every submission will be accompanied by a table of contents and index of all documents submitted for ease of reference.
- **Digital copies of reports**
    - Every report shall also be submitted in digital format to the authority in the following formats:
    - The final report as submitted in the portable document format (.pdf)
    - An editable document in the relevant Open Document Format for Office Applications (ODF) and if available the relevant Microsoft Office document format (MS Office)
    - All tables and models used to and referred to in the reports shall also be submitted as spread sheets in the relevant ODF format and MS Office format
    - The digital copies of reports shall be submitted in the form of removable storage devices (Hard drive or USB pen drive) and also hosted on a secured online document storage.
    - The removable storage device submitted at each deliverable stage shall contain:
    - Reports for that stage
    - All draft and final reports previously submitted and Correspondence with Client.
    - Clients' comments on submitted reports and any communication, letters and approvals to and from other government and local agencies and any other relevant body.
    - All editable soft copies for the project shall be submitted by the Consultant with the deliverables.
    - Consultant shall include editable soft copies of the final versions of all documents, including but not limited to the strip plan, plan & profile drawings, cross sections of right of way and details of structures as well as any cost workings.

- **Data products**

  - During the course of the assignment, the consultant shall perform several surveys and collect data that will be used for the design of the road and delivered to the client.
  - Consultants are encouraged to keep commonly available software and data packages, and typical uses for data while deciding final formats of data within the constraints of this document or where a format has not been defined
  - As required in relevant clause, consultants are required to agree with OB&CC all actual data formats proposed to be used for the project

  - In order to standardize data formats and simplify hand over and re-use of data, some requirements for minimum content and format are laid down below.

Sr No	Data product	Contents required (definition)	Data format
0	Formats to be used	List of data, drawing and design outputs, reporting format, digital format suggested, key data to be included (column headers), units and system to be used	CSV or ODF sheet, .xlsx optional
1	Traffic surveys		
1.1	List of traffic survey points	Point no, location coordinates (lat, long), location of survey point, chainage, no lanes/type of junction, typeof survey, date of survey, length of survey, any commentary, equipment/technique used, link to survey output	CSV or ODF sheet, .xlsx optional
1.2	Classified traffic volume countsurvey	Survey point, survey location, no of lanes, chainage, location coordinates (lat, long), date, time and period of survey	CSV or ODF sheet, .xlsx optional
1.3	O-D, turning movement, axle load and othersurveys	Survey point, survey location, location lat, long, chainage, date, time, period of survey, technique/equipment used in addition to the survey data itself	CSV or ODF sheet, .xlsx optional
2	Engineering surveys and investigations		
2.1	Raw DGPS data	Notes must contain Date, time of survey, equipment	CSV or ODF, Receiver

2.2	LiDAR point cloud	Notes must contain Date, time of survey, equipment, summary post processing applied. Data: Survey benchmarks, data points, point cloud of entire project corridor as defined in	LASer file format for exchange CSV sheet, .xlsx optional
2.3	Images	360 Deg/ ortho images of entire project road way	Geographic Tagged Image File Format (GeoTIFF)
2.4	Video	Traverse video of entire project length	Audio video interleave (.avi) or MPEG-4 file (.mp4)
2.5	Topographic map + contours	Scale of map in accordance with IRC SP 19, 50 cm contours with roadway marked on maps	Contours: geo-referenced shape files (.shp) or .dxf files, .dwg/.dgn files options
2.6	Digital elevation model	Digital terrain modeled from aerial and ground surveys	Digital elevation model in USGS Spatial Data transfer standard (SDTS) format
2.7	Longitudinal andcross sections	Location of cross section - existing, design chainage,lat, long, Cross section drawing	.dxf files, .dwg/.dgn files options
2.8	As-is road map	3D digital map of as-is project highway containing earth surface, road layers, utilities, buildings and trees with feature data extracted and mapped in layers, marked on the map and tabulated data provided separately. All road, surface, sub surface inventory, pavement investigation and soil survey data to be super-imposed as layers	Digital terrain model and maps in LandXML/.dxf format, .dwg/.dgn files options Separate CSV or ODF sheet, .xlsx optional of feature data in addition to map
2.9	Details of utility	type of utility, no, class and category of utility installation (e.g. 66 kV xlpe), location, distance from centerline, user agency	CSV or ODF sheet, .xlsx optional
2.10	Utility maps	geo-referenced schematic map, existing and design road centerline, type of utility, size, no, class and category	georeferenced shape files (.shp) and drawings in .dxf format
2.11	Road inventor ysurveys	All data as required in clause 4.11.3.1, geo-referencing for each row of data in lat, long form	CSV or ODF sheet
2.12	Pavement investigation	Test pit reference id, location, chainage, geo- reference (lat, long), pavement composition - layer no, material type, thickness, sub grade type, and condition	CSV or ODF sheet

2.13	Pavement condition survey	Data as required	CSV or ODF sheet

2.14	Pavement structural strength	FWD results as per IRC guidelines, geo-referencing for test points	CSV or ODF sheet
2.15	Sub-grade and soil strength	In the format of the testing lab, summary details must be tabulated and must include: test pit no, location, chianage, lat/long, date, time of test, tester/lab details, in-situ density, moisture content, field CBR, characterization, in-lab moisture and density, lab CBR	Summary in CSV orODF sheet
3	Proposed roadway designs		
3.1	Proposed alignment geometry	Georeferenced centerline horizontal and vertical alignment for the road To be presented superimposed on surface map, satellite imagery and digital elevation model of region	Geometry or shape files : .shp/.dxf, .dwg/.dgnfiles options
3.2	Final alignment geometry	Georeferenced centerline horizontal and vertical alignment for the road. Additional detail on lanes, super elevation, junctions, structures, under/overpasses, PUP/CUP, wayside amenities etc	Geometry or shape files : .shp/.dxf, .dwg/.dgnfiles options
3.3	Proposed roadway model	Proposed digital roadway model and design data- including embankment, roadway, road layers, roadside amenities, signals, road furniture, markings and other construction elements in 3D	.dxf/.dtm
3.4	Proposed structures	Geo referenced location and alignment, 3D models of structure and appurtenances, cross section, plan and profile drawings for construction as per IRC	.dxf/.dtm
3.5	Proposed highway cross sections	Roadway cross sections for homogenous sections	.dxf files Digital surface model in .dxf format
4	Other deliverables		
4.1	Digitized cadastral maps	Digitized revenue map overlaid with key landmarks, land size, survey number and owner ship data, with >1mm accuracy on a scale in accordance with IRC SP 19.	Geometry or shape files : .shp/.dxf, .dwg/.dgnfiles
4.2	Financial analysis	Spreadsheet model with instructions, index and containing all inputs and assumptions, time series construction and operating costs, revenues, financing and equity cash flows, NPV/IRR, sensitivity scenarios and results	ODF sheets, MS office

6 Teaming Arrangements

Team composition and Qualification Requirements for the key professionals (And any other requirements which will be used for evaluating the key experts):

Sl. No.	Key Personnel	Minimum experience in Years/Minimum Qualification	No. of Personnel
1	Senior Road/ Highway Engineer cum Team Leader	• **Relevant Professional Experience:** Experience in road/ highway sector which includes Preparation of feasibility report, Detailed Project Report, and Preparation of Tender documents for **at least (3) three 4/6/8 lane State/ National Highway projects** as Team Leader. • **Age Limit:** Not more than 65 years on the date of submission of Proposal • **Essential Qualification**: Master's (Postgraduate) in Civil Engineering/ Construction Management/ Transportation Engineering {AICTE Approved}. • **Total Professional Experience:** Min.**10 years** after essential qualification.	1
2	Bridge Design Expert	• **Relevant Professional Experience:** Experience in road/ highway sector which includes Preparation of Feasibility report/ Detailed Project Report in **at least (3) three 4/6/8 lane State/ National Highway projects** as Bridge design Engineer. • **Age Limit:** Not more than 65 years on the date of submission of Proposal. • **Essential qualification:** Masters in Structural Engineering/ Bridge Engineering/ Foundation Engineering {AICTE Approved}. • **Total Professional Experience:** Min.**10 years** after essential qualification.	2
3	Highway Engineer	• **Relevant Professional Experience:** Experience in road/ highway sector which includes Preparation of Feasibility report/ Detailed Project Report in **at least (3) three 4/6/8 lane State/ National Highway projects** as Highway Engineer or Highway Design Engineer.	2

Sl. No.	Key Personnel	Minimum experience in Years/Minimum Qualification	No. of Personnel
		• **Age Limit:** Not more than 65 years on the date of submission of Proposal • **Essential Qualification:** Master's (Postgraduate) in Highway/Transportation engineering {AICTE Approved}. • **Total Professional Experience:** Min.**10 years** after essential qualification.	
4	Material –cum – Geotechnical Engineer	• **Relevant Professional Experience:** Experience in road/ highway sector which includes Preparation of Feasibility report/ Detailed Project Report in **at least (3) three 4/6/8 lane State/ National Highway projects** as Material –cum – Geotechnical Engineer. • **Age Limit:** Not more than 65 years on the date of submission of Proposal • **Essential Qualification:** Masters in Foundation Engineering/Soil Mechanics/ Geo-Tech Engineering {AICTE Approved}. • **Total Professional Experience:** Min.**10 years** after essential qualification.	1
5.	Traffic and Safety Expert	• **Relevant Professional Experience:** Experience as Traffic Engineer in **at least (3) three 4/6/8 lane State/ National Highway projects** and it is mandatory for the Traffic and Road Safety Expert to have completed at least 15 days certification course on Road Safety Audit from IAHE/IITs/NITs/CRRI. The CV of the proposed key personnel who have not completed minimum 15 days certification course shall not be evaluated. • **Age Limit:** Not more than 65 years on the date of submission of Proposal • **Essential Qualification:** Masters in Traffic Engineering/ Transportation Engineering /Transport Planning {AICTE Approved}.	1

Sl. No.	Key Personnel	Minimum experience in Years/Minimum Qualification	No. of Personnel
		• **Total Professional Experience:** Min.**10 years** after essential qualification.	

- 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 OB&CC shall be obtained. The address of the site office including the personnel manning it including their Telephone and E-mail ID will be intimated by the Consultant to OB&CC before commencement of the services.
- All the meeting as and when required by the authority shall be attended by Team Leader along with required Key person and other supporting staff.
- The Consultants shall be required to form a multi-disciplinary team for this assignment. The consultants‟ team shall be manned by adequate number of engineering personnel with relevant experience in the execution of similar detailed design assignments.
- Provide adequate manpower including but not limited to Support staffs, surveyors, assistants, AutoCAD draftsmen, liaison officers, computer operators, etc. to ensure mandated timelines are met.
- Ensure adequate resources including but not limited to computers, software licenses, scanner, printer etc. are deployed to ensure mandated timelines are met.
- Ensure adequate resources including but not limited to BM Pillars, boundary pillars, Total Station/DGPS systems, vehicles etc. are deployed to ensure mandated timelines are met.
- During entire period of services, the Consultant shall interact continuously with OB&CC /R&B and provide any clarification as regards methods being followed and carryout modification as suggested by OB&CC /R&B.
- A programme of various activities shall be provided to OB&CC /R&B and prior intimation shall be given to OB&CC /R&B regarding start of key activities such as boring, survey etc. so that inspections of OB&CC /R&B officials could be arranged in time.
- The OB&CC /R&B officers and other Government officers may visit the site at any time, individually or collectively to acquaint/ supervise the field investigation and survey works.
- The consultant shall be required to send **copies** of concise monthly Progress Report by the 5th day of the following month to the designated officer.
- These reports will indicate the dates of induction and de-induction of various key personnel and the activities performed by them along with work schedule for successful completion of DPR.
- All equipment, instruments, 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.

7 Payment Terms and Schedule

A. Consultancy Fee

Payment for the assignment shall be quoted by the applicant as a **lumpsum amount in INR.** The cost derived shall be inclusive of all statutory government taxes and duties (if any) as applicable but excluding GST. GST, at the prevalent rate shall be paid extra as applicable.

The agency is required to raise invoices for every payment milestone along with deliverables / copies of approval for deliverables already submitted to the client. The client, after necessary certification of the invoices, shall make payment to the agency. TDS shall be deducted by client as per statutory requirement and certificate for the same would be issued.

Authority shall adhere to following payment schedule:

Sl. No.	Description of Items	Payment Schedule
1	**Stage-1:** Inception Report and Quality Assurance Plan (QAP)	On Submission 2.5% On Approval 2.5%
2	**Stage-2:** Draft Feasibility Report	On Submission 7.5% On Approval 7.5%
3	**Stage-2:** Final Feasibility Report	On Submission 10% On Approval 10%
4	**Stage–3:** Project Clearances, Land Acquisition and Shifting of utilities Report	On Submission 10% On Approval 10%
5	**Stage-4:** Draft Detailed Project Report.	On Submission 10% On Approval 10%
6	**Stage-4:** Final Detailed Project Report.	On Submission 10% On Approval 10%

Section: 4

Technical Proposal Submission Forms

TECH -1

COVERING LETTER

(ON BIDDER'S LETTERHEAD)

[Location, Date]

To,

The Chief General Manager-II,
Odisha Bridge and Construction Corporation Limited,
Vikash Bhawan, Nayapalli,
Bhubaneswar- 751012, Odisha

Subject: Selection of an Agency for preparation of DPR for "Improvement of Road from Acharya Vihar to Airport Square in Bhubaneshwar".

Dear Sir,

I, the undersigned, offer to provide the services for the proposed assignment in respect to your Request for Proposal No. _____, Dated: _____. I hereby submit the proposal which includes this technical proposal. Our proposal will be valid for acceptance up to **120 Days** and I confirm that this proposal will remain binding upon us and may be accepted by you at any time before this expiry date.

All the information and statements made in this technical proposal are true and correct and I accept that any misinterpretation contained in it may lead to disqualification of our proposal. If negotiations are held during the period of validity of the proposal, I undertake to negotiate on the basis of the proposal submitted by us. Our proposal is binding upon us and subject to the modifications resulting from contract negotiations.

I have examined all the information as provided in your Request for Proposal (RFP) and offer to undertake the service described in accordance with the conditions and requirements of the selection process. I agree to bear all costs incurred by us in connection with the preparation and submission of this proposal and to bear any further pre-contract costs. In case, any provisions of this

RFP/ ToR including of our technical & financial proposal is found to be deviated, then your organization / department shall have rights to reject our proposal including forfeiture of the Earnest Money Deposit absolutely. I confirm that, I have the authority to submit the proposal and to clarify any details on its behalf.

I understand you are not bound to accept any proposal you receive. I remain,

Yours faithfully,

Authorized *Signatory with Date and Seal:*

Name and Designation: _____

Address of Bidder: _____

TECH -2

Bidder's Organization (General Detail)

Sl. No.	Description	Full Details
1	**Name of the Bidder**	
2	**Address for communication:** Tel : Fax: Email id:	
3	**Name of the authorized person signing & submitting the bid on behalf of the Bidder:** Mobile No. : Email id :	
4	**Registration / Incorporation Details** Registration No: Date & Year. :	
5	**Local office in Odisha** **If Yes, Please furnish contact details**	Yes / No
6	**Bid Processing Fee Details** Amount: Online reference No. : Date: Name of the Bank:	
7	**EMD Details** Amount: Online reference No. : Date: Name of the Bank:	
8	PAN Number	

9	Goods and Services Tax Identification Number (GSTIN)	
10	Willing to carry out assignments as per the scope of work of the RFP	**YES**
11	Willing to accept all the terms and conditions as specified in the RFP	**YES**

Authorized Signatory [*In full and initials*]: _____

Name and Designation with Date and Seal: _____

TECH - 3

Bidder Organization (Financial Details)

Financial Information in INR				
Details	**FY-2024-25**	**FY-2023-24**	**FY-2022-23**	**Average**
Turnover from consultancy services only (in Crs)				

Supporting Documents:

Audited certified financial statements for the last **Three FYs** (**preceding the financial year in which the proposal is due)** (Submission of copies of Income & Profit/Loss and Balance Sheet for the respective financial years is mandatory along with this form)

Filled in information in this format must have to be jointly certified and sealed by the CA(along with UDIN) and the authorized representative of the bidder and to be furnished scan copy along with the technical proposal failing which the proposal will be out rightly rejected.

_____

Signature and Seal of the Chartered Accountant with UDIN

Authorized Signatory [*In full initials with Date and Seal*]: _____

TECH - 4

FORMAT FOR POWER OF ATTORNEY

(On Bidder's Letter Head)

I,_____, the _____(Designation) of (Name of the Organization) in witness whereof certify that **<Name of person>** is authorized to execute the attorney on behalf of **<Name of Organization>, <Designation of the person>** of the company acting for and on behalf of the company under the authority conferred by the <**Notification / Authority order no.>** Dated <**date of reference>** has signed this Power of attorney at **<place**> on this day of **<day><month>, <year>.**

The signatures of **<Name of person>** in whose favour authority is being made under the attorney given below are hereby certified.

Name of the Authorized Representative:

_____

(Signature of the Authorized Representative with Date)

CERTIFIED:

Signature, Name & Designation of person executing attorney:

TECH - 5

(BIDDER'S PAST EXPERIENCE DETAILS)

Table -1

(List of completed assignments only of similar nature during last five (5) years preceding the proposal due date)**

Category 1.a

Sl. no.	Period (Year)	Name of the Assignment with details thereof	Name of the Client	*Contract Value (in INR) and Duration in Month	Date of Award / Commencement of assignment	Date of Completion of assignment	Remarks if any
A	B	C	D	E	F	G	H
1							
2							
3							

Authorized Signatory [*In full and initials*]:

Name and Designation with Date and Seal:

Note: Bidders are requested to furnish the list limited to 5 eligible assignments of similar nature undertaken during the last 5 Years (preceding the due date of proposal) as per the above prescribed format only. Information not conforming to the above format will be treated as non-responsive. Copies of the Work order / Contract Document along with Completion Certificate from the previous Clients need to be furnished along with the above information.

TECH - 6

INFORMATION REGARDING ANY CONFLICTING ACTIVITIES AND DECLARATION THEREOF

Are there any activities carried out by your agency which are of conflicting nature as mentioned in **Section 2: [Information to the Bidder] under Eligibility Criteria: Sl No (2).** ***If yes, please furnish details of any such activities.***

If no, please certify,

IN BIDDER'S S LETTERHEAD

I, hereby declare that our agency as Individual is not indulged in any such activities which can be termed as the conflicting activities as mentioned in **Section 2: [Information to the Bidder] under Eligibility Criteria: Sl No (2) and Clause no 14 of the Section - 2**

I, also acknowledge that in case of misrepresentation of any of the information, our proposal / contract shall be rejected / terminated by the Client which shall be binding on us.

Authorized Signatory [*In full initials with Date and Seal*]: _____

TECH -7

DESCRIPTION OF APPROACH, METHODOLOGY TO UNDERTAKE THE ASSIGNMENT

[Technical approach, methodology and work plan are key components of the Technical Proposal. In this Section, bidder should explain his understanding of the scope and objectives of the assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. Further, he should highlight the problems being addressed and their importance, and explain the technical approach to be adopted to address them. It is suggested to present the required information divided into following four sections]

A. Understanding of Scope, Objectives and Completeness of response

Please explain your understanding of the scope and objectives of the assignment based on the scope of work, the technical approach, and the proposed methodology adopted for implementation of the tasks and activities to deliver the expected output(s), and the degree of detail of such output. ***Please do not repeat/ copy the ToR here.***

B. Description of Approach and Methodology:

a. Key guiding principles for the study.
b. Proposed Framework.
c. Information matrix
d. Any other issues

C. Methodology to be adopted:

Explaining of the proposed methodologies to be adopted highlighting of the compatibility of the same with the proposed approach. This includes:

a. Alignment Option Study
b. Preparation of GAD
c. Land Acquisition
d. Project Clearance (Forest, Environment, CRZ Clearance, IWAI, Railway, Airport as applicable)
e. Utility Shifting
f. Value Engineering
g. New materials & Technology

D. Staffing and Study Management Plan:

The bidder should propose and justify the structure and composition of the team and should enlist the main activities under the assignment in respect of the Key Professionals responsible for it. Further, it is necessary to enlist of the activities under the proposed assignment with sub-activities (week wise). (Graphical representation)

Authorized Signatory [*In full and initials*]: _____

Name and Designation with Date and Seal: _____

TECH - 8

Format of Curriculum Vitae (CV) for Proposed Key Professional

***1. Proposed Position*:**

***2. Name of Firm* :**

***3. Name of Staff* :**

***4. Date of Birth* :**

5. Total Professional Experience :

***6. Relevant years of experience in Highway Projects* :**

7. Essential Qualification and Desirable Qualification:

[Indicate college / university and other specialized education of staff member, giving names of institutions, degrees obtained, and dates]

***8. Membership in Professional Associations*:**

***9. Other Trainings* :**

***10. Countries of Work Experience*:**

***11. Languages* :**

[For each language indicate proficiency: excellent, good, fair, or poor; in speaking, reading, and writing]

12. Employment Record :

*[Starting with present position, list in reverse order every employment held by staff member since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held. For experience in **last ten years**, also give types of activities performed and Client references, where appropriate as per the prescribed format given below]*

From [Year]	To [Year]
Name of the Firm:	
Position Held:	

Details of the Task Assigned [List all tasks to be performed under this Assignment/job]	

13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned

[Among the Assignment/jobs in which the staff has been involved, indicate the following information for those Assignment /jobs that best illustrate staff capability to handle the tasks listed under point 12.]

Name of the Project	
Length of the Project	
Year	
Location	
Name of the Client	
Project Feature	
Position Held	
Contract value	
Activities Performed	

[For each position of key professional separate form Tech-8 will be prepared]

Certification:

I, the undersigned, certify that to the best of my knowledge and belief that this CV correctly describes my qualifications and past experiences. I will undertake this assignment for the full project duration in terms of roles and responsibilities assigned in the technical proposal or any agreed extension of activities thereof. I understand that any misstatement herein leads to disqualification of CV.

Date:

Signature of Key Professional with Date _____

Authorized Signatory [*In full and initials*]: _____

Name and Designation with Date and Seal: _____

TECH – 9

PROPOSED WORKPLAN TO CARRY OUT THE ASSIGNMENT

Weeks (1 to 12) → **Sequence of Study Activities / Sub Activities ↓**	**1**	**2**	**3**	**4….**

Indicate all main activities / sub activities of the proposed assignment including delivery of reports (Inception. and Final Reports) and other associate sub-activities

Authorized Signatory [*In full and initials*]: _____

Name and Designation with Date and Seal: _____

Section: 5

Financial Proposal Submission Forms to be submitted online only

(Please refer to the BOQ Excel format uploaded with this RFP document in the e-tendering portal)

Section 6
Annexures

Annexure – I – Bid Submission Checklist

Sl. No.	Description	Submitted (Yes/No)	Page No.
TECHNICAL PROPOSAL			
1	Filled in Bid Submission Check List **(ANNEXURE-I)**		
2	Covering Letter **(TECH -1)**		
3	Bid Processing Fee		
4	EMD		
5	Copy of Certificate of Incorporation / Registration of the Bidder		
6	Copy of PAN		
7	Copy of Goods and Services Tax Identification Number (GSTIN)		
8	Copies of IT Returns for the last Three FYs preceding proposal due date.		
9	General Details of the Bidder **(TECH - 2)**		
10	Financial details of the bidder **(TECH - 3)** along with all the supportive documents such as copies of Profit – Loss Statement and Balance Sheet for the concerned period		
11	Power of Attorney **(TECH - 4)** in favour of the person signing the bid on behalf of the bidder.		
12	List of completed assignments of similar nature (Past Experience Details) **(TECH - 5)** along with the copies of work orders for the respective assignments		
13	Self-Declaration on Potential Conflict of Interest **(TECH - 6)**		
14	Undertaking for not have been black-listed by any Central / State Govt./any Autonomous bodies as per the RFP		
15	Description of Approach, Methodology & Work Plan **(TECH - 7)**		
16	CV of Key Professionals **(TECH – 8)**		
17	Work Plan **(TECH – 9)**		

Undertaking:

- *All the information has been submitted as per the prescribed format and procedure.*
- *All pages of the proposal have been sealed and signed by the authorized representative.*

Authorized Signatory [*In full and initials*]:_____

Name and Designation with Date and Seal: _____

Annexure – II

PERFORMANCE BANK GUARANTEE FORMAT

To,

The Managing Director,
Odisha Bridge and Construction Corporation Limited,
Vikash Bhawan, Nayapalli,
Bhubaneswar- 751012, Odisha

WHEREAS (Name and address of the Consultant) (hereinafter called "the Consultant") has undertaken, in pursuance of RFP No_____ dated _____ to undertake the service " **Insert the work Name for** _____ " (herein called contract) **AND WHEREAS** it has been stipulated by **Managing Director, Odisha Bridge & Construction Corporation Limited, Bhubaneswar** in the said contract that the Consultant shall furnish you with a bank guarantee by a scheduled commercial bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the contract; **AND WHEREAS** we have agreed to give the supplier such a bank guarantee; **NOW THEREFORE** we hereby affirm that we are guarantors and responsible to you, on behalf of the Consultant, up to a total of _____ (amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the consultant to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

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

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

This performance bank guarantee shall be valid until the _____day of _____, <Year>

Our branch at Bhubaneswar (Name & Address of the Bank) is liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us at our Bhubaneswar branch a written claim or demand and received by us at our Bhubaneswar branch on or before Dt _____otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

…….

(Signature of the authorized officer of the Bank)

…….

Name and designation of the officer

…….

…….

Seal, name & address of the Bank & Branch

Section 7

Standard form of Contract

Note: This draft Agreement is a generic document and has to be modified based on particulars of the Project.

Contents

I. Form of Contract

II. General Conditions of Contract

1. General Provisions

2. Commencement, Completion, Modification and Termination of Contract

3. Obligations of the Consultant

4. Consultants' Personnel and Sub-Consultants

5. Obligations of the Employer

6. Payments to the Consultant

7. Fairness and Good Faith

8. Settlement of Disputes

9. Liquidated Damages

10. Miscellaneous Provisions

III. Special Conditions of Contract

IV. Appendices

Appendix A – Description of Services

Appendix B - Reporting Requirements

Appendix C - Staffing Schedule

Appendix D - Cost Estimates in Foreign Currency

Appendix E - Duties of the Employer

CONTRACT FOR CONSULTANTS' SERVICES

Between

Odisha Bridge and Construction Corporation Limited

And

[name of the Consultant]

Dated:

I. Form of Contract

(Text in brackets [ ] should be filled up appropriately; all notes should be deleted in final text)

This **CONTRACT** (hereinafter called the "Contract") is made the [day] day of the month of [month], [year], between the Governor of Odisha acting through Managing Director, Odisha Bridge & Construction Corporation Limited , (office address), [name of employer] (hereinafter called the "Employer"), of the First Part and, [name of Consultant] (hereinafter called the "Consultant") of the Second Part.

[*Note: If the Consultant consist of more than one entity, the above should be partially amended to read as follows: "…(hereinafter called the "Employer") and, on the other hand, a joint venture/consortium/association consisting of the following entities, namely, lead consultant [name of lead Consultant] and [name of Consultant/s] (hereinafter called the "Consultant").*

WHEREAS

(a) the Consultant, having represented to the "Employer" that he has the required professional skills, personnel and technical resources, has offered to provide in response to the Tender Notice dated issued by the Employer ;

(b) the "Employer" has accepted the offer of the Consultant to provide the services on the terms and conditions set forth in this Contract.

NOW, THEREFORE, IT IS HEREBY AGREED between the parties 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;

(b) The Special Conditions of Contract;

(c) The following Appendices:

Appendix A: Description of Services
Appendix B: Reporting Requirements
Appendix C: Staffing schedule

Appendix D: Cost Estimates **Appendix**

E: Duties of the "Employer" **Appendix**

F: Duties of the Consultant

2. The mutual rights and obligations of the "Employer" and the Consultant shall be as set forth in the Contract, in particular:

(a) the Consultants shall carry out and complete the Services in accordance with the provisions of the Contract; and

(b) the "**Employer**" shall make payments to the Consultant 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.

Signed by -----

For and on behalf of the Governor of Odisha

[Managing Director, OB&CC Ltd.]

(**Witnesses) [Authorized Representative]**

(i)

In presence of (Witnesses)

(ii)

2. For and on behalf of [name of Consultant] [**Authorized Representative**]

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

3. For and on behalf of each of the Members of the Consultant.

[**name of member] [Authorized Representative**]

4. [Name of member]

[**Authorized Representative**]

II. General Conditions of Contract

1. GENERALPROVISIONS

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 Odisha for the time being.

b) "Agency" means any private or public entity that will provide the Services to the "Client" under the Contract.

c) "Contract" means the Contract signed by the Parties and all the attached documents listed in its Clause 1, that is the General Conditions (GC), the Special Conditions (SC) and the Appendices.

d) "Day" means calendar day.

e) "Effective Date" means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1.

f) "Foreign Currency" means any currency other than the currency of the "Client's" country.

g) "GC" means these General Conditions of Contract.

h) "Government" means the Government of Odisha

i) "Local Currency" means Indian Rupees.

j) "notice" Written communication sent to Address for communication mentioned in contract.

k) "Party" means the "Client" or the Agency, as the case may be, and "Parties" means both of them.

l) "Personnel" means professionals and support staff provided by the Agency assigned to perform the Services or any part thereof; "Foreign Personnel" means such professionals and support staff who at the time of being so provided had their domicile outside the Government's country; "Local Personnel" means such professionals and support staff who at the time of being so provided had their domicile inside the Government's country; and "Key Personnel" means the Personnel referred to in Clause GC 4.2(a).

m) "Reimbursable expenses" means all assignment-related costs [such as travel, translation, report printing, secretarial expenses, subject to specified maximum limits in the Contract].

n) "SC" means the Special Conditions of Contract by which the GC may be amended or supplemented.

o) "Services" means the work to be performed by the Agency pursuant to this Contract, as described in Appendix A hereto.

p) "Third Party" means any person or entity other than the "Client", or the Agency.

q) "In writing" means communicated in written form with proof of receipt.

1.2 Relationship Between the Parties

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

1.3 Law Governing Contract: This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the applicable laws of India.

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

1.5 Notices

1.5.1 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 post to such Party at the address specified in the SC.

1.5.2 A Party may change its address for notice hereunder by giving the other Party notice in writing of such change to the address specified in the SC.

1.6 Location: The Services shall be performed at such locations as are specified in Appendix A hereto and, where the location of a particular task is not so specified, at such locations, as the "Employer" may approve.

1.7 Authority of Lead Partner : In case the Consultant consists of a joint venture/consortium/ association of more than one entity, the Members hereby authorize the entity specified (Lead Consultant) in the SC to act on their behalf in exercising all the Consultant's rights and obligations towards the "Employer" under this Contract, including without limitation the receiving of instructions and payments from the "Employer". However, each member or constituent of Consortium of Consultant shall be jointly and severally liable for all obligations of the Consultant under the Contract.

1.8 Authorized Representatives: Any action required or permitted to be taken, and any document required or permitted to be executed under this Contract by the "Employer" or the Consultant may be taken or executed by the officials specified in the SC.

1.9 Taxes and Duties: The Consultant, Sub-Consultants and Personnel shall be liable to pay such direct and indirect taxes, duties, fees and other impositions levied under the applicable laws of

India.

1.10 Fraud and Corruption

1.10.1 Definitions: It is the Employer's policy to require that Employers as well as Consultants observe the highest standard of ethics during the execution of the Contract. In pursuance of this policy, the Employer defines, for the purpose of this provision, the terms set forth below as follows:

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

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

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

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

1.10.2 Measures to be taken by the Employer

a. The Employer may terminate the contract if it determines at any time that representatives of the consultant were engaged in corrupt, fraudulent, collusive or coercive practices during the selection process or the execution of that contract, without the consultant having taken timely and appropriate action satisfactory to the Employer to remedy the situation;

b. The Employer may also sanction against the Consultant, including declaring the Consultant ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the Consultant has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for, or in executing, a Employer-financed contract;

1.10.3 Commissions and Fees

At the time of execution of this Contract, the Consultants shall disclose any commissions or fees that may have been paid or are agreed to be paid to agents, representatives, or commission agents with respect to the selection process or execution of the contract. The information disclosed must include at least the name and address of the agent, representative, or commission agent, the amount and currency, and the purpose of the commission or fee.

2. COMMENCEMENT, COMPLETION, MODIFICATION AND TERMINATION OF CONTRACT

2.1 Effectiveness of Contract: This Contract shall come into force and effect on the date (the "Effective Date") of the "Employer's notice to the Consultant instructing the Consultant to begin carrying out the Services. This notice shall confirm that the conditions precedent and 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 specified in the SC, either Party may, by not less than twenty one (21) days 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 Consultant shall begin carrying out the Services not later than the number of days after the Effective Date specified in the SC.

2.4 Expiration of Contract: Unless terminated earlier pursuant to Clause GC 2.9 hereof, this Contract shall expire at the end of such time period after the Effective Date as 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 other statement, representation, promise or agreement not set forth herein.

2.6 **Modifications or Variations:**

(a) Any modification or variation of the terms and conditions of this Contract, including any modification or variation of the scope of the Services, may only be made by written agreement between the Parties. Pursuant to Clause GC 7.2 here of, however, each Party shall give due consideration to any proposals for modification or variation made by the other Party.

(b) In cases of substantial modifications or variations, the prior written consent of the Employer is required.

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, is not foreseeable, is unavoidable and not brought about by or at the instance of the Party claiming to be affected by such events and which has caused the non- performance or delay in performance, 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 extreme 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 by or of such Party's Sub-Consultants or agents or employees nor

ii. any event which a diligent Party could reasonably have been expected both to take into account at the time of the conclusion of this Contract and avoid or overcome in the carrying out of its obligations hereunder.

c. Subject to clause 2.7.2, Force Majeure shall not include insufficiency of funds or inability 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 continue to perform its obligations under the Contract as far as is reasonably practical and shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

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 case 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 written notice of the restoration of normal conditions as soon as possible.

c. 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.

d. During the period of their inability to perform the Services as a result of an event of Force Majeure, the Consultant, upon instructions by the "Employer", shall either:

i. demobilize, or

ii. continue with the Services to the extent possible, in which case the Consultant shall continue to be paid proportionately and on prorata basis, under the terms of this Contract.

e. In the case of disagreement between the Parties as to the existence or extent of Force Majeure, the matter shall be settled according to Clause GC8.

2.8 Suspension : The "Employer" may, by written notice of suspension to the Consultant, suspend all payments to the Consultant hereunder if the Consultant fails to perform any of its 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 allow the Consultant to remedy such failure, if capable of being remedied, within a period not exceeding thirty (30) days after receipt by the Consultant of such notice of suspension.

2.9 Termination

2.9.1 By the "Employer": The "Employer" may terminate this Contract in case of the occurrence of any of the events specified in paragraphs (a) through (h) of this Clause GC 2.9.1.1.

a. If the Consultant fails to remedy a failure in the performance of its obligations hereunder, as specified in a notice of suspension pursuant to Clause GC 2.8 hereinabove, within thirty (30) days of receipt of such notice of suspension or within such further period as the "Employer" may have subsequently approved in writing.

b. If the Consultant becomes (or, if the Consultant consists of more than one entity, if any of its Members becomes and which has substantial bearing on providing Services under this contract) insolvent or go into liquidation or receivership whether compulsory or voluntary.

c. If the Consultant fails to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause GC 8hereof.

d. If the Consultant, in the judgment of the "Employer", has engaged in corrupt or fraudulent practices in competing for or in executing this Contract.

e. If the Consultant submits to the "Employer" a false statement which has a material effect on the rights, obligations or interests of the "Employer".

f. If the Consultant places itself in position of conflict of interest or fails to disclose promptly any conflict of interest to the Employer.

g. If the consultant fails to provide the quality services as envisaged under this Contract. The Consultancy Monitoring Committee (CMC) formulated to monitor the progress of the assignment may make judgment regarding the poor quality of services, the reasons for which shall be recorded in writing. The CMC may decide to give one chance to the consultant to improve the quality of the services.

h. If, as the result of Force Majeure, the Consultant is unable to perform a material portion of the Services for a period of not less than sixty (60) days.

i. If the "Employer", in its sole discretion and for any reason whatsoever, decides to terminate this Contract.

2.9.1.1 In such an occurrence the "Employer" shall give a not less than thirty (30) days' written notice of termination to the Consultants, and sixty (60) days' in case of the event referred to in (h).

2.9.2 By the Consultant: The Consultant may terminate this Contract, by not less than thirty (30) days' written notice to the "Employer", in case of the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause GC2.9.2.

a. If the "Employer" fails to pay any money due to the Consultant pursuant to this Contract and not subject to dispute pursuant to Clause GC 8 hereof within forty-five (45) days after receiving written notice from the Consultant that such payment is overdue.

b. If, as the result of Force Majeure, the Consultant is unable to perform a material portion of the Services for a period of not less than sixty (60) days.

c. If the "Employer" fails to comply with any final decision reached as a result of arbitration pursuant to Clause GC 8hereof.

d. If the "Employer" 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 Consultant may have subsequently approved in writing) following the receipt by the "Employer" of the Consultant's notice specifying such breach.

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

2.9.4 Cessation of Services: Upon termination of this Contract by notice of either Party to the other pursuant to Clauses GC 2.9.1 or GC 2.9.2 hereof, the Consultant 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 Consultant and equipment and materials furnished by the "Employer", the Consultant shall proceed as provided, respectively, by Clauses GC 3.9 or GC 3.10 hereof.

2.9.5 Payment upon Termination: Upon termination of this Contract pursuant to Clauses GC2.9.1 or GC 2.9.2 hereof, the "Employer" shall make the following payments to the Consultant:

a. If the Contract is terminated pursuant to Clause 2.9.1 (g), (h) or 2.9.2, remuneration pursuant to Clause GC 6.3(h) (i)hereof for Services satisfactorily performed prior to the effective date of termination, and reimbursable expenditures pursuant to Clause GC 6.3(h)(ii) hereof for expenditures actually and reasonably incurred prior to the effective date of termination;

b. If the agreement is terminated pursuant of Clause 2.9.1 (a) to (f), the consultant shall not be entitled to receive any agreed payments upon termination of the contract. However, the "Employer" may consider making payment for the part satisfactorily performed on the basis of Quantum Merit as assessed by it, if such part is of economic utility to the Employer. Applicable Under such circumstances, upon termination, the client may also impose liquidated damages as per the provisions of Clause 9 of this agreement. The consultant will be required to pay any such liquidated damages to client within 30 days of termination date.

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

3. OBLIGATIONS OF THE CONSULTANT

3.1 General

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

3.2 Conflict of Interests : The Consultant shall hold the "Employer's interests paramount, without any consideration for future work, and strictly avoid conflict of interest with other assignments or

their own corporate interests. If during the period of this contract, a conflict of interest arises for any reasons, the Consultant shall promptly disclose the same to the Employer and seek its instructions.

3.2.1 Consultant not to benefit from Commissions, Discounts, etc. :

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

b. Furthermore, if the Consultant, as part of the Services, has the responsibility of advising the "Employer" on the procurement of goods, works or services, the Consultant shall comply with the Employer's applicable procurement guidelines, and shall at all times exercise such responsibility in the best interest of the "Employer". Any discounts or commissions obtained by the Consultant in the exercise of such procurement responsibility shall be for the account of the "Employer".

3.2.2 Consultant and Affiliates Not to Engage in Certain Activities : The Consultant agrees that, during the term of this Contract and after its termination, the Consultant and any entity affiliated with the Consultant, as well as any Sub-Consultants and any entity affiliated with such Sub-Consultants, shall be disqualified from providing goods, works or services (other than consulting services) resulting from or directly related to the Consultant's Services for the preparation or implementation of the project.

3.2.3 Prohibition of Conflicting Activities : The Consultant shall not engage, and shall cause their Personnel as well as their Sub-Consultants and their Personnel not to engage, either directly or indirectly, in any business or professional activities that would conflict with the activities assigned to them under this Contract.

3.3 Confidentiality : Except with the prior written consent of the "Employer", the Consultant and the Personnel shall not at any time communicate to any person or entity any confidential information acquired in the course of the Services, nor shall the Consultant and its Personnel make public the recommendations formulated in the course of, or as a result of, the Services.

3.4 Insurance to be Taken out by the Consultant : The Consultant (i) shall take out and maintain, and shall cause any Sub-Consultants to take out and maintain insurance, at their (or the Sub-Consultants', as the case may be) own cost but on terms and conditions approved by the "Employer", insurance against the risks, and for the coverage specified in the SC, and (ii) at the "Employer's request, shall provide evidence to the "Employer" showing that such insurance has

been taken out and maintained and that the current premiums therefore have been paid.

3.5 Accounting, Inspection and Auditing: The Consultant (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 changes and costs, and the bases thereof, and (ii) shall periodically permit the "Employer" or its designated representative and/or the Employer, and up to five years from 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 "Employer" or the Employer, if so required by the "Employer" or the Employer as the case may be.

3.6 Consultant's Actions Requiring "Employer's Prior Approval: The Consultant shall obtain the "Employer's prior approval in writing before taking any of the following actions:

(a) Any change or addition to the Personnel listed in Appendix C.

(b) **Subcontracts:** the Consultant may subcontract work relating to the Services to an extent and with such experts and entities as may be approved in advance by the "Employer". Notwithstanding such approval, the Consultant shall always retain full responsibility for the Services. In the event that any Sub-Consultants are found by the "Employer" to be incompetent or incapable or undesirable in discharging assigned duties, the "Employer" may request the Consultant to provide a replacement, with qualifications and experience acceptable to the "Employer", or to resume the performance of the Services itself.

3.7 Reporting Obligations: The Consultant shall submit to the "Employer" the reports and documents specified in Appendix B hereto, in the form, in the numbers and within the time periods set forth in the said Appendix. Final reports shall be delivered in CD ROM in addition to the hard copies specified in said Appendix.

3.8 Documents Prepared by the Consultant to be the Property of the "Employer" : All plans, drawings, specifications, designs, reports, other documents and software prepared by the Consultant for the "Employer" under this Contract shall become and remain the property of the "Employer", and the Consultant shall, not later than upon termination or expiration of this Contract, deliver all such documents to the "Employer", together with a detailed inventory thereof. The Consultant may retain a copy of such documents, but shall not use anywhere, without taking permission, in writing, from the Employer and the Employer reserves right to grant or deny any such request. If license agreements are necessary or appropriate between the Consultant and third parties for purposes of development of any such computer programs, the Consultant shall obtain the "Employer's prior written approval to such agreements, and the "Employer" shall be entitled at its discretion to require recovering the expenses related to the development of the program(s) concerned.

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

3.10 **Equipment and Materials Provided by the Consultants:** Equipment or materials brought into the Government's country by the Consultant and the Personnel and used either for the Project or personal use shall remain the property of the Consultant or the Personnel concerned, as applicable.

4. CONSULTANTS' PERSONNEL AND SUB-CONSULTANTS

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

4.2 **Description of Personnel:**

a. The title, agreed job description, minimum qualification and estimated period of engagement in the carrying out of the Services of each of the Consultant's Key Personnel are as per the consultant's proposal and are described in Appendix C. If any of the Key Personnel has already been approved by the "Employer", his/her name is listed as well.

b. If required to comply with the provisions of Clause GC 3.1.1 hereof, adjustments with respect to the estimated periods of engagement of Key Personnel set forth in Appendix C may be made by the Consultant by written notice to the "Employer", provided (i) that such adjustments shall not alter the originally estimated period of engagement of any individual by more than 10% or one week, whichever is larger, and (ii) that the aggregate of such adjustments shall not cause payments under this Contract to exceed the ceilings set forth in Clause GC 6.1(b) of this Contract. Any other such adjustments shall only be made with the "Employer's written approval.

c. If additional work is required beyond the scope of the Services specified in Appendix A, the estimated periods of engagement of Key Personnel set forth in Appendix C may be increased by agreement in writing between the "Employer" and the Consultant. In case where payments under this Contract exceed the ceilings set forth in Clause GC 6.1(b) of this Contract, this will be explicitly mentioned in the agreement.

4.3 Approval of Personnel: The Key Personnel and Sub-Consultants listed by title as well as by name in Appendix C are hereby approved by the "Employer". In respect of other Personnel which the Consultant proposes to use in the carrying out of the Services, the Consultant shall submit to the

"Employer" for review and approval a copy of their Curricula Vitae (CVs). If the "Employer" does not object in writing (stating the reasons for the objection) within twenty-one (21) days from the date of receipt of such CVs, such Personnel shall be deemed to have been approved by the "Employer".

4.4 Removal and/or Replacement of Personnel:

a. Except as the "Employer" may otherwise agree, no changes shall be made in the Personnel. If, for any reason beyond the reasonable control of the Consultant, such as retirement, death, medical incapacity, among others, it becomes necessary to replace any of the Personnel, the Consultant shall forthwith provide as a replacement a person of equivalent or better qualifications.

b. If the "Employer" (i) finds that any of the Personnel has committed serious misconduct or has been charged with having committed a criminal action, or (ii) has reasonable cause 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 as a replacement a person with qualifications and experience acceptable to the "Employer".

c. Any of the Personnel provided as a replacement under Clauses (a) and (b) above, as well as any reimbursable expenditures (including expenditures due to the number of eligible dependents) the Consultants may wish to claim as a result of such replacement, shall be subject to the prior written approval by the "Employer". The rate of remuneration applicable to a replacement person will be the rate of remuneration paid to the replacement person. Also (i) the Consultant shall bear all additional travel and other costs arising out of or incidental to any removal and/or replacement, and (ii) the remuneration to be paid for any of the Personnel provided as a replacement shall not exceed the remuneration which would have been payable to the Personnel replaced.

4.5 **DELETED**.

5. OBLIGATIONS OF THE "EMPLOYER"

5.1 Assistance and Exemptions: Unless otherwise specified in the SC, the "Employer" shall use its best efforts to ensure that the Government shall:

a. Provide the Consultant, Sub-Consultants and Personnel with work permits and such other documents as shall be necessary to enable the Consultant, Sub-Consultants or Personnel to perform the Services.

b. Arrange for the Foreign Personnel to be provided promptly with all necessary entry and exit visas, residence permits, exchange permits, and any other documents required for their stay in India.

c. 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.

d. Provide to the Consultant, Sub-Consultants and Personnel any such other assistance as may be specified in the SC.

5.2 **Change in the Applicable Law Related to Taxes and Duties :** If, after the date of this Contract, there is any change in the Applicable Laws of India with respect to taxes and duties, which are directly payable by the consultant for providing the services i.e. service tax or any such applicable tax from time to time, which increases or decreases the cost incurred by the Consultant in performing the Services, then the remuneration and reimbursable expenses otherwise payable to the Consultant under this Contract shall be increased or decreased accordingly by agreement between the Parties hereto, and corresponding adjustments shall be made to the ceiling amounts specified in Clause GC 6.1(b).

5.3 Services, Facilities and Property of the "Employer":

(a) The "Employer" shall make available to the Consultant and its Personnel, for the purposes of the Services and free of any charge, the services, facilities and property described in Appendix E at the times and in the manner specified in said Appendix E.

(b) In case that such services, facilities and property shall not be made available to the Consultant as and when specified in Appendix E, the Parties shall agree on any time extension that it may be appropriate to grant to the Consultant for the performance of the Services.

5.4 Payment: In consideration of the Services performed by the Consultant under this Contract, the "Employer" shall make to the Consultant such payments and in such manner as is provided by Clause GC 6 of this Contract.

5.5 Counterpart Personnel:

a. If necessary, the "Employer" shall make available to the Consultant free of charge such professional and support counterpart personnel, to be nominated by the "Employer" with the Consultant's advice, if specified in Appendix E.

b. Professional and support counterpart personnel, excluding "Employer's liaison personnel, shall work under the exclusive direction of the Consultant. If any member of the counterpart personnel fails to perform adequately any work assigned to such member by the Consultant that is consistent with the position occupied by such member, the Consultant may request the replacement of such member, and the "Employer" shall not unreasonably refuse to act upon such request.

6. PAYMENTS TO THECONSULTANT

6.1 Total Cost of the Services

a. The total cost of the Services payable is set forth in Appendix D as per the consultant's proposal to the Employer and as negotiated thereafter.

b. Except as may be otherwise agreed under Clause GC 2.6 and subject to Clause GC 6.1(c), payments under this Contract shall not exceed the amount specified in Appendix-D.

c. Notwithstanding Clause GC 6.1(b) hereof, if pursuant to any of the Clauses GC 4.2 (c) or 5.2 hereof, the Parties shall agree that additional payments shall be made to the Consultant in order to cover any necessary additional expenditures not envisaged in the cost estimates referred to in Clause GC 6.1(a) above, the ceiling or ceilings, as the case may be, set forth in Clause GC 6.1(b) above shall be increased by the amount or amounts, as the case may be, of any such additional payments.

6.2 Currency of Payment: All payments shall be made in Indian Rupees. [In case the payment is to be made in the currency other that Indian Rupees, the same shall be mentioned instead of Indian Rupees]

6.3 **Terms of Payment:** The payments in respect of the Services shall be made as follows :

a. The consultant shall submit the invoice for payment when the payment is due as per the agreed terms. The payment shall be released as per the work-related milestones achieved and as per the specified percentage as per SC13.

b. Once a milestone is completed, the consultant shall submit the requisite deliverables as specified in this Contract. The Employer shall release the requisite payment upon acceptance of the deliverables. However, if the Employer fails to intimate acceptance of the deliverables or its objections thereto, within 30 days of receipt of it, the Employer shall release the payment to the consultant without further delay.

c. Final Payment: The final payment as specified in SC 13 shall be made only after the final report and a final statement, identified as such, shall have been submitted by the Consultant and approved as satisfactory by the "Employer". The Services shall be deemed completed and finally accepted by the "Employer" and the final report and final statement shall be deemed approved by the "Employer" as satisfactory ninety (90) calendar days after receipt of the final report and final statement by the "Employer" unless the "Employer", within such ninety (90) day period, gives written notice to the Consultant specifying in detail deficiencies in the Services, the final report or final statement. The Consultant shall thereupon promptly make any necessary corrections, and thereafter the foregoing process shall be repeated. Any amount, which the "Employer" 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 Consultant to the "Employer" within thirty (30) days after receipt by the Consultant of notice thereof. Any such claim by the "Employer" for reimbursement must be made within twelve (12) calendar months after receipt by the "Employer" of a final report and a final statement approved by the "Employer" in accordance with the above.

d. For the purpose of payment under Clause 6.3 (b) above, acceptance means; acceptance of the deliverables by the Employer after submission by the consultant and the consultant has made presentation to the CMC/Employer (Mention this if presentation is required) with /without modifications to be communicated in writing by the Employer to the consultant.

e. If the deliverables submitted by the consultant are not acceptable to the Employer / CMC, reasons for such non-acceptance should be recorded in writing; the Employer shall not release the payment due to the consultant. This is without prejudicing the Employer's right to levy any liquidated damages under clause 9. In such case, the payment will be released to the consultant only after it re- submits the deliverable, and which is accepted by the Employer.

f. All payments under this Contract shall be made to the accounts of the Consultant specified in the SC.

g. With the exception of the final payment under (c) above, payments do not constitute acceptance of the Services nor relieve the Consultant of any obligations hereunder, unless the acceptance has been communicated by the Employer to the consultant in writing and the consultant has made necessary changes as per the comments / suggestions of the Employer communicated to the Consultant.

h. In case of early termination of the contract, the payment shall be made to the consultant as mentioned herewith:

    i. Assessment should be made about work done from the previous milestone, for which the payment is made or to be made till the date of the termination. The consultant shall provide the details of persons reasonably worked during this period with supporting documents. Based on such details, the remuneration shall be calculated based on the man month rate as specified.

    ii. A reasonable assessment of the reimbursable and miscellaneous expenses shall be made based on details furnished by the consultant in this regard with supporting documents and based on the assessment of the work done and the respective rates as provided. Wherever such an assessment is difficult, the rates should be arrived at by calculating the amount on pro-rata basis. The total amount payable shall be the amount calculated as per (i) and (ii) above plus any

applicable tax.

7. FAIRNESS AND GOOD FAITH

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

7.2 Operation of the Contract : The Parties recognize that it is impractical in this Contract to provide for every contingency which may arise during the life of the Contract, and the Parties hereby agree that it is their intention that this Contract shall operate fairly as between them, and without detriment to the interest of either of them, and that, if during the term of this Contract either Party believes that this Contract is operating unfairly, the Parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with Clause GC 8 hereof.

8. SETTLEMENT OF DISPUTES

8.1 Amicable Settlement: Performance of the contract is governed by the terms & conditions of the contract, in case of dispute arises between the parties regarding any matter under the contract, either Party of the contract may send a written Notice of Dispute to the other party. The Party receiving the Notice of Dispute will consider the Notice and respond to it in writing within 30 days after receipt. If that party fails to respond within 30 days, or the dispute cannot be amicably settled within 60 days following the response of that party, clause GC 8.2 shall become applicable.

8.2 **Arbitration:** In the case of dispute arising upon or in relation to or in connection with the contract between the Employer and the Consultant, which has not been settled amicably, any party can refer the dispute for Arbitration under (Indian) Arbitration and Conciliation Act, 1996. Such disputes shall be referred to an Arbitral Tribunal consisting of 3 (three) arbitrators, one each to be appointed by the Employer and the Consultant, the third arbitrator shall be chosen by the two arbitrators so appointed by the parties and shall act as Presiding Arbitrator. In case of failure of the two arbitrators, appointed by the parties to reach a consensus regarding the appointment of the third arbitrator within a period of 30 days from the date of appointment of the two arbitrators, the Presiding arbitrator shall be appointed by the Secretary of the Ministry / Department. The Arbitration and Conciliation Act, 1996 and any statutory modification or re-enactment thereof, shall apply to these arbitration proceedings.

8.3 Arbitration proceedings shall be held in India at the place indicated in SC and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.

8.4 The decision of the majority of arbitrators shall be final and binding upon both parties. The expenses of the arbitrators as determined by the arbitrators shall be shared equally by the Employer

and the Consultant. However, the expenses incurred by each party in connection with the preparation, presentation shall be borne by the party itself. All arbitration awards shall be in writing and shall state the reasons for the award.

9. Liquidated Damages

9.1 The parties hereby agree that due to negligence of act of any party, if the other party suffers losses, damages the quantification of which may be difficult, and hence the amount specified hereunder shall be construed as reasonable estimate of the damages and both the parties agree to pay such liquidated damages, as defined hereunder as per the provisions of this Contract.

9.2 The amount of liquidated damages under this Contract shall not exceed [10] % of the total value of the contract as specified in Appendix D.

9.3 The liquidated damages shall be applicable under following circumstances:

a. If the deliverables are not submitted as per schedule as specified in SC 13, the Consultant shall be liable to pay 1% of the total cost of the services for delay of each week or part thereof.

b. If the deliverables are not acceptable to the Employer as mentioned in Clause 6.3 (f), and defects are not rectified to the satisfaction of the Employer within 30 days of the receipt of the notice, the Consultant shall be liable for Liquidated Damages for an amount equal to [10]% of total cost of the services for every week or part thereof for the delay.

10. Miscellaneous provisions:

i. "Nothing contained in this Contract shall be construed as establishing or creating between the Parties, a relationship of master and servant or principal and agent.

ii. Any failure or delay on the part of any Party to exercise right or power under this Contract shall not operate as waiver thereof.

iii. The Contractor/Consultant shall notify the Employer/ the Government of India of any material change in their status, in particular, where such change would impact on performance of obligations under this Contract.

iv. Each member/constituent of the Contractor/Consultant, in case of a consortium, shall be jointly and severally liable to and responsible for all obligations towards the Employer/Government for performance of works/services including that of its Associates/Sub Contractors under the Contract.

v. The Contractor/Consultant shall at all times indemnify and keep indemnified the Employer/Government of India against all claims/damages etc. for any infringement of any Intellectual Property Rights (IPR) while providing its services under the Project.

vi. The Contractor/Consultant shall at all times indemnify and keep indemnified the Employer/Government of India against any claims in respect of any damages or compensation payable in consequences of any accident or injury sustained or suffered by its (the Contractor's/Consultant's) employees or agents or by any other third Party resulting from or by any action, omission or operation conducted by or on behalf of the Contractor/Consultant.

vii. The Contractor/Consultant shall at all times indemnify and keep indemnified the Employer/Government of India against any and all claims by Employees, Workman, Contractors, sub- contractors, suppliers, agent(s), employed engaged or otherwise working for the Contractor, in respect of wages, salaries, remuneration, compensation or the like.

viii. All claims regarding indemnity shall survive the termination or expiry of the Contract.

ix. It is acknowledged and agreed by all Parties that there is no representation of any type, implied or otherwise, of any absorption, regularization, continued engagement or concession or preference for employment of persons engaged by the (Contractor/Consultant) for any engagement, service or employment in any capacity in any office or establishment of the Government of India or the Employer.

II. Special Conditions of Contract :

(Clauses in brackets { } are optional; all notes should be deleted in final text)

SC Clause	Ref. of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.	1.5	The addresses are:
		1. "Employer" : Attention : Facsimile :
		2, Consultant : Attention : Facsimile :
2.	1.7	{Lead Partner is [insert name of member]} Note: If the Consultant consists of a joint venture/ consortium/ association of more than one entity, the name of the entity whose address is specified in Clause SC 1.6 should be inserted here. If the Consultant consists only of one entity, this Clause SC 1.8 should be deleted from the SC.

3.	1.8	The Authorized Representatives are: For the "Employer": For the Consultant:
4.	2.1	{The effectiveness conditions are the following: [insert conditions]} Note: List here any conditions of effectiveness of the Contract e.g., approved of the Contract by the Employer, "Employer's" approval of Consultant's proposals for appointment of specified key staff members, effectiveness of Employer Loan, receipt by Consultant of advance payment and by "Employer" of advance payment guarantee (see Clause SC 6.4(a)), etc. If there are no effectiveness conditions, delete this Clause SC 2.1 from the SC.
5.	2.2	The time period shall be [insert time period, e.g.: four months].
6.	2.3	The time period shall be [insert time period, e.g.: four months].
7.	2.4	The time period shall be [insert time period, e.g.: twelve months].
8.	3.4	Limitation of the Consultants' Liability towards the "Employer" {Note: Proposals to introduce exclusions/limitations of the Consultants' liability under the Contract should be carefully scrutinized by
		Employers/"Employer's. In this regard the parties should be aware of the Employer's policy on this matter which is as follows: 1. If the Parties agree that the Consultants' liability should simply be governed by the Applicable Laws of India, they should delete this Clause SC 3.4 from the SC. 2. If the Parties wish to limit or to partially exclude the Consultants' liability to the "Employer", they should note that, to be acceptable to the Employer, any limitation of the Consultants' liability should at the very least be reasonably related to (a) the damage the Consultants might potentially cause to the "Employer", and (b) the Consultants' ability to pay compensation using their own assets and reasonably obtainable insurance coverage. The Consultants' liability should not be limited to less than a multiplier of the total payments to the Consultants under the Contract for remuneration and reimbursable expenses. A statement to the effect that the Consultants are liable only for the re-performance of faulty Services is not acceptable to the Employer. Also, the Consultants' liability should never be limited for loss or damage caused by the Consultants' gross negligence or willful misconduct.

9.	3.5	The risks and the insurance coverage shall be as follows: (Note : Delete/modify whichever is not applicable) (a) Third Party motor vehicle liability insurance in respect of motor vehicles operated in the Government's country by the Consultant or its Personnel or any Sub-Consultants or their Personnel, with a minimum coverage of [insert amount and currency]; (b) Third Party liability insurance, with a minimum coverage of [insert amount and currency]; (c) Professional liability insurance to cover the employer against any loss suffered by the employer due to the professional service provided by the Consultant, with a minimum coverage of [insert amount and currency]; (d) Workers' compensation insurance in respect of the Personnel of the Consultant and of any Sub-Consultants, in accordance with the relevant provisions of the Applicable Laws of India, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate; and (e) Insurance against loss of or damage to (i) equipment purchased in whole or in part with funds provided under this Contract, (ii) the Consultant's property used in the performance of the Services, and (iii) any documents prepared by the Consultant in the performance of the Services, by theft, fire or any natural calamity. Note: If there are no other actions, delete this Clause SC 3.6. If the Services consist of or include the supervision of civil works, the following action should be inserted: {taking any action under a civil works contract designating the Consultant as "Engineer", for which action, pursuant to such civil works contract, the written approval of the "Employer" as "Employer" is required.}
10.	4.6	{The person designated as resident project manager in Appendix C shall serve in that capacity, as specified in Clause GC 4.6.}

		Note: If there is no such manager, delete this Clause SC 4.6.
11.	{5.1}	Note: List here any changes or additions to Clause GC 5.1. If there are no such changes or additions, delete this Clause SC 5.1.
12.	6.1(b)	The ceiling in local currency is: [insert amount and currency]
13.	6.3	[Delete whichever is not applicable]

1. For lump-sum contracts payment will be made based on milestones indicated for each activity as below:

Activity 1:

Sr. No.	**Milestone (Deliverables)**	**Time period for submission**	**Payment (as % of the total service cost)**
1.			
2.			
3.			
4.			
Total			

Activity 2:

Sr. No.	**Milestone (Deliverables)**	**Time period for submission**	**Payment (as % of the total service cost)**
1.			
2.			
3.			
4.			
Total			

OR

2. For time-based contracts remuneration will be paid on monthly basis.

14.	8.3	The Arbitration proceedings shall take place in (indicate name of the city) in India.

Binding signature of Employer Signed by _____

(for and on behalf of the Governor of Odisha)

Binding signature of Contractor Signed by _____

(for and on behalf of_____duly authorized vide Resolution

No._____dated_____of the Board of Directors of_____)

In the
presence of
(Witnesses)

1.

2.

IV. APPENDICES

Appendix A: Description of the Services

Details as per TOR

Appendix B: Reporting Requirements

Please refer TOR

Appendix C: Staffing Schedule

The Consultants Key personnel and all other Professional / Sub Professional / Support Staff / Sub-Consultancy personnel shall work as per Government of Odisha Calendar and as required by the client from time to time. The Consultant shall work as per the work program of the Contractor. In this context, in case the work plan of the Consultant needs suitable modifications, the same shall be carried out and submitted to the client for consideration. The Consultants hours of work normally shall match with that of Contractor's activities on the site. No extra remuneration shall be claimed or paid for extra hours of work required in the interest of Project completion.

Appendix D: Total Cost of Services (INR)

Appendix E: Duties of the "Employer"

Please refer TOR

Section 8

Procedure under E-Tendering

DEFINITIONS

a) **Tender portal:** The E-Procurement Portal of Government of Odisha introduced for the process of E-Tendering which can be accessed on https**://www.tendersodisha.gov.in**

b) Use of valid Digital Signature Certificate of appropriate class (Class II or class III) issued from registered certifying authorities (CA) as stipulated by Controller of Certifying Authorities (CCA), Government of India such as n-Code, Sify, TCS, MTNL, e-Mudhra is mandatory for all users.

c) For all purpose, the server time displayed in the e-Procurement portal shall be the time to be followed by all the users.

d) Words in capital and not defined in this document shall have the same meaning as in the Request for Proposal ("**RFP**").

1. PARTICIPATION IN BID:

1.1 **PORTAL REGISTRATION:** The Contractor/Bidder intending to participate in the bid is required to register in the portal using his/her active personal/official e-mail ID as his/her Login ID and attach his/her valid Digital signature certificate (DSC) to his/her unique Login ID. He/She has to submit the relevant information as asked for about the firm/contractor. The portal registration of the bidder/firm is to be authenticated by the State Procurement Cell after verification of original valid certificates/documents such as (i) PAN and (ii) Registration Certificate (RC) / GSTIN. The time period of validity in the portal is at per with validity of RC/GSTIN.Any change of information by the bidder is to be re-authenticated by the State Procurement Cell. After successful authentication bidder can participate in the online bidding process.

1.2 Bidders participating through Joint Venture shall declare the authorised signatory through Memorandum of Understanding duly registered and enroll in the portal in the name and style of the Joint venture Company. It is mandatory that the DSC issued in the name of the authorised signatory is used in the portal. For participating in the tender, the authorized signatory holding Power of Attorney shall be the Digital Signatory. In case the authorized signatory holding Power of Attorney and Digital Signatory are not the same, the bid shall be considered non-responsive.

1.3 Any third party/company/person under a service contract for operation of e-Procurement system in the State or his/their subsidiaries or their parent companies shall be ineligible to participate in the procurement process that are undertaken through the e-Procurement system irrespective of

who operates the system.

2. LOGGING TO THE PORTAL:

The Contractor/Bidder is required to type his/her *Login ID* and password. *The* system *will again ask to* select the DSC and confirm it with the password of DSC as a second stage authentication. For each login, a user's DSC will be validated against its date of validity and also against the Certificate Revocation List (CRL) of respective CAs stored in system database. The system checks the unique Login ID, password and DSC combination and authenticates the login process for use of portal.

3. DOWNLOADING OF BID:

The tender documents uploaded by the Tender Inviting Officer in the website https://tendersodisha.gov.in will appear in "Latest Active Tender" Section of the homepage. The publication of the tender will be for specific period of time till the last date of submission of bids after which the same will be removed from the list of Active Tenders. The bidder can download the tender of his choice and save it in his system and undertake the necessary preparatory work off-line and upload the completed tender at his convenience before the closing date and time of submission.

4. CLARIFICATION ON BID:

The bidder may ask question related to tender online in the e-procurement portal within the period of seeking clarification. The Officer inviting the bid / Procurement Officer-Publisher will clarify queries related to the tender. The clarification to the queries will be hoisted in the tender portal.

5. PREPARATION & SUBMISSION OF BID:

5.1 Detailed RFP may be downloaded from Tender Portal for detail study and preparation of bid. The bidder shall carefully go through the RFP document & prepare the required documents for Technical Proposal & Financial Proposal as specified in Cl.No.4.1 of Section-2 & upload the scanned copies of Technical proposal documents in PDF format & Financial proposal in excel (Fin-2) format template uploaded by the Authority.

5.2 The bidders should check the system generated confirmation statement on the status of the submission.

5.3 The bidder shall log on to the portal with his /her DSC and move to the desired tender for up loading the documents in appropriate place one by one simultaneously checking the documents.

5.4 Bids cannot be submitted after due date and time. The bids once submitted cannot be viewed, retrieved or corrected. The Bidder should ensure correctness of the bid prior to uploading and take print out of the system generated summary of submission to confirm successful uploading of bid. The bids cannot be opened even by the OIT or the Procurement Officer Publisher/ opener before the due date and time of opening.

5.5 Each process in the e-procurement is time stamped and the system can detect the time of log in of each user including the Bidder.

5.6 The Bidder should ensure clarity/legibility of the document uploaded by him to the portal.

5.7 The system shall require all the mandatory forms and fields filled up by the bidder during the process of submission of the bid/tender

5.8 The Bidder should upload sufficiently ahead of the bid closure time to avoid traffic rush and failure in the network.

5.9 The tender inviting officer is not responsible for any failure, malfunction or breakdown of the electronic system used during the e-procurement process.

5.10 The Bidder is required to upload documents related to his eligibility criteria and qualification information and Financial Proposal template duly filled in.

5.11 The Bidder will not be able to submit his bid after expire of the date and time of submission of bid (server time). The date and time of bid submission shall remain unaltered even if the specified date for the submission of bids declared as a holiday for the Officer Inviting the Bid.

6. SIGNING OF BID:

The 'online bidder' shall digitally sign on all statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity as per IT ACT 2000. If any of the information furnished by the bidder is found to be false / fabricated / bogus, his EMD/Bid Security shall stand forfeited & his name shall be recommended for blocking of portal registration and the bidder is liable to be blacklisted.

7. SECURITY OF BID SUBMISSION:

7.1 All bid uploaded by the Bidder to the portal will be encrypted.

7.2 The encrypted Bid can only be decrypted / opened by the authorised openers on or after the due date and time.

8. RESUBMISSION AND WITHDRAWAL OF BIDS:

8.1 Resubmission of bid by the bidders for any number of times before the final date and time of submission is allowed.

8.2 Resubmission of bid shall require uploading of all documents including price bid a fresh.

8.3 If the bidder fails to submit his modified bids within the pre-defined time of receipt, the system shall consider only the last bid submitted.

8.4 The bidder should avoid submission of bid at the last moment to avoid system failure or malfunction of internet or traffic jam or power failure etc.

8.5 The Bidder can withdraw his bid before the closure date and time of receipt of the bid by uploading scanned copy of a letter addressing to the Procurement Officer Publisher (Officer Inviting Tender) citing reasons for withdrawal. The system shall not allow any withdrawal after expiry of the closure time of the bid.

9. OPENING OF THE BID:

9.1 Bid opening date and time is specified during tender creation or can be extended through corrigendum / addendum. Bids cannot be opened before the specified date & time.

9.2 The bidders & guest users can view the summary of opening of bids from any system. Contractors are not required to be present during the bid opening at the opening location if they so desire.

9.3 In the event of the specified date of bid opening being declared a holiday for the Officer inviting the Bid, the bids will be opened at the appointed time on the next working day.

10. EVALUATION OF BIDS:

10.1 All the opened bids shall be downloaded and printed for taking up evaluation. The officer authorized to open the tender shall sign and number on each page of the documents downloaded and furnish a certificate that "the documents as available in the portal containing 103 nos of pages".

10.2 The bidder may be asked in writing/ online to clarify on the uploaded documents provided in the Technical Bid, if necessary, with respect to any doubts or illegible documents. The officer inviting tender may ask for any other document of historical nature during Technical evaluation of the tender. Provided in all such cases, furnishing of any document in no way alters the Bidder's price bid. Non submission of legible documents may render the bid non-responsive.

10.3 The bidders will respond in not more than 7 days of issue of the clarification letter, failing which the bid of the bidder will be evaluated on its own merit.

10.4 The Technical evaluation of all the bids shall be carried out as per information furnished by Bidders.

10.5 The Procurement Officer-Evaluators; will evaluate bid and finalize list of responsive bidders.

10.6 The financial bids of the technically responsive bidders shall be opened on the due date of opening. The Procurement Officer-Openers shall log on to the system in sequence and open the financial bids.

10.7 The Financial Bid will be opened on the notified date & time in the presence of bidders or their authorized representative who wish to be present.

10.8 At the time of opening of "Financial Bid", bidders whose technical bids were found responsive will be opened.

10.9 The responsive bidders' name bid prices will be announced.

10.10 Procurement Officer-Openers shall sign on each page of the downloaded Financial Proposal and the Comparative Statement and furnish a certificate to that respect.

10.11 Bidder can witness the principal activities and view the documents/summary reports for that particular work by logging on to the portal with his DSC from anywhere.

10.12 System provides an option to Procurement Officer Publisher for reconsidering the rejected bid with the approval of concern Executive Engineer / Head of Department.

DISCLAIMER

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