Request for Proposal (RFP) for

Selection of Consultant for preparing Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port

Indian Ports Association
1st Floor, South Tower, NBCC Place
B. P Marg, Lodi Road
New Delhi - 110 003
Ph No: 011-24369061/63; Fax No : 011-24365866

Disclaimer

1. This RFP document is neither an agreement nor an offer by the IPA. The purpose of this RFP is to provide information to the short listed parties that may be useful to them in the formulation of their proposal pursuant to this RFP.
2. Though adequate care has been taken in preparation of this Request for Proposal (RFP) document, Consultancy Company/ Firm/Consortium (Applicant) submitting detailed financial proposal in response to this RFP should satisfy itself that the information provided in the RFP document is complete in all respects.
3. Neither IPA nor their employees will have any liability to any prospective Consultancy Company/ Firm/Consortium (Applicant) or any other person under the law of contract, tort, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this RFP document, any matter deemed to form part of this RFP document, the award of the Project/Assignment.
4. IPA will not be responsible for any delay in receiving the proposals and reserves the right to accept/reject any or all of proposals submitted in response to this RFP document at any stage without assigning any reasons whatsoever.
5. IPA also reserves the right to withhold or withdraw the process at any stage with intimation to all who submitted the RFP Application and it reserves the right to change/modify/amend any or all provisions of this RFP document.

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The set of RFP document is issued to:

Name: _____

Address: _____

_____

_____

_____

Signature of the Officer
Issuing the RFP Document: _____

1. LETTER OF INVITATION

New Delhi, Date: 22nd April, 2016

Dear Mr./Ms.

Name of the Consultant

Address of the Consultant

1. Introduction

The Indian Port Association on behalf of Chennai Port Trust, invites proposals to provide the following consulting services:

Preparation of Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port. More details on the services are provided in the Terms of Reference.

2. Background

Chennai Port, formerly known as **Madras Port**, is the second largest port of India, after the Nhava- Sheva Port, and the largest port in the Bay of Bengal. It is the third oldest port among the 12 major ports of India with official port operations beginning in 1881, although maritime trade started much earlier in 1639 on the undeveloped shore. It is an artificial and all-weather port with wet docks. Once a major travel port, it become a major container port in the post-Independence era. The port remains a primary reason for the economic growth of Tamil Nadu, especially for the manufacturing boom in South India, and has contributed greatly to the development of the city

The port has become a hub port for containers, cars and project cargo in the east coast of India. From handling a meagre volume of cargo in the early years of its existence, consisting chiefly of imports of oil and motors and the export of groundnuts, granite and ores, the port has started handling more than 60 million tonnes of cargo in recent years. In 2014, the port's container traffic crossed 1.4 million twenty-foot equivalent units (TEUs). It is currently ranked the 86th largest container port in the world and there are plans to expand the capacity to about 140 million tonnes per annum. It is an ISO 14001:2004 and ISPS-certified port and has become a main line port having direct connectivity to more than 50 ports around the world.

3. Objective

The objective of this RFP is to engage a consultant for preparation of Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port.

4. This Request for Proposal (RFP) has been addressed to the following short- listed Consultants:

S. No.	Lead Company	Consortium/JV Partners
1		
2		
3		

It is not permissible to transfer this invitation to any other firm.

5. **A firm will be selected under Quality and Cost Based Selection (QCBS) and procedures described in this RFP.**

6. All communications including the submission of Proposal should be addressed to:

Managing Director,
Indian Port Association,
1st Floor, South Tower, NBCC Place,
B.P.Marg, Lodi Road,
New Delhi – 110 003
Ph: 011 – 24369061; Fax No: 011-24365866

The official website for accessing the information related to RFP: www.ipa.nic.in

2. INSTRUCTIONS TO THE CONSULTANTS/APPLICANTS

2.1 Definitions

(a) "Employer" means the Indian Port Association (IPA)/Ministry of Shipping/Chennai Port Trust which has invited the bids for consultancy services and with which the selected Consultant signs the Contract for the Services and to which the selected consultant shall provide services as per the terms and conditions and TOR of the contract.

(b) "Consultant" means any interested firms/companies/agencies who submit their proposals that may provide or provides the Services to the Employer 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 project Specific Conditions (SC), and the Appendices.

(d) "Project specific information", means such part of the Instructions to Consultants used to reflect specific project and assignment conditions.

(e) "Day" means calendar day.

(f) "Government" means the Government of India.

(g) "Instructions to Consultants" means the document, which provides Consultants with all information needed to prepare their proposals.

(h) "Personnel" means professionals and support staff provided by the Consultant or by any Sub-consultant and assigned to perform the Services or any part thereof.

(i) "Proposal" means the Technical Proposal and the Financial Proposal.

(j) "RFP" means the Request for Proposal prepared by the Employer for the selection of Consultants.

(k) "Assignment/Job" means the work to be performed by the Consultant pursuant to the Contract.

(l) "Sub-Consultant" means any person or entity with whom the Consultant subcontracts any part of the Assignment/job.

(m) "Terms of Reference" (TOR) means the document included in the RFP as Section 2 which explains the objectives, scope of work, activities, tasks to be performed, respective

responsibilities of the Employer and the Consultant, and expected results and deliverables of the Assignments/job.

2.2 The applicant will be required to submit their financial offer strictly on the basis of terms of reference provided in this RFP document without attaching any counter conditions and certificate to this effect has to be furnished.

2.3 The applicant has to submit a non-refundable bid processing fee of Rs. 10,000/- along with the proposal through a DD/Banker's cheque drawn in favour of Indian Ports Association, New Delhi.

2.4 In case of any dispute arising while performing the services as described in this RFP document, the decision of the Employer will be final.

2.5 For applicants who are subsidiaries of foreign companies (Equity of Foreign entity more than 50%) and if their turnover are claimed, the IPA shall insist for a letter from the Parent Company to make their services available to Indian Company as required and demanded by IPA without any extra financial liabilities.

2.6 The applicant must be a well-established consultant in India for more than 5 years having experience in conceptualizing/ planning/engineering/design/proof-checking, preparing feasibility reports, design and estimation, preparation of architectural / structural drawings, preparation of tender documents, evaluation of tenders, comprehensive project management with quality and quantity survey, preparation of bills etc. of the work (s) in the respective category.

2.7 The applicant should have regular set up of a team of experienced professional like Highway Design Engineers/transport planner etc. having sufficient experience.

2.8 The applicant shall be able to hire the services of some other suitable consulting agencies for specialized jobs.

2.9 When two or more firms are forming a consortium to participate in RFP then one firm shall become the lead member of the consortium and shall submit an authorization letter for other members of consortium. The evaluation will be conducted on the basis of document submitted by consortium as a whole against evaluation criteria. However, no applicant applying individually or as a member of a consortium, as the case may be, can be member of another applicant.

2.10 Even though applicants satisfy the necessary requirements they are subject to disqualification if they have:

- Made untrue or false representation in the form, statements required in the application document.
- Records of poor performance such as abandoning work, not properly completing contract, financial failures or delayed completion.

2.11 It may be noted, Project shall be allotted to an Applicant consultants commensurate to their capabilities and capacities as assessed by Employer. No representation in this respect will be entertained.

2.12 For selection of consultant, proposals received will be evaluated based on the details furnished and minimum criteria specified by the Employer in this document.

2.13 **Bid Undertaking:** Applicant has to furnish following undertaking along with bid.

"I/we certify that in the last three years, we/any of the consortium members have neither failed to perform on any contract, as evidenced by imposition of Penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award, nor been expelled from any project or contract by any public authority nor have had any contract terminated by any public authority for breach on our part".

2.14 Bid Security

A Bid Security in the form of a Bank Guarantee or Demand Draft, from a scheduled Indian Bank in favour of 'Indian Port Association' valid for 180 days from the last date of submission, payable at New Delhi, for the sum of Rs. 1,00,000/- (Rupees One Lakh Only) will be required to be submitted by each Applicant.

The Bank Guarantee or Demand Draft in original shall be placed in an envelope and attached with the envelope containing the Technical proposal marked as "Technical Proposal - Preparation of Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port". Envelope containing financial proposal should be marked as "Financial Proposal - Preparation of Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port" and "to be opened only in presence of Evaluation Committee". Both the envelopes i.e. envelope containing Technical Proposal and Financial Proposal shall be placed in an outer envelope and marked "Not to be opened before 16-05-2016 and opened only in presence of Evaluation Committee".

Bids received without the specified Bid Security shall be summarily rejected. The envelope containing bid security should be marked as Bid Security.

IPA shall not be liable to pay any interest on bid security deposits. Bid security of unsuccessful applicants will be returned, without any interest, as promptly as possible after signing the contract with Successful Applicant or when the selection process is cancelled by Employer.

IPA shall be entitled to forfeit and appropriate the bid security as mutually agreed loss and damage payable to IPA in regard to the RFP without prejudice to IPA's any other right or remedy under the following conditions:

1) If any Applicant withdraws its proposal during the period of its validity as specified in this RFP and as extended by the applicant from time to time, or

2) In the case of a Successful Applicant, if the applicant fails to sign the agreement within the specified time limit, and/or fails to submit the inception report within the specified time, or

3) If the Applicant commits any breach of terms of this RFP or is found to have made a false representation to IPA.

For the Successful Applicant the bid security will be retained by IPA till the submission of the Final Report. After selection of the Successful Applicant the Bid Security will be converted into Performance Guarantee and it will be released 180 days after the approval of the final report.

2.15 Right to accept or reject any or all proposals

Notwithstanding anything contained in this document, the IPA reserves the right to accept or reject any Proposal and to annul the Selection Process and reject all Proposals, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons thereof.

The Employer reserves the right to reject any Proposal if: (a) at any time, a material misrepresentation is made or discovered, or (b) the Applicant does not provide, within the time specified by the Employer, the supplemental information sought by the Employer for evaluation of the Proposal. Misrepresentation/ improper response by the Applicant may lead to the disqualification of the Applicant. If the Applicant is the Lead Member of a consortium, then the entire consortium may be disqualified / rejected. If such disqualification/ rejections occurs after the proposals have been opened and the highest ranking Applicant gets disqualified / rejected, then the Employer reserves the right to consider the next best Applicant, or take any other measure as may be deemed fit in the sole discretion of the Employer, including annulment of the Selection Process.

2.16 Language

The Proposal with all accompanying documents (as specified in this RFP document) and all communications in relation to or concerning the Selection Process shall be in English language and strictly on the forms provided in this document. No supporting document or printed literature shall be submitted with the Proposal unless specifically asked for and in case any of these Documents is in another language, it must be accompanied by an accurate translation of the relevant passages in English, in which case, for all purposes of interpretation of the Proposal, the translation in English shall prevail.

2.17 Evaluation processes

2.17.1 The proposals would be evaluated by a Committee constituted by Employer. A three-stage procedure will be adopted in evaluating the proposal. In the first stage- Proof of Eligibility, it will be examined as to Whether:

i) The proposal is accompanied by Document fee

ii) The Proposal is accompanied by Bid Security of required value and of validity equal or more than the minimum required validity

iii) The firms(s) have required experience

iv) The firms(s) have required turnover

v) The documents are properly signed by the authorized signatories and whether the proposal contains proper Power of Attorney (POA).

vi) The proposals have been received on or before the dead line of submission.

vii) In case a Joint Venture/Association of firms, the proposal shall be accompanied by a certified copy of legally binding Memorandum of Understanding (MOU) on a stamp paper of Rs.l00, signed by all firms to the joint venture/Association.

In case answers to any of the above items is 'No' the bid shall be declared as non-responsive and shall not be evaluated further.

A Consultant satisfying the minimum Eligibility Criteria as mentioned in the Data sheet and who had submitted the above mentioned documents shall be declared "pass" in Proof of Eligibility and the Technical Proposals of only those consultants shall be opened and evaluated further.

2.17.2 In the second stage the Technical proposal shall be evaluated as per the detailed evaluation criteria given in Data Sheet.

A proposal securing 75 points shall be declared pass in the evaluation of Technical Proposal. The technical proposal should score at least 75 points out of 100 to be considered for financial evaluation. The CV of the proposed Team Leader should score at least 75 % marks otherwise the entire proposal shall be considered to have failed in the evaluation of Technical Proposals and shall not be considered for opening of Financial Proposals.

2.17.3 Evaluation of Financial Proposal

a) In case for a particular package, only one firm is eligible for opening of Financial Proposals, the Financial Proposal shall not be opened, the bids for that package shall be cancelled and IPA shall invite fresh bids for this package. For financial evaluation, total cost of financial proposal excluding Service Tax shall be considered. Service Tax shall be payable extra.

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

c) In case 2 firms are eligible for opening of Financial proposals ,the procedure as mentioned at Clauses 2.17.3(g), 2.17.4 and, 2.17.5 as mentioned below shall be followed for determining the "most preferred bidder (H-1 bidder)" for this package.

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

For the sake of clarity it is mentioned that if, Financial proposals of 5 Consultants are opened and suppose the values of Financial Proposals quoted by 5 Consultants are as follows— Consultant X-1 quotes Rs. 200 Lakhs, Consultant X-2 quotes Rs. 120 lakhs, Consultant X-3 Quotes Rs 180 lakhs, Consultant X-4 quotes Rs. 190 lakhs and Consultant X-5 quotes Rs. 250 lakhs. Average Quote: Rs. (200+ 120+180+l90+250)/5 =Rs 188 lakhs. So all quotes lying within (+)/(-) 20% of Rs 188 lakhs i.e. quotes which lies in the range of Rs 225.6 Lakhs to Rs 150.4 lakhs shall be considered as "reasonable Financial Proposals". So out of 5 firms whose Financial Proposals were opened, Financial Proposal submitted by only 3 firms namely X-1(Financial Quote of Rs 200 lakhs) , X-3 (Financial Quote of Rs 180 lakhs) and X-4 (Financial Quote of Rs 190 lakhs) shall be considered as "reasonable Financial Proposals" and they shall only be considered for determining the "most preferred bidder (H-1 bidder)" for that particular package . Financial Proposals submitted by X-2 (Financial Quote of Rs 12 lakhs) and X-5 (Financial Quote of Rs 250 lakhs) shall not be considered further.

Thereafter, the most preferred bidder (H-1 bidder) shall be determined using the procedure as given at Clauses 2.17.

e) While determining "reasonable Financial Proposals", if the Financial Proposal of only one Firm comes out as a "reasonable Financial Proposal" and all other Financial Proposals do not turn out to be "reasonable Financial Proposals", the Firm Quoting the "reasonable Financial Proposal" shall be declared as the most preferred bidder (H-1).

f) While determining "reasonable Financial Proposals", if the Financial Proposal of none of the firms is found to be within the range of (+)/(-) 20% of the average Financial quote, bids shall be cancelled and IPA shall invite fresh bids for this package.

g) The lowest financial proposal (FM) will be given a financial score (SF) of 100 points. The financial scores of other proposals will be computed as follows:

SF = l00xFM/F
(SF = Financial Score, FM: Amount of lowest bid, F= Amount of financial proposal converted in the common currency)

2.17.4 Combined evaluation of Technical and Financial Proposals. Proposals will finally be ranked according to their combined technical (ST) and Financial (SF) scores using the weights indicated in the Data Sheet:
S: STXT -|- SFXT
Where,
S: Combined Score,
ST=Technical Score out of 100
SF: Financial Score out of 100
T and f are values of weightage for technical and financial proposals respectively as given in the Data Sheet.

A Consultant with a "particular Team" having the maximum combined score (S) shall be declared as the most preferred bidder (H-l).

2.18 Correspondence with applicant

Given and except as provided in this RFP, the IPA shall not entertain any correspondence with any applicant in relation to acceptance or rejection of any application.

IPA, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time to:

- Suspend and/or cancel the bidding process and/or amend and/or supplement the Bidding process or modify the dates or other terms & conditions relating there to.
- Consult with any applicant in order to receive clarification or further information.
- Select or not to select any applicant and/or to consult with any applicant in order to receive clarification or further information.
- Retain any information and / or evidence submitted to the IPA by, on behalf of, and/or in relation to any applicant and/or.

– Independently verify, disqualify, reject and/or accept any and all submissions or other information and/or evidence submitted by or on behalf of any applicant.

2.19 Fraud and corrupt practices

The Applicants and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Selection' Process. Notwithstanding anything to the contrary contained in this document, the IPA (IPA) shall reject a Proposal without being liable in any manner whatsoever to the Applicant, if it determines that the Applicant has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice (collectively the "Prohibited Practices") in the Selection Process. In such an event, the IPA shall, without prejudice to its any other rights or remedies, forfeit and appropriate the Bid Security or Performance Security, as the case may be, as 'mutually agreed genuine pre-estimated compensation and damages payable to the IPA for, inter alia, time, cost and effort of the IPA, in regard to this document, including consideration and evaluation of such Applicant's Proposal.

2.19.1 Without prejudice to the rights of IPA herein above and the rights and remedies which the IPA may have under the LOA or the Agreement, if an Applicant, as the case may be, is found by the IPA to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Selection Process, or after the issue of the LOA or the execution of the Agreement, such Applicant shall not be eligible to participate in any tender or RFP issued by the IPA during a period of three years from the date such Applicant, as the case may be, is found by the IPA to have directly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as the case may be.

2.19.2 For the purposes of this Section, the following terms shall have the meaning hereinafter respectively assigned to them: (a) "corrupt practice" means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of any person connected with the Selection Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the IPA who is or has been associated in any manner, directly or indirectly with the Selection Process or the LOA or has dealt with matters concerning the Agreement or arising therefrom, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the IPA, shall be deemed to constitute influencing the actions of a person connected with the Selection Process); or (ii) save as provided herein, engaging in any manner whatsoever, whether during the Selection Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Agreement, who at any time has been or is a legal, financial or technical· consultant adviser of the IPA in relation to any matter concerning the Project; (b) "fraudulent practice" means a misrepresentation or omission of facts or disclosure of incomplete facts, in order to influence the Selection Process; (c) "coercive practice" means impairing or harming or threatening to impair or harm, directly or indirectly, any persons or property to influence any person's participation or action in the Selection Process; (d) "undesirable practice" means (i) establishing contact with any person connected with or employed or engaged by the IPA with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Selection Process; or (ii) having a Conflict of Interest; and (e) "restrictive practice" means forming a cartel or arriving at any

understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Selection Process.

2.20 Ownership of document and copyright

All the study outputs including primary data shall be compiled, classified and submitted by the consultant to the IPA in hard and soft copies. The study outputs shall remain the property of the IPA and shall not be used for any purpose other than that intended under these terms of reference without the permission of the IPA.

2.21 Coordination with Chennai Port Trust and NHAI

Although the RFP for Development of dedicated container corridor to Chennai Port in the State of Tamil Nadu is being issued by Indian Port Association but for all work related matters the selected consultant has to work in tandem with Chennai Port Trust and NHAI, local PIU/ any local office of NHAI. The Department will assist the consultant in getting all the relevant information pertaining to the project on best effort basis but it will primarily be the responsibility of the consultant to arrange the information necessary for the implementation of this project.

2.22 Team for the Project

The team proposed at the time of empanelment has to be employed on this project and if the consultant wants any replacement in that case they have to take the permission of MD IPA. For the same, the CV of the replacement has to be provided along with a written request citing reason for replacement. The person who is the replacement has to be equal or better qualified than the person replaced.

3. DATA SHEET

INFORMATION TO CONSULTANTS

Sl. No.	
1	The name of IPA is: "Indian Port Association". The method of selection is Quality and Cost - Based Selection (QCBS). The weights given to technical and financial proposals are Technical =70% Financial =30%
2	Objective and description of the assignment: The main objective of this assignment is to conduct: preparation of Detailed Project Report for **Development of Dedicated Container Corridor to NHAI road at Chennai Port .** The detailed description of services is mentioned in the Terms of Reference.
3 3.1	**EVALUATION CRITERIA** **First Stage Evaluation – Minimum Eligibility Requirement: (also refer Annexure – I)** i) The consultancy firm should have successfully rendered the services for conducting a feasibility report and / or Detailed Project Reports for the strengthening and/or Detailed Engineering Designs for at least five 4-lane Highway projects (NH/SH) for a length of not less than 10 km each including concrete road of cumulative length in all these five projects not less than 15km satisfactorily in the last 5 years. ii) The consultancy firm should have successfully rendered the services for conducting a feasibility report and / or Detailed Project Reports and/or Detailed Engineering Designs for any two of the major structures such as Grade separators / Elevated Corridors / Bridges / ROBs / RUBs of length not less than 60m each in the last 5 years. iii) The required average annual turnover during the last 5 financial years should be at least Rs. 5.00 crores per annum. iv) The Bidder shall furnish audited financial statements for the last five years, audited by a Chartered Accountant, which include Profit and Loss Account, Balance Sheet and Certificates regarding contingent liabilities. • The sole applicant shall fulfill all the requirements as above • In case of JV, the Lead Partner should fulfill at least 75% of all eligibility requirements and the other partner shall fulfill at least 50% of all eligibility requirements. • If the applicant firm has/have prepared the DPR/FS projects solely on its own, 100%weightage shall be given. If the applicant firm have prepared the DPR/FS projects as a lead partner in a JV, 75% weightage shall be given. If the applicant firm have prepared the DPR projects as the other partner (not lead partner) in a JV 50% weightage shall be given. If the applicant firm has prepared the DPR/FS projects as an associate, 25% weightage shall be given.

3.2 **Second Stage Evaluation: (also refer Annexure – I)**

3.2.1 Evaluation Criteria for Technical Proposal

1. Firms Relevant Experience in last 5 years - 20 Points as per **Table A (also refer Annexure-I)**

Table A

Sl. No.	Description	Eligible Project	Marking	Max Marks
1	Specific Experience of DPR Consultancy/ Feasibility Study related to the Assignment in the last 5 years (from 2011-12 onwards)	Aggregate Length of DPR/ Feasibility Study of 4/6 lane Projects with each project of minimum length 50km	- Aggregate Length of 50 km with each project of minimum length 10km – (Point-5) - Aggregate Length between 50km and 100 km with each project of minimum length 10km (Point-7) - Aggregate Length more than 100 km with each project of minimum length 10km (Point-8)	8
2		Aggregate Length of Concrete Road covered in DPR/ Feasibility Study of 4/6 lane Project	- Aggregate Length of 15km – (Point-3) - Aggregate Length greater than 15 km (Point-4)	4
3		DPR of Grade separators / Elevated Corridors / Bridges / ROBs / RUBs having a length of more than 60m	2 Structures (Point – 1) 3 Structures (Point – 2) 4 Structures (Point – 3) More than 4 Structures (Point – 4)	4
4	Turn Over of Firm	Annual Average Turn Over for the last 5 years (For Sole Bidder/Lead Partner in Association/Combined value of JV Partners in JV)	-Less than INR 5 cr (Points- 0) - From INR 5 cr to less than INR 10 cr (Points- 3) - More than INR 10 cr (Points- 4)	4
	Total			**20**

2. Adequacy of Approach and Methodology – 5 Points as per **Table B (also refer Annexure-I)**

Sl. No.	Description	Max points
1	Site Appreciation	2
2	Comments on TOR	1
3	Team Composition and Task assignment	1
4	Methodology	1
	Total Points	**5**
	Rating given below shall be applicable on all above : Below Average (50 %) Average (75%) Good (90%) Excellent (100%)	

3. Material testing, Survey& Investigation, Equipment and Software proposed to be used – 5 Points as per **Table C. (also Refer Annexure-I)**

Table C

Sl. No.	Description	Breakup of Points	Max points
a)	Availability of in-house material testing facility		1
	Available	*1*	
	Not available/outsourced	*0.5*	
b)	Field investigation facilities		2
	Available	*2*	
	Not available/outsourced	*1*	
c)	Office Equipment and software		2
	Available	*2*	
	Not available/outsourced	*1*	
	Total		**5**

4. Qualification and competence of the key staff for adequacy of the Assignment

A) The max points for various key staffs are as in **Table D (also refer Annexure –I):**

Table D

Sl. No.	Key Personnel	Max Points
1	Team Leader	15
2	Bridge Engineer	12
3	Traffic-cum-Safety Expert	10
4	Pavement & Material Engineer	10
5	Quantity Surveyor	8
6	Financial Expert	8
7	Environment Specialist	4
8	Social Expert	3
	Total	**70**

B) The weightage points given to evaluation sub-criteria for qualifications and competence of Key staff are as under **(also refer Annexure –I)**:

1. General Qualification – 25% **(Refer Table E)**
2. Relevant Experience and Adequacy for the Project – 70%**(Refer Table E)**
3. Employment with the Firm – 5%**(Refer Table E)**

Total – 100%

Table E

Sl. No.	Description	Break up weightage (in %)	Max weightage (in %)
1	Essential Qualification		25
2	Relevant Experience and Adequacy for the Project		70
	(i) Total Professional experience	25 (max)	
	(ii) Experience in Projects with Similar capacity	25 (max)	
	(iii) Experience in Similar Capacity in Highway Projects ((4/6	20 (max)	

	laning of NH/SH/Expressways)		
3	Employment with the Firm		5
	Less than 1 year	0	
	1 year to 2 years	3	
	>2 years	5	
Total			**100**

5. In case Feasibility Study is part of DPR services, the experience shall be counted in DPR only.

6. In case Bridge is included as part of DPR of Highway the experience will be counted both in (a) and in (b).

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

3.2.2 Detailed evaluation criteria which is to be used for evaluation of technical bids is as indicated at **Annexure - I**.
The Consultant should carryout self-evaluation based on the evaluation criteria Annexure - I. While submitting the self-evaluation along with bid, Consultant shall make references to the documents which have been relied upon in his self-evaluation. Result of technical evaluation shall be made available on the website giving opportunity to the bidders to respond within 7 days in case they have any objection.

3.3 **Third stage - Evaluation of Financial proposal**

3.3.1 Financial Proposals of all Qualified Consultants in accordance with clause 2.17 of Instruction to the Consultants/Applicants shall be opened.
The consultancy services will be awarded to the consultant scoring highest marks in combined evaluation of Technical and Financial proposals in accordance with clause 2.17 of Instruction to the Consultants/Applicants. The Factors are:
The weight given to Technical Proposal (T) = 0.70
The weight given to Financial Proposal(f)= 0.30
3.3.2The common currency is "Indian Rupee".
Fixed Exchange rate for conversion (for bid evaluation purpose only):
1US $=Rs. 65.00.
3.3.3 Commencement of Assignment (Date, Location): The Consultants shall commence the services within fifteen days of the date of effectiveness of the contract at locations as required for the project stretch stated in TOR.

4
- Clarifications must be requested in writing before 11:00 AM on 03-05-2016.
- Pre-Bid meeting will be held at 02:00 PM on 03-05-2016.

The address for requesting clarifications and Pre-Bid meeting is:

Managing Director,
Indian Port Association,
1st Floor, South Tower, NBCC Place,
B.P.Marg, Lodi Road,
New Delhi – 110 003
Ph: 011 – 24369061; Fax No: 011-24365866
EmailID: ipa@nic.in

5	The proposal of the consultant should be valid for 180 days from the last date of submission. Duration of project**: 6 Month**
6	**The date of submission of proposal is: 16-05-2016 (before 3.00 PM IST)** The address for submission of proposal is: Managing Director, Indian Port Association, 1st Floor, South Tower, NBCC Place, B.P.Marg, Lodi Road, New Delhi – 110 003 Ph: 011 – 24369061; Fax No: 011-24365866 **The Applicant to state cost in *Indian Rupees* only.** Applicant must submit : ■ Technical proposal: Two copies (one original + one copy) and one soft copy (PDF Format). ■ Financial proposal: One copy only in sealed envelopes with name of the Project written on the sealed envelope. This is to be placed in a sealed outer envelope which also contains envelope for Bid Security. The outer envelope and envelope containing financial proposal should be marked in bold capital letters as **FINANCIAL PROPOSAL: TO BE OPENED ONLY IN PRESENCE OF EVALUATION COMMITTEE** and "**Not to be opened before 16-05-2016**".

4. TERMS OF REFERENCE

1. GENERAL

1.1 To facilitate easy movement of container cargo and thereby attract more containers / cargo to the Chennai port, it is proposed to take up development of a dedicated Road facilities for easy and effective container / cargo evacuation from the Port directly to NHAI Road grid and form a 8 lane concrete road to reach out by avoiding inter Port activities and create a dedicated container corridor.
The proposed concrete road widening is in stretches commencing from

i. North west corner of IOCL fore shore terminal–B (near Gate no.1) to shunting goose neck point;

ii. From shunting goose neck point to existing Loco shed; and

iii. From existing loco shed to CISF crime office building. The road widening will be about 18m for adding another 4 lane with central median. All the above stretches will be provided with cable chase and storm water drain arrangements. Further, from EFLT service station to gate no 6, it is proposed to provide 36 m wide eight lane road with 1.5m wide foot path on both sides and storm water drain.

It is also proposed a four lane Road over-bridge (for approximately 900 m length) for a width of about 18 m for crossing the existing railway lines at gate no. 4 and upcoming additional railway track lines near CISF crime office building.

As of now, Chennai Port has two BOT Container Terminal Operators viz., CCTL & CITPL and creation of a multi cargo terminal at JD east is underway and vehicle volumes are increasing in the existing road traffic. Hence, the proposal has been formulated under the Sagarmala scheme to augment the cargo handling capacity by developing necessary infrastructure facility.

1.2 Ministry of Shipping (Authority) through Indian Ports Association (IPA) seeks the services of qualified firms for preparing a Detailed Project Report for **Development of development of Green channel for container evacuation from Chennai Port** on Annuity Hybrid / EPC basis. The approximate length of the connectivity is **3 km** based on the preliminary work undertaken by Chennai Port. Preliminary work for fixing of alignment for the same has been completed through Satellite imageries and Digital Terrain Model and through limited actual ground reconnaissance and survey and the same would be further elaborated in the Detailed Project Report. The Authority has accordingly decided to take up the preparation of Detailed Project Report for the Project by engaging the services of consultants of repute who have experience and exposure in the field of highway development and operation. The Terms of Reference (the "TOR") for this assignment are specified below.

1.3 The Consultant shall be guided in its assignment by the Model Concession Agreement and the Manual of Specifications and Standards for Highways through Public Private Partnership. The specification and standards applicable for the Highways shall be prepared by the Consultant duly taking into consideration of "Codes for Highways" published by IRC.

1.4 The Consultant shall be responsible for preparing the Schedules A, B, C, D and H of the Concession Agreement and for bringing out any special feature or requirement of the Project Highway referred to in the Concession Agreement or the Manual. The details and

particulars to be specified in the Schedules shall be duly addressed and incorporated therein, in accordance with the provisions of the Manual

1.5 The Consultant shall assist the Employer/Stakeholders and the Legal Adviser its consultant and by furnishing clarifications as required for the financial appraisal and legal scrutiny of the Project Highway and Bid Documents.

1.6 The Consultant shall also participate in the pre-bid conference with the Bidders of the Project Highway and assist the Employer/Stakeholders in clarifying the technical aspects arising from the Bid Documents including the Detailed Project Report.

2. OBJECTIVE

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

(i) enhanced safety and level of service for the road users;

(ii) superior operation and maintenance enabling enhanced operational efficiency of the Project Highway;

(iii) minimal adverse impact on the local population and road users due to road construction;

(iv) minimal adverse impact on environment; and

(v) Minimal acquisition of land.

3. SCOPE OF SERVICES

3.1 The highway alignment has been fixed after considering various alternative alignments and their relative advantages and disadvantages. However, the consultant can suggest alternatives provided it is cost efficient and it relieves the financial burden on the Employer. Based on the finalized alignment, the Consultant shall furnish land acquisition details as per revenue records/maps for further processing of land acquisition. Consultant shall also submit 3a, 3A and 3D draft notification for acquisition of land.

3.2 If the EMPLOYER decides to collect toll from the project road, then the Consultant shall study the possible locations and design of toll plaza. Wayside amenities required on tolled road shall also be planned. The local and slow traffic may need segregation from the traffic and provision of service roads.

3.3 The general scope of services is given in the sections that follow. However, the entire scope of services would, inter-alia, include the items mentioned in the Letter of Invitation and the TOR. The Consultant will also make suitable proposals for development of the project road to 4-lane configuration and as required at the appropriate time to maintain the level of service over the design period. The Consultants shall prepare documents for EPC/ Hybrid Annuity contracts for DPR assignment.

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

3.5 Environmental Impact Assessment, Environmental Management Plan and Rehabilitation and Resettlement Studies shall be carried out by the Consultant meeting the requirements

of the lending agencies like ADB/World Bank/JICA, etc.

3.6 Wherever required, consultant will liaise with concerned authorities and arrange all clarifications. On behalf of the EMPLOYER, approval of all drawings including GAD and detail engineering drawings will be taken by the consultant from the Railways. However, if railways require proof checking of the drawings prepared by the consultants, the same will be got done by EMPLOYER and payment to the proof consultant shall be made by EMPLOYER directly. Consultant will also obtain 'NO Objection Certificate' from Ministry of Environment and Forest and also incorporate the estimates for shifting of utilities of all types involved from concerned local authorities in the DPR. Consultant is also required to prepare all Land Acquisition papers (i.e. all necessary schedule and draft 3a, 3A, and 3D, 3G notification as per L.A. act) for acquisition of land either under NH Act or State Act. Any survey, investigation, documentation required for land acquisition work/notification will be undertaken by consultants only.

3.7 The DPR consultant will prepare the Bid Documents.

3.8 Consultant shall obtain all types of necessary clearances required for implementation of the project on the ground from the concerned agencies. The EMPLOYER shall provide the necessary supporting letters and official fees as per the demand note issued by such concerned agencies from whom the clearances are being sought to enable implementation.

3.9 The consultant shall prepare separate documents for Hybrid Annuity as well as EPC contracts at Draft DPR stage. The studies for financing options like Hybrid Annuity and EPC will be undertaken in draft DPR stage.

3.10 The Consultant shall be guided in its assignment by the Model Agreement for Engineering, Procurement and Constructions (EPC) / Model Concession Agreement for Hybrid Annuity Project and the Manual of Specifications and Standards for four lane of highways through Public Private Partnership (PPP) published by IRC (IRC:SP:84-2014) (the "Manual") along with relevant IRC codes for design of long bridges.

3.11 The consultant shall prepare the bid documents including required schedules (as mentioned above) as per EPC/ Hybrid Annuity documents. For that it is suggested that consultant should also go through the EPC documents of ministry before bidding the project. The Consultant shall assist the EMPLOYER and its Financial Consultant and the Legal Adviser by furnishing clarifications as required for the financial appraisal and legal scrutiny of the Project Highway and Bid Documents.

4. General Scope of Services

4.1 Primary Tasks

General Scope of Services shall cover but be not limited to the following major tasks:

i. review of all available reports and published information about the project road and the project influence area;

ii. Environmental and social impact assessment, including such as related to cultural properties, natural habitats, involuntary resettlement etc.;

Public consultation, including consultation with Communities located along the road, NGOs working in the area, other stake-holders and relevant Government Departments at all the different stages of assignment (such as inception stage, feasibility stage, preliminary design stage and once final designs are concretized);

iii. detailed reconnaissance;

iv. identification of possible improvements in the existing alignment and bypassing congested locations with alternatives, evaluation of different alternatives comparison on techno-

economic and other considerations and recommendations regarding most appropriate option;

v. traffic studies including traffic surveys and Axle load survey and demand forecasting for next thirty years;

vi. Wherever project road follows any existing road, inventory and condition surveys of the same;

vii. Wherever project road follows any existing road, inventory and condition surveys for existing bridges, cross-drainage structures, other Structures, river Bank training/Protection works and drainage provisions;

viii. detailed topographic surveys using Total Stations and DGPS;

ix. Wherever project road follows any existing road, Pavement investigations of the same;

x. sub-grade characteristics and strength: investigation of required sub-grade and sub-soil characteristics and strength for road and embankment design and sub soil investigation;

xi. identification of sources of construction materials;

xii. detailed design of road, its x-sections, horizontal and vertical alignment and design of embankment of height more than 6m and also in poor soil conditions and where density consideration require, even lesser height embankment. Detailed design of structures preparation of GAD and construction drawings and cross-drainage structures and underpasses etc.

xiii. identification of the type and the design of intersections;

xiv. design of complete drainage system and disposal point for storm water

xv. value analysis/value engineering and project costing;

xvi. economic and financial analyses;

xvii. contract packaging and implementation schedule.

xviii. strip plan indicating the scheme for carriageway widening, location of all existing utility services (both over- and underground) and the scheme for their relocation, trees to be felled, transplanted and planted and land acquisition requirements including schedule for LA: reports documents and drawings arrangement of estimates for cutting/transplanting of trees and shifting of utilities from the concerned department; xix to find out financial viability of project for implementation and suggest the preferred mode on which the project is to be taken up.

xix. preparation of detailed project report, cost estimate, approved for construction drawings, rate analysis, detailed bill of quantities, bid documents for execution of civil works through budgeting resources.

xx. Design of toll plaza and identification of their numbers and location and office cum residential complex including working drawings

xxi. Design of weighing stations, parking areas and rest areas.

xxii. Any other user oriented facility enroute toll facility.

xxiii. Tie-in of on-going/sanctioned works of MORT&H/NHAI/other agencies.

xxiv. Preparation of social plans for the project affected people as per policy of the lending agencies/Government of India R&R Policy

4.2 While carrying out the field studies, investigations and design, the development plans being implemented or proposed for future implementation by the local bodies, should be taken into account. Such aspect should be clearly brought out in the reports and drawings.

4.3 If the EMPLOYER decides to collect toll from the project road, the consultant shall study the possible locations and design of toll plaza, wayside amenities required and arboriculture along the highway shall also be planned.

4.4 The local and slow traffic may need segregation from the main traffic and provision of service roads and physical barrier including fencing may be considered, wherever necessary to improve efficiency and safety

4.5 Standards and Codes of Practices

(a) All activities related to field studies, design and documentation shall be done as per the latest guidelines/circulars of MoRT&H and relevant publications of the Indian Roads Congress (IRC) and Bureau of Indian Standards (BIS). For aspects not covered by IRC and BIS, international standards practices, may be adopted. The Consultants, upon award of the Contract, may finalise this in consultation with EMPLOYER and reflect the same in the inception report.

(b) All notations, abbreviations and symbols used in the reports, documents and drawings shall be as per IRC:71

4.6 Quality Assurance Plan (QAP)

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

2. It is imperative that the QAP is approved by EMPLOYER before the Consultants start the field work.

4.7 Review of Data and Documents

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

i. Climate;

ii. Road inventory;

iii Road condition, year of original construction, year and type of major maintenance/rehabilitation works;

iv. Condition of bridges and cross-drainage structures;

v. sub-surface and geo-technical data for existing bridges;

vi. Hydrological data, drawings and details of existing bridges;

vii Existing geological maps, catchment area maps, contour plans, etc. for the project area

viii Condition of existing river bank/protection works, if any.

ix. Details of sanctioned/on-going works on the stretch sanctioned by MoRT&H/other agencies for Tie-in purposes

x. survey and evaluation of locally available construction materials;

xi. Historical data on classified traffic volume (preferably for 5 years or more);

xii. origin-destination and commodity movement characteristics; if available;

xiii. Speed and delay characteristics; if available;

xiv. Commodity-wise traffic volume; if available;

xv. Accident statistics; and,

xvi. Vehicle loading behaviour (axle load spectrum), if available.

xvii) Type and location of existing utility services (e.g. Fiber Optical Cable, O/H and U/G Electric, Telephone line, Water mains, Sewer, Trees etc.)

xvi) Environmental setting and social baseline of the project

4.8 Social Analysis

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 labour, land acquisition and resettlement.

4.9 Traffic Surveys

All traffic surveys shall be completed in Feasibility Studies:

4.9.1 Following traffic surveys shall be conducted as a part of the study:

(i) Origin-destination survey of the vehicular traffic at other appropriate locations;

(ii) Classified traffic volume counts for determining actual vehicular traffic flow along the homogeneous sections of the existing route between the end terminal;

(iii) Classified traffic volume counts for determining actual cross traffic flow along the cross roads/intersections together with turning movements;

(iv) Axle load survey the neighbouring National and State Highways and on the present alignment of the road, if any

4.9.2 Classified Traffic Volume Count

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

<table>
<tr><td colspan="3">Motorised Traffic</td><td>Non-Motorised Traffic</td></tr>
<tr><td colspan="3">2-Wheeler</td><td>Bi-Cycle</td></tr>
<tr><td colspan="3">3-Wheeler</td><td>Cycle-Rickshaw</td></tr>
<tr><td colspan="3">Passenger Car</td><td>Animal Drawn Vehicle (ADV)</td></tr>
<tr><td colspan="3">Utility Vehicle (Jeep, Van etc.)</td><td>Hand Cart</td></tr>
<tr><td colspan="3"></td><td>Other Non-Motorised Vehicle</td></tr>
<tr><td rowspan="2">Bus</td><td colspan="2">Mini Bus</td><td rowspan="13"></td></tr>
<tr><td colspan="2">Standard Bus</td></tr>
<tr><td rowspan="2">LCV</td><td colspan="2">LCV-Passenger</td></tr>
<tr><td colspan="2">LCV-Freight</td></tr>
<tr><td rowspan="4">Truck</td><td colspan="2">MCV : 2-Axle Rigid Chassis</td></tr>
<tr><td colspan="2">HCV : 3-Axle Rigid Chassis</td></tr>
<tr><td rowspan="2">MAV</td><td>Semi Articulated</td></tr>
<tr><td>Articulated</td></tr>
<tr><td colspan="3">Passenger Car</td></tr>
<tr><td colspan="3">Utility Vehicle (Jeep, Van etc.)</td></tr>
<tr><td colspan="3"></td></tr>
</table>

2. All results shall be presented in tabular and graphical form. The survey data shall be analysed to bring out the hourly and daily variations. The traffic volume count per day shall be averaged to show a weekly Average Daily Traffic (ADT) by vehicle type. The Annual Average Daily Traffic (AADT) shall be worked out by applying seasonal factors.

3. The consultants shall compile the relevant traffic volume data from secondary sources also. The salient features of traffic volume characteristics shall be brought out and variations if any, from the traffic census carried out by the State PWD shall be suitably explained.

4.9.3 Origin-Destination and Commodity Movements Surveys

1. The Consultants shall carry out 1-day (24 hour, both directions) O-D and Commodity Movement Surveys at locations finalised in consultation with EMPLOYER. These will be

essentially required around congested towns to delineate through traffic. The road side interviews shall be on random sample basis and cover all four-wheeled vehicles. The locations of the O-D survey and Commodity Movement surveys shall normally be same as for the classified traffic count stations.

2. The location of origin and destination zones shall be determined in relation to each individual station and the possibility of traffic diversion to the Project Road from/to other road routes.

3. The trip matrices shall be worked out for each vehicle type information on weight for trucks should be summed up by commodity type and the results tabulated, giving total weight and average weight per truck for the various commodity types. The sample size for each vehicle type shall be indicated on the table and also in the graphical representations.

4. The data derived from surveys shall also be analysed to bring out the lead and load characteristics and desire line diagrams.

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

6. The commodity movement data should be duly taken into consideration while making the traffic demand estimates

4.9.4 Axle Load Surveys

1) Axle load surveys in both directions shall be carried out on neighboring National and State Highways or at suitable location(s) in the project road stretch on a random sample basis normally for trucks only (both empty and loaded trucks) for 2 normal days - (24 hours) at special count stations to be finalised in consultation with EMPLOYER. However, a few buses may be weighed in order to get an idea about their loading behaviour. While selecting the location(s) of axle load survey station(s), the locations of existing bridges with load restrictions, if any, should be taken into account and such sites should be avoided. The survey shall capture sufficient data as per the guidelines stipulated in IRC: 58 – 2015 (as may be necessary if proposed pavement is of rigid type).

2) The axle load surveys shall normally be done using axle load pads or other sophisticated instruments. The location(s) of count station(s) and the survey methodology including the data formats and the instrument type to be used shall be finalised before taking up the axle load surveys.

3) The axle load data should be collected axle configuration-wise. The number of equivalent standard axles per truck shall be calculated on the basis of results obtained. The results of the survey should bring out the VDF for each truck type (axle configuration, if the calculated VDF is found to be below the national average, then national average shall be used. Furthermore, the data from axle load surveys should be

analysed to bring out the Gross Vehicle Weight (GVW)and Single Axle Load (SAL) Distributions by truck type (axle configuration).

4) If the project alignment has any existing bridge, then the Consultant shall ascertain from local enquiries about the exceptional live loads that have used the highway in the past in order to assess the suitability of existing bridges to carry such loads.

4.9.5 Traffic Demand Estimate

1. The consultants shall make traffic demand estimates and establish possible traffic growth rates in respect of all categories of vehicles, taking into account the past trends, annual population and real per capita growth rate, elasticity of transport demand in relation to income and estimated annual production increase. The other aspects including socio-economic development plans and the land use patterns of the region having impact on the traffic growth, the projections of vehicle manufacturing industry in the country, development plans for the other modes of transport, O-D and commodity movement behaviour should also be taken into account while working out the traffic demand estimates.

2. The values of elasticity of transport demand shall be based on the prevailing practices in the country. The Consultants shall give complete background including references for selecting the value of transport demand elasticity.

3. It is envisaged that the 4-laning of the project road sections covered under this TOR would be completed and opened to traffic after 3 years. The traffic demand estimates shall be done for a further period of 30 years from completion of four lane. The demand estimates shall be done assuming three scenarios, namely, optimistic, pessimistic and most likely traffic growth. The growth factors shall be worked out for five-yearly intervals.

4. Traffic projections should be based on sound and proven forecasting techniques. In case traffic demand estimated is to be made on the basis of a model, the application of the model in the similar situation with the validation of the results should be established. The traffic projections should also bring out the possible impact of implementation of any competing facility in the near future. The demand estimates should also take into account the freight and passenger traffic along the major corridors that may interconnect with the project. Impact of toll charges on the traffic estimates should be estimated

5. The methodology for traffic demand estimates described in the preceding paragraphs is for normal traffic only. In addition to the estimates for normal The methodology for traffic demand estimates described in the preceding paragraphs is for normal traffic only. In addition to the estimates for normal.

6. The traffic forecasts shall also be made for both diverted and generated traffic.

7. Overall traffic forecast thus made shall form the basis for the design of each pavement type and other facilities/ancillary works.

4.10 Engineering surveys and investigations

4.10.1. Reconnaissance and Alignment

1. The Consultants should make an in-depth study of the available land width (ROW), topographic maps, satellite imageries and air photographs of the project area, 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. Mobile LIDAR technology or any other equivalent technology shall be used for timely and more survey accuracy.

2. The detailed ground reconnaissance may be taken up immediately after the study of maps and other data. The primary tasks to be accomplished during the reconnaissance surveys include;

    i. Topographical features of the area.
    ii. Typical physical features along the proposed ROW i.e. land use pattern.
    iii. Possible alignment alternatives, vis-a-vis, scheme for the construction of additional lanes parallel to the existing road.
    iv. Assess the requirement of ROBs/Flyovers and via-duct for pedestrian crossings with possible alignment alternatives;
    v. Preliminary identification of improvement requirements including treatments and measures needed for the cross-roads;
    vi. Traffic pattern and preliminary identification of traffic homogenous links;
    vii. Sections through congested areas;
    viii. Wherever project road follows any existing road, Inventory of major aspects including land width, terrain, pavement type, carriageway type, bridges and structures (type, size and location), intersections(type, cross-road category, location) urban areas (location, extent), geologically sensitive areas, environmental features:
    ix. Critical areas requiring detailed investigations; and,
    x. Requirements for carrying out supplementary investigations.
    xi. soil (textural classifications) and drainage conditions
    xii. type and extent of existing utility services along the alignment (within ROW).
    xiii. Typical physical features along the approach roads
    xiv. Possible bridge locations, land acquisition problems, nature of crossings, likely length of approaches and bridge, firmness of banks, suitability of alignment of approach roads

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

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

5. The data obtained from the reconnaissance surveys should be compiled in the tabular as well as graphical (chart) form indicating the major physical features and the proposed widening scheme for EMPLOYER's comments. The data and the charts should also accompany the rationale for the selection of traffic survey stations.

4.10.2. Topographic Surveys:

1. The basic objective of the topographic survey would be to capture the essential ground features along the alignment in order to consider improvements and for working out improvements, rehabilitation and upgrading costs. The detailed topographic surveys should normally be taken up after the completion of reconnaissance surveys.
2. The carrying out of topographic surveys will be one of the most important and crucial field tasks under the project. The detailed field surveys shall be carried out using high precision instruments i.e. TOTAL Station and Differential GPS (DGPC). The data from the topographic surveys shall be available in (x, y, z) format for use in a sophisticated digital terrain model (DTM). The Consultants would be fully responsible for any inaccuracy in surveys.
3. The detailed field surveys would essentially include the following activities:

    i. Topographic Surveys along the Right of Way (ROW): Running a continuous open Traverse along the existing road and realignments, wherever required, and fixation of all cardinal points such as horizontal points (HIP's), intersection centre points and transit points etc. and properly referencing the same with a pair of reference pillars fixed on either side of the centre-line at safe places within the ROW.
    ii. The detailed field surveys would essentially include the topographic surveys along the proposed location of bridge and alignment of approach road.
    iii. The detailed topographic surveys should be carried out along the approach roads alignment and location of bridge approved by EMPLOYER.
    iv. Collection of details for all features such as structures (bridges, culverts etc.) utilities, existing roads, electric and telephone installations (both O/H as well as underground), huts, buildings, fencing and trees (with girth greater than 0.3metre) oil and gas lines etc. falling within the extent of survey.

4. The width of survey corridor will generally be as given under:
    i. The width of the survey corridor should 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 a minimum of 30 m beyond either side of the centre line of the proposed divided carriageway or land boundary whichever is more.
    ii. In case the reconnaissance survey reveals the need for bypassing the congested locations, the traverse lines would be run along the possible alignments in order to identify and select the most suitable alignment for the bypass. The detailed topographic surveys should be carried out along the bypass alignment approved by EMPLOYER. At locations where grade separated intersections could be the obvious

choice, the survey area will be suitably increased. Field notes of the survey should be maintained which would also provide information about traffic, soil, drainage etc.

iii. The width of the surveyed corridor will be widened appropriately where developments and / or encroachments have resulted in a requirement for adjustment in the alignment, or where it is felt that the existing alignment can be improved upon through minor adjustments.

iv. Where existing roads cross the alignments, the survey will extend a minimum of100m either side of the road centre line and will be of sufficient width to allow improvements, including at grade intersection to be designed.

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

i. Reference Pillar and Bench Mark/Reference pillar of size 15 cm X 15 cm X 45cm shall be cast in RCC of grade M 15 with a nail fixed in the Centre of the top surface. The reference pillar shall be embedded in concrete upto a depth of 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 Bench Mark Pillar coincides with Reference Pillar, only one of the two need be provided.

ii. Establishing Bench marks at site connected to GTS Bench marks at an interval of 250 meters on Bench mark pillar made of RCC as mentioned above with RL and BM No. marked on it with red paint.

iii. **Boundary Pillars**- Wherever there is a proposal of realignment of the existing Highway and/or construction of New Bypasses; Consultant shall fix boundary pillars along the proposed alignment on the extreme boundary on either side of the project Highway at 50 m interval.

4.10.3. Longitudinal and Cross-Sections

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

ii. Longitudinal section levels along final centre line at every 25m interval, at the locations of curve points, small streams, and intersections and at the locations of change in elevation.

iii. Cross sections at every 50m interval in full extent of survey covering sufficient number of spot levels on existing carriageway and adjacent ground for profile correction course and earth work calculations. Cross sections shall be taken at closer interval at curves.

iv. Longitudinal section for cross roads for length adequate for design and quantity estimation purposes.

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

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

4.10.4. Details of utility Services and Other Physical Features

1. The Consultants shall collect details of all important physical features along the alignment. These features affect the project proposals and should normally include buildings and structures, monuments, burial grounds, cremation grounds, places of worship, railway

lines, stream/river/canal, water mains, severs, gas/oil pipes, crossings, trees, plantations, utility services such as electric, and telephone lines (O/H & U/G) and poles, optical fiber cables (OFC) etc. The survey would cover the entire right-of-way of the road on the adequate allowance for possible shifting of the central lines at some of the intersections locations.

2. The information collected during reconnaissance and field surveys shall be shown on a strip plan so that the proposed improvements can be appreciated and the extent of land acquisition with L.A. schedule, utility removals of each type etc. assessed and suitable actions can be initiated. Separate strip plan for each of the services involved shall be prepared for submission to the concerned agency.

4.10.5. Road and Pavement Investigations

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

4.10.6. Road Inventory Surveys (applicable, if any existing road is being used as a part of the project road)

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

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

4.10.7. Pavement Investigation (applicable, if any existing road is being used as a part of the project road)

1 Pavement Composition

i. The data concerning the pavement composition may be already available with the PWD. However, the consultants shall make trial pits to ascertain the pavement composition. The test pit interval will be as per Para 4 below.

ii. For each test pit, the following information shall be recorded:

- *test pit reference (Identification number, location)*
- *pavement composition (material type and thickness); and*
- *sub-grade type (textural classification) and condition (dry, wet)*

2 **Road and Pavement Condition Surveys**

i. Detailed field studies shall be carried out to collect road and pavement surface conditions. The data should generally cover:

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

Pavement Condition

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

Shoulder Condition

10 Paved: Same as for pavement
10 Unpaved: material loss, rut depth and corrugation
10 Edge drop, mm

Embankment Condition

10 general condition; and
10 extent of slope erosion

ii. The objective of the road and pavement condition surveys shall be to identify defects and sections with similar characteristics. All defects shall be systematically referenced, recorded and quantified for the purpose of determining the mode of rehabilitation.

iii. The pavement condition surveys shall be carried out using visual means. Supplemented by actual measurements and in accordance with the widely accepted methodology (AASHTO, IRC, OECD, TRL and World Bank Publications) adapted to meet the study requirements. The measurement of rut depth would be made using standard straight edges.

iv. The shoulder and embankment conditions shall be evaluated by visual means and the existence of distress modes (cuts, erosion marks, failure, drops) and extent (none, moderate, frequent and very frequent) of such distress manifestations would be recorded.

v. For sections with severe distresses, additional investigations as appropriate shall be carried out to determine the cause of such distresses.

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

Drainage Condition

12 *General conditions*

12 Connectivity of drainage turnouts into the natural topography

12 Condition in cut sections

12 Condition at high embankments

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

3 Benkelman Beam Deflection

i. *The Consultants shall carry out structural strength surveys for existing pavements using Benkelman Beam Deflection technique in accordance with the CGRA procedure given in IRC:81-1997 ("Guidelines for Strengthening of Flexible Road Pavements Using Benkelman Beam Deflection Technique").*

ii. *It is suggested that the deflection surveys may be carried out as per the scheme given below:*
   - *mainline testing; and,*
   - *Control section testing.*

iii. *The deflection tests for the mainline shall be carried out at every 500m along the road sections covered under the study. The control section testing shall involve carrying out deflection testing for each 100m long homogenous road segment along the road sections. The selection of homogenous segment shall be based on the data derived from pavement condition surveys. The total length of such homogenous segments shall not be less than 60m per kilometre. The deflection measurements for the control section testing should be at an interval of not more than 10 m.*

iv. *Benkelman Beam Deflection surveys may not be carried out for severely distressed sections of the road warranting reconstruction. The Consultants, immediately upon the award of the contract, shall submit to EMPLOYER the scheme describing the testing schedule including the interval. The testing scheme shall be supported by data from detailed reconnaissance surveys.*

v. *In case, the Consultants wish to use any acceptable method(s) other than Benkelman Beam deflection technique for the evaluation of pavement strength, viz. Falling weight deflectometer method etc details of such methods or innovative features for deflection testing using Benkelman Beam technique along with the methodology for data analysis, interpretation and the use of such data for pavement overlay design purposes using IRC or any other widely used practices, such as AASHTO guidelines, should be got approved by EMPLOYER. The sources of such methods should be properly referenced.*

4.10.8. Subgrade Characteristics and Strength

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

2 The data on soil classification and mechanical characteristics for soils along the existing alignments may already be available with the PWD. The testing scheme is, therefore, proposed as given under:

i. *For the widening (4/-Laning) of existing road within the ROW, the Consultants shall test at least three sub-grade soil samples for each homogenous road segment or three samples for each soil type encountered, whichever is more.*

ii. *For the roads along new alignments, the test pits for sub grade soil shall be @5km or for each soil type, whichever is more. A minimum of three samples should be tested corresponding to each homogenous segment.*

3 The testing for subgrade soil shall include:

i. *in-situ density and moisture content at each test pit*
ii. *field CBR using DCP at each test pit*
iii. *characterisation (grain size and Atterberg limits) at each test pit and,*
iv. *laboratory moisture-density characteristics (modified AASHTO compaction);*
v. *laboratory CBR (unsoaked and 4-day soak compacted at three energy levels)and swell.*

4 For problematic soils, the testing shall be more rigorous. The characteristics with regard to permeability and consolidation shall also be determined for these soils. The frequency of sampling and testing of these soils shall be finalised in consultation with the EMPLOYER officers after the problematic soil types are identified along the road sections.

5 The laboratory for testing of material should be got approved from EMPLOYER before start of work.

4.10.9. Investigations for Bridges and Structure

4.10.9.1 Inventory of Bridges, Culverts and Structures (applicable, if any existing structure is being used as a part of the project road)

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.

4.10.9.2 Hydraulic and Hydrological Investigations

1. The hydrological and hydraulic studies shall be carried out in accordance with IRC Special Publication No. 13 ("Guidelines for the Design of Small Bridges and Culverts") and IRC:5 ("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
2. The consultant shall also collect information on observed maximum depth of scour.
3. 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.
4. The Consultants shall make a desk study of available data on topography(topographic maps, stereoscopic aerial photography), storm duration, rainfall statistics, top soil characteristics, vegetation cover etc. so as to assess the catchment areas and hydraulic parameters for all existing and proposed drainage provisions. The findings of the desk study would be further supplemented and augmented by a reconnaissance along the area. All important hydrological features shall be noted during this field reconnaissance.
5. 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.

6. Conducting Model studies for bridges is not covered in the scope of consultancy services. If Model study is envisaged for any bridge, requirement of the same shall be spelt out in the RPF documents separately indicating scope and time frame of such study. Salient features of the scope of services to be included for model study are given in the supplement- II Terms of Reference.

4.10.9.3 Condition Surveys for Bridges, Culverts and Structures (applicable, if any existing road is being used as a part of the project road)

1 The Consultants shall thoroughly inspect the existing structures and shall prepare a report about their condition including all the parameters given in the Inspection pro-forma of IRC-SP; 35. The condition and structural assessment survey of the bridges/culverts/structures shall be carried out by senior experts of the Consultants.

2 For the bridges identified to be in a distressed condition based upon the visual condition survey, supplementary testing shall be carried out as per IRC-SP: 35 and IRC-SP:40. Selection of tests may be made based on the specific requirement of the structure.

3 The assessment of the load carrying capacity or rating of existing bridges shall be carried out under one or more of the following scenarios:

i. *Design* live load is not known nor is the records and drawings available.

ii. if during the condition assessment survey and supplementary testing the bridge is found to indicate distress of serious nature leading to doubt about structural and / or functional adequacy, and

iii. when the design live load is less than that of the statutory commercial vehicle plying or likely to ply on bridge;

4 The evaluation of the load carrying capacity of the bridge shall be carried out as per IRC-SP: 37 ("Guidelines for Evaluation of Load Carrying Capacity of Bridges"). The analytical and correlation method shall be used for the evaluation of the load carrying capacity as far as possible. When it is not possible to determine the load carrying capacity of the bridge using analytical and correlation method, the same shall be carried out using load testing. The consultant has to exhaust all other methods of evaluation of strength of bridges before recommending to take up load testing of bridges. Road closure for testing if unavoidable shall be arranged by EMPLOYER for limited duration say 12 hrs or so.

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

4.10.9.4 Geo-technical Investigations and Sub-Soil Exploration

1 The Consultants shall thoroughly inspect the existing structures and shall prepare a report about their condition including all the parameters given in the Inspection pro-forma of IRC-SP; 35. The condition and structural assessment survey of the bridges/culverts/structures shall be carried out by senior experts of the Consultants.

Sl. No.	Description	Location of Boring
1	Overall length = 6 – 30 m	One abutment location and One abutment

		location and at least one intermediate location between abutments for structures having more than one span.
2	Overall length = 30 – 60 m	One abutment location and at least one intermediate location between abutments for structures having more than one span.
3	Overall length >60 m	Each abutment and each pier locations.

2 The deviation(s), if any, by the Consultants from the scheme presented above should be got approved from EMPLOYER.

3 However, where a study of geo-technical reports and information available from adjacent crossings over the same waterway (existing highway and railway bridges) indicates that subsurface variability is such that boring at the suggested spacing will be insufficient to adequately define the conditions for design purposes, the Consultants shall review and finalise the bore hole locations in consultation with the EMPLOYER officers.

4 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.

5 The scheme for the borings locations and the depth of boring shall be prepared by the Consultants and submitted to EMPLOYER for approval. These may be finalised in consultation with EMPLOYER.

6 The sub-soil exploration and testing should be carried out through the Geotechnical Consultants empanelled by MORT&H. The soil testing reports shall be in the format prescribed in relevant IRC Codes.

7 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 2m below embankment base or to rock level and are to be fully logged. Appropriate tests to be carried out on samples collected from these bore holes to determine the suitability of various materials for use in widening of embankments or in parts of new pavement structure.

4.10.10. Material Investigations

1 The Consultants shall identify sources (including use of fly-ash/slag), quarry sites and borrow areas, undertake field and laboratory testing of the materials to determine their suitability for various components of the work and establish quality and quantity of various construction materials and recommend their use on the basis of techno-economic principles. The Consultants shall prepare mass haul diagram for haulage purposes giving quarry charts indicating the location of selected borrow areas, quarries and the respective estimated quantities.

*"*Environment *friendly materials"*

"As per MORTH circular No. RW /NH-33044/53/2013-S&R(R) dated 20th November, 2013, alternative pavement materials and technologies for road construction shall be assessed and compared in the design stage. The alternative resulting in substantial reduction in GHG emission and with least life cycle cost shall be recommended for implementation.

Technical and economic feasibility of using industrial byproducts, recyclable and waste materials shall be assessed depending on their availability in the concerned region.

2 It is to be ensured that no material shall be used from the right-of-way except by way of levelling the ground as required from the construction point of view, or for landscaping and planting of trees etc. or from the cutting of existing ground for obtaining the required formation levels.
3 Environmental restrictions, if any, and feasibility of availability of these sites to prospective civil works contractors, should be duly taken into account while selecting new quarry locations.
4 The Consultants shall make suitable recommendations regarding making good the borrow and quarry areas after the exploitation of materials for construction of works.
5 The Material Investigation aspect shall include preparation and testing of bituminous mixes for various layers and concrete mixes of different design mix grades using suitable materials (binders, aggregates, sand filler etc.) as identified during Material Investigation to conform to latest MoRT&H specification.

4.11 Detailed Design of Road and Pavements, Bridges and Structures

4.11.1 General

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

i. high speed highway with divided carriageway configuration complete in all respects with service roads at appropriate locations;
ii. design of pavement for the additional lanes and overlay for the existing road, paved shoulders, medians, verges;
iii. bridges, viaduct/subways and other grade separated structures including ROBs/RUBs etc.;
iv. at-grade and grade-separated intersections, interchanges (if required);
v. ROB for railway crossings as per the requirement and the standards of the Indian Railways; and,
vi. prepare alignment plans, longitudinal sections and cross-sections @ 50mintervals;
vii. designs for road furniture and road safety/traffic control features;
viii. designs and drawings for service road/under passes/overpass/cattle passes tree planting/fencing at locations where necessary / required
ix. toll plazas and office-cum-residential complex for PIU (one for each civil contract package)
x. short bypasses at congested locations
xi. drainage design showing location of turnouts, out falling structures, separate drawings sheet for each 5 km. stretch.
xii. bridges and structures rehabilitation plan with design and drawings
xiii. traffic amenities (Parking Areas, Weighing Station and Rest Areas, etc.).
xiv. Design of pavement for approach road
xv. Design of river bank 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.

4.11.2 Design Standards

1. The Consultants shall evolve Design Standards and material specifications for the Study primarily based on IRC publications, MoRT&H Circulars and relevant recommendations of the international standards for approval by EMPLOYER.

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

4.11.3 Geometric Design

1. The design of geometric elements shall, therefore, take into account the essential requirements of such facilities.
2. Based on the data collected from reconnaissance and topographic surveys, the sections with geometric deficiencies, if any, should be identified and suitable measures for improvement should be suggested for implementation.
3. The data on accident statistics should be compiled and reported showing accident type and frequency so that black spots are identified along the project road section. The possible causes (such as poor geometric features, pavement condition etc.) of accidents should be investigated into and suitable cost-effective remedial measures suggested for implementation.
4. The detailed design for geometric elements shall cover, but not be limited to the following major aspects:
   i. horizontal alignment;
   ii. longitudinal profile;
   iii. Cross-sectional elements, including refuge lane (50m) at every 2kms.
   iv. junctions, intersections and interchanges;
   v. *bypasses; and,*
   vi. *Service roads as and when require i.e. built up area..*

5. The alignment design shall be verified for available sight distances as per the standard norms. The provision of appropriate markings and signs shall be made wherever the existing site conditions do not permit the adherence to the sight distance requirements as per the standard norms.
6. The consultants shall make detailed analysis of traffic flow and level of service for the existing road and workout the traffic flow capacity for the improved project road. The analysis should clearly establish the widening (4-laning) requirements with respect to the different horizon periods taking into account special problems such as road segments with isolated steep gradients.
7. In the case of closely spaced cross roads the Consultant shall examine different options such as, providing grade separated structure for some of them with a view to reduce number of at-grade crossings, services roads connecting the cross-roads and closing access from some of the intersections and prepare and furnish appropriate proposals for this purpose keeping in view the cost of improvement, impact on traffic movement and accessibility to cross roads. The detailed drawings and cost estimate should include the provisions for realignments of the existing cross roads to allow such arrangements.
8. The Consultant shall also prepare design of grade separated pedestrian crossings (viaducts) for large cross traffic of pedestrians and/or animals.
9. The Consultant shall also prepare details for at-grade junctions, which may be adopted as alternative to the grade separated structures. The geometric design of interchanges shall take into account the site conditions, turning movement characteristics, level of service, overall economy and operational safety.
10. The 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.
11. The consultant shall prepare complete road and pavement design including drainage for new bypass option identified around congested town enroute.

4.11.4 Pavement Design

1. The detailed design of pavement shall involve:
   i. *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;;*
   ii. *Pavement design for bypasses; and,*
   iii. *Design of shoulders.*
2. The design of pavement shall primarily be based on IRC publications.
3. The design of pavement shall be rigorous and shall make use of the latest Indian and International practices. The design alternatives shall include both rigid and flexible design options. The most appropriate design, option shall be established on life-cycle costing and techno-economic consideration.
4. For the design of pavement, each set of design input shall be decided on the basis of rigorous testing and evaluation of its suitability and relevance in respect of inservice performance of the pavement. The design methodology shall accompany the design proposals and shall clearly bring out the basic assumptions, values of the various design inputs, rationale behind the selection of the design inputs and the criteria for checking and control during the implementation of works. In other words, the design of pavement structure should take due account of the type, characteristics of materials used in the respective courses, variability of their properties and also the reliability of traffic predictions. Furthermore, the methodology adopted for the design of pavement shall be complete with flowcharts indicating the various steps in the design process, their interaction with one another and the input parameter required at each step.
5. For the design of overlays for the existing 2-lane pavement, the strengthening requirement shall duly take into account the strength of the existing pavementvis-à-vis the remaining life. The overlay thickness requirements shall be worked out for each road segment homogenous with respect to condition, strength and sub-grade characteristics. The rehabilitation provisions should also include the provision of regulating layer. For existing pavement with acceptable levels of cracking, provision of a crack inhibiting layer should also be included.
6. Latest techniques of pavement strengthening like provision of geo-synthetics and cold/hot pavement recycling should be duly considered by the consultant for achieving economy.
7. The paved shoulders shall be designed as integral part of the pavement for the main carriageway. The design requirements for the carriageway pavement shall, therefore, be applicable for the design of shoulder pavements. The design of granular shoulder should take into account the drainage considerations besides the structural requirements.
8. The pavement design task shall also cover working out the maintenance and strengthening requirements and periodicity and timing of such treatments.

4.11.5 Design of Embankments

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

4.11.6 Design of Bridges and Structures

1. The data collected and investigation results shall be analysed to determine the following:
   i. HFL
   ii. LWL
   iii. LBL

iv. Erodibility of bed/scour level
v. Design discharge
vi. Linear waterway and effective linear waterway
vii. Likely foundation depth
viii. Safe bearing capacity
ix. Engineering properties of sub soil
x. Artesian conditions
xi. Settlement characteristics
xii. Vertical clearance
xiii. Horizontal clearance
xiv. Free board for approach road
xv. Severity of environment with reference to corrosion
xvi. Data pertaining to seismic and wind load
xvii. Requirement of model study etc.

2. 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 EMPLOYER 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.
3. 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 EMPLOYER. 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.
4. 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 EMPLOYER the Consultants shall prepare detailed design as per IRC codes/guidelines for all components of the bridges and structures.
5. Subsequent to the approval of the GAD and Alignment Plan by EMPLOYER 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.
6. Dismantling/reconstruction of existing structures shall be avoided as far as possible except where considered essential in view of their poor structural conditions/ inadequacy of the provisions etc.
7. The existing structures having inadequate carriageway width shall be widened/reconstructed in pat or fully as per the latest MoRT&H guidelines. The Consultant shall furnish the detailed design and working drawings for carrying out the above improvements.
8. Suitable repair/rehabilitation measures shall be suggested in respect of the existing structures as per IRC-SP:40 along with their specifications, drawings and cost estimate in the form of a report. The rehabilitation or reconstruction of the structures shall be suggested based on broad guidelines for rehabilitation and strengthening of existing bridges contained in IRC-SP:35 and IRC-SP:40.
9. Subsequent to the approval of the GAD and the alignment plan by EMPLOYER, detailed design shall also be carried out for the proposed underpasses, overpasses and interchanges.

10. The Consultants shall also carry out the design and make suitable recommendations for protection works for bridges and drainage structures.
11. 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 EMPLOYER.

4.11.7 Drainage System

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

4.11.8 Traffic Safety Features, Road Furniture and Road Markings

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

4.11.9 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-ofway with a view to beautify the highway and making the environment along the highway pleasing. The existing trees/plants shall be retained to the extent possible. The Transplantation of trees shall also be proposed wherever feasible.

4.11.10 Toll Plaza (if the project road is decided to be tolled)

1. The Consultants shall identify the possible toll plaza location(s) based on the data and information derived from the traffic studies and a study of the existing physical features including the availability of land. The location of the plaza should keep in view that it is required to collect toll on rational basis from as much of the vehicular traffic as possible consistent with economy of collection and operations. The location of the toll plaza should be finalised in consultation with EMPLOYER.
2. Toll Plaza shall be designed as per IRC:84**.**

4.12 Environment and Social Impact Assessment

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

4.12.1. Environmental Impact Assessment

Environment impact assessment or initial environment examination be carried out in accordance with ADB's Environmental Assessment Requirements of ADB 1998guidelines for selected infrastructure projects 1993 as amended from time to time World Bank

Guidelines/Government of India Guidelines, as applicable

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

4.12.2. Social Assessment

1. The consultant would conduct base line socio-economic and census survey to assess the impacts on the people, properties and loss of livelihood. The socioeconomic survey will establish the benchmark for monitoring of R&R activities. A social assessment is conducted for the entire project to identify mechanisms to improve project designs to meet the needs of different stakeholders. A summary of stakeholder's discussions, issue raised and how the project design was developed to meet stakeholders need would be prepared.
2. The consultant shall prepare Land Acquisition Plan and assist EMPLOYER in acquisition of land under various Acts.

3. The consultant would prepare Resettlement and Rehabilitation Plan –assess feasibility and effectiveness of income restoration strategies and suitability and availability to relocation sites. The resettlement plan which accounts for land acquisition and resettlement impacts would be based on a 25% socio-economic survey and 100% census survey of project affected people which provide 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 partic Employernts) should be fully documented and records made available to EMPLOYER.

- 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 EMPLOYER/ADB/World Bank/MORT&H/ NHAI, till the acceptance of the reports by the EMPLOYER/ADB/World Bank/ MORT&H /NHAI, as applicable.

4.12.3. Reporting Requirements of EIA

The consultant would prepare the stand-alone reports as per the requirement of the ADB/World Bank/MORT&H/NHAI, 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 EMPLOYER/ADB/ World Bank / MORT&H/NHAI, till the acceptance of the reports by the EMPLOYER / ADB/ World Bank / MORT&H/NHAI, 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:
  - 41 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.
  - 41 A detailed EMP for construction and operational phases with recourse to the mitigation measures for all adverse impacts.
  - 41 Detailed plans for highway-side tree plantation (as part of the compensatory afforestation component).
  - 41 Environmental enhancement measures would be incorporated. Enhancement

measures would include items described in the scope of work and shall be complete with plans, designs, BOQ and technical specifications.

- Environmental monitoring plans during and after construction including scaling and measurement techniques for the performance indicators selected for monitoring.
- The EMP should be amendable to be included in the contract documents for the works.
- Incorporating any other as per the suggestions of the EMPLOYER/ADB/World Bank MORT&H/NHAI, till the acceptance of the reports by the EMPLOYER/ADB/ World Bank/MORT&H/NHAI as applicable.

4.12.4. Reporting requirements of RAP

Analysis on the resettlement plan to 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 partic Employertion of PAPs.
- Definition of PAPs and the eligibility criteria
- Census and survey results-number affected, how are they affected and what impacts will they experience.
- Legal and entitlement policy framework-support principles for different categories of impact.
- Arrangements for monitoring and evaluation (internal and external)
- Implementation schedule for resettlement which is linked to the civil works contract
- A matrix of scheduled activities linked to land acquisition procedures to indicate clearly what steps and actions will be taken at different stages and the time frame
- The payment of compensation and resettlement during the acquisition process

An itemized budget (replacement value for all assets) and unit costs for different assets

5. Estimation of Quantities and Project Costs

1. The Consultants shall prepare detailed estimates for quantities (considering designs and mass haul diagram) and project cost for the entire project (civil packages wise), including the cost of environmental and social safeguards proposed based on MoRT&H's Standard Data Book and market rate for the inputs. The estimation of quantities shall be based on detailed design of various components of the projects. The estimation of quantities and costs would have to be worked out separately for civil work Package as defined in this TOR.
2. The Consultants shall make detailed analysis for computing the unit rates for the different items of works. The unit rate analysis shall duly take into account the various inputs and their basic rates, suggested location of plants and respective lead distances for mechanized construction. The unit rate for each item of works shall be worked out in terms of manpower, machinery and materials.
3. The project cost estimates so prepared are to be checked against rates for similar on-going works in India under MORT&H/World Bank/ADB financed road sector projects.

6. Viability and Financing Options

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

6.1 Economic Analysis

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

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

i. Assess the capacity of existing roads and the effects of capacity constraints on vehicle operating costs (VOC);
ii. Calculate VOCs for the existing road situation and those for the project;
iii. Quantify all economic benefits, including those from reduced congestion, travel distance, road maintenance cost savings and reduced incidence of road accidents; and,
iv. Estimate the economic internal rate of return (EIRR) for the project over a 30-year period. In calculating the EIRRs, identify the tradable and non-tradable components of projects costs and the border price value of the tradable components.
v. *Saving in* time *value.*

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

*Sc*enario – I Base Costs and Base Benefits
Scenario – II Base Costs plus 15% and Base Benefits
Scenario - III Base Costs and Base Benefits minus 15%
Scenario - IV Base Costs plus 15% and Base Benefits minus 15%

The sensitivity scenarios given above are only indicative. The Consultants shall select the sensitivity scenarios taking into account possible construction delays, construction costs overrun, traffic volume, revenue shortfalls, operating costs, exchange rate variations, convertibility of foreign exchange, interest rate volatility, non-compliance or default by contractors, political risks and force majeure

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

6.2 Financial Analysis

1 It is envisaged that the project stretch should be implemented on EPC/Hybrid Annuity basis, therefore, the Consultant shall study the financial viability of the project under a commercial format and under different user fee scenarios and funding options. The Consultants shall submit and finalise in consultation with the EMPLOYER's officers the format for the analysis and the primary parameters and scenarios that should be taken

into account while carrying out the commercial analysis. The financial model so developed shall be the property of EMPLOYER.

2 The Financial analysis for the project should cover financial internal rate of return, projected income statements, balance sheets and fund flow statements and should bring out all relevant assumptions. The sensitivity analysis should be carried out for a number of probabilistic scenarios.

3 The financial analysis should cover identification, assessment, and mitigating measures for all risks associated with the project. The analysis shall cover, but be not limited to, risks related to construction delays, construction costs overrun, traffic volume, revenue shortfalls, operating costs, exchange rate variations, convertibility of foreign exchange, interest rate volatility, non-compliance or default by contractors, political risks and force majeure.

4 The consultant shall suggest positive ways of enhancing the project Viability and furnish different financial models for implementing on Hybrid Annuity format.

7. Time period for the service

1. Time period envisaged for the study of the project is indicated in **Clause 14 of TOR.** The final reports, drawings and documentation shall be completed within this time schedule

2. EMPLOYER shall arrange to give approval on all sketches, drawings, reports and recommendations and other matters and proposals submitted for decision by the Consultant in such reasonable time so as not to delay or disrupt the performance of the Consultant's services

8. Project Team

1. The Consultants shall be required to form a multi-disciplinary team for this assignment. The consultants Team shall be manned by adequate number of experts with relevant experience in the execution of similar detailed design assignments.
2. List of suggested key personnel to be fielded by the consultant with appropriate man-month of consultancy services is given in Enclosure I as per EMPLOYERs assessment.
3. A Manning Schedule for key personnel mentioned above is enclosed as FORM-C along with broad job- description and qualification**.** The information furnished in FORM-C are to assist the Consultants to understand the EMPLOYER's perception about these requirements and shall be taken by the Consultants for the purpose of Financial Proposal and deployment schedule etc. in technical proposal to be submitted by them. Any deviation proposed may be recorded in the comments on TOR. All the key personnel mentioned will be evaluated at the time of evaluation of technical proposal. Consultants are advised in their own interest to frame the technical proposal in an objective manner as far as possible so that these could be properly assessed in respect of points to be given as part of evaluation criteria as mentioned in Data sheet. The bio-data of the key personnel should be signed on every sheet by the personnel concerned and the last sheet of each bio-data should also be signed by the authorised signatory of the Consultants.

9. Reports to be submitted by the Consultant to EMPLOYER

9.1 All reports, documents and drawings are to be submitted separately for each of the traffic homogenous link of the Project Road. The analysis of data and the design proposals shall be based on the data derived from the primary surveys and investigations carried out

during the period of assignment. The sources of data and model relationships used in the reports shall be indicated with complete details for easy reference.

9.2 Project preparation activities will be split into three stages as brought out below. Preliminary design work should commence without waiting for feasibility study to be completed.

- **Stage 1: Inception Report**
- **Stage 2: Feasibility Report**
- **Stage 3: Detailed Project Report (DPR)**

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

10. Reports and Documents to be submitted by the Consultant to EMPLOYER

1. The Consultant shall submit to the EMPLOYER the reports and documents in bound volumes (and not spiral binding form) after completion of each stage of work as per the schedule and in the number of copies as given in Clause 14 of TOR. Further, the reports shall also be submitted in CDs in addition to the hardcopies as mentioned in Clause 14 of TOR. Consultant shall submit all other reports mentioned specifically in the preceding paras of the TOR

2. The time schedule for various submissions prescribed at s.l.no.1 above shall be strictly adhered to. No time-over-run in respect of these submissions will normally be permitted. Consultant is advised to go through the entire terms of reference carefully and plan his work method in such a manner that various activities followed by respective submissions as brought out at Sl.No.1 above are completed as stipulated. Consultant is, therefore, advised to deploy sufficient number of supporting personnel, both technical and administrative, to undertake the project preparation activities in construction package (Section) simultaneously. As far as possible, the proposal should include complete information such as number of such persons, name, position, period of engagement, remuneration rate etc. The Consultant is also advised to start necessary survey works from the beginning so as to gain time in respect of various other activities in that stage

STAGE 1

10.1 Quality Assurance Plan (QAP) Document

1. Immediately upon the award, the Consultants shall submit four copies of the QAP document covering all aspects of field studies, investigations design and economic financial analysis. The quality assurance plans/procedures for different field studies, engineering surveys and investigation, design and documentation activities should be presented as separate sections like engineering surveys and investigations, traffic surveys, 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 EMPLOYER.

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

10.2 Inception Report (IR)

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

2. The requirements, if any, for the construction of bypasses should be identified onthe 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 EMPLOYER.

STAGE 2

10.3 Feasibility Report (IR)

1. The Consultant shall commence the Feasibility Study of the project in accordance with the accepted IR and the report shall contain the following:

   - Executive summary
   - Project description including possible alternative alignments/bypasses and technical/engineering alternatives
   - Methodology adopted for the feasibility study

- Socioeconomic profile of the project areas
- Indicative design standards, methodologies and specifications
- Traffic surveys and analysis
- Environmental screening and preliminary environmental assessment
- Initial social assessment and preliminary land acquisition/resettlement plan
- Cost estimates
- Economic and financial analysis
- Conclusions and recommendations

2. In view of para 1 above the consultant has to submit the following documents in six sets:

   i. Technical Specifications: The MORT&H's Technical Specifications for Road and Bridge works (latest edition/revision) shall be followed for this study. However, this submission by the consultant under this document 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.
   ii. Rate Analysis: This volume will present the analysis of rates for all items of works. The details of unit rate of materials at source, carriage charges, any other applicable charges, labour rates, and machine charges as considered in arriving at unit rates will be included in this volume.
   iii. Cost Estimates: This volume will present the each item of work as well as a summary of total cost.
   iv. Bill of Quantities: This volume shall contain the detailed Bill of Quantities for all items of works
   v. Civil Work Contract Agreement: A civil works contract agreement shall be submitted.
3. The basic data obtained from the field studies and investigations shall be submitted in a separate volume as an Appendix to Feasibility Report.

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

10.4 Strip Plan and Clearances

1. The Consultants shall submit the following documents:

   i. Details of the centre line of the proposed road along with the existing (if any) and proposed right-of-way limits to appreciate the requirements of land acquisition;
   ii. The information concerning the area including ownership of land to be acquired for the implementation of the project shall be collected from the revenue and other concerned authorities and presented along with the strip plans;
   iii. Strip plans showing the position of existing utilities and services indicating clearly the position of their relocation;

iv. Details for various clearances such as environment and forest clearances;
v. Separate strip plan showing shifting/relocation of each utility services in consultation with the concerned local authorities;
vi. The utility relocation plans should clearly show existing right-of-way and pertinent topographic details including buildings, major trees, fences and other installations such as water-mains, telephone, telegraph and electricity poles, and suggest relocation of the services along with their crossings the highway at designated locations as required and prepare necessary details for submission to the Service Departments;
vii. Detail schedules for acquisition of additional land and additional properties in consultation with the revenue authorities; and
viii. Land Acquisition Plan.

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. Kilometer-wise Land Acquisition Plan (LAP) and schedule of ownership thereof and Costs as per Revenue Authorities and also based on realistic rates.
ii. Details of properties, such as buildings and structures falling within the right-ofway and costs of acquisition based on realistic rates.
iii. Kilometer-wise Utility Relocation Plan (URP) and costs for relocation per civil construction package as per concerned authorities.
iv. Kilometer-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. Kilometer-wise Strip Plans for section (Package) shall be prepared separately for each concerned agency and as suggested by EMPLOYER.

10.5 Land Acquisition Report

1. The Land acquisition report shall be prepared and submitted for section (package). The report shall include detail schedules about acquisition of landholdings as per revenue records and their locations in a strip plan and also the costs as per district authorities. Details shall be submitted in land acquisition proforma to be supplied by EMPLOYER. The land acquisition report shall be submitted in vernacular language / Hindi and English languages as deemed necessary.

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

STAGE 3

10.6 **Draft Detailed Project Report (DDPR)**

1. The draft DPR Submission shall consist of construction package-wise Main Report, Design Report, Materials Report, Engineering Report, Drainage Design Report, Economic and Financial Analysis Report, Environmental Assessment Report including Resettlement Action Plan (RAP), Package-wise bid Documents and Drawings.

2. The Report volumes shall be submitted as tabulated in para 10 above.

3. The Documents and Drawings shall be submitted for 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, tunnels and cross-drainage structures. The sub-soil exploration report including the complete details of boring done, analyses and interpretation of data and the selection of design parameters shall be included as an Appendix to the Design Report.*

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

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

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

The material Report should also clearly indicate the locations of areas with problematic soils. Recommendations concerning the improvement of such soils for use in the proposed construction works, such as stabilisation (cement, lime, mechanical) should be included in the Report.

iv. *Volume - IV, Environmental Assessment Report including Environmental Management Plan (EMP) & Resettlement Action Plan (RAP): 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: The MORT&H's Technical Specifications for Road and Bridge works (latest edition/revision) shall be followed for this study. However, this submission by the consultant under this document shall contain the special technical specifications which are not covered by MOST Specifications for Roads and Bridges (latest edition / revision) and also specific quality control norms for the construction of works.*

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

vii. *Volume - VII, Cost Estimates: This volume will present the contract package wise cost of each item of work as well as a summary of total cost.*

viii. *Volume - VIII, Bill of Quantities: This volume shall contain the package-wise detailed Bill of Quantities for all items of works.*

ix. *Volume - IX, Drawing Volume: All drawings forming part of this volume shall be 'good for construction' drawings. All plan and profile drawings will be prepared in scale 1:250V and 1:2500H scale to cover one km in one sheet. In addition this volume will contain 'good for construction' drawings for the following:*

a. *Horizontal Alignment and Longitudinal Profile.*

b. *Cross-section @ 50m interval along the alignment within ROW*

c. *Typical Cross-Sections with details of pavement structure.*

d. *Detailed Working Drawings for individual Culverts and Cross-Drainage Structures.*

e. *Detailed Working Drawings for individual Bridges, tunnels and Structures.*

f. *Detailed Drawings for Improvement of At-Grade and Grade-Separated Intersections and Interchanges.*

g. *Drawings for Road Sign, Markings, Toll Plazas, and other Facilities.*

h. *Schematic Diagrams (linear chart) indicating but be not limited to be following:*

- *Widening scheme;*
- *Locations of median openings, intersections, interchanges, underpasses, overpasses, bypasses;*
- *Locations of service roads;*
- *location of traffic signals, traffic signs, road markings, safety features; and,*
- *locations of toll plaza, parking areas, weighing stations, bus bays, rest areas, if any.*
- *Drawings for toll plaza, Bus Bays, Parking areas, Rest areas, weighing stations etc.*

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

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

x. *Volume - X, Civil Work Contract Agreement: A civil works contract agreement shall be submitted.*

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

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

The Final package-wise DPR consisting of Main Report, Design Report, Drainage Design Report and Materials Report, incorporating all revisions deemed relevant following receipt of the comments from EMPLOYER on the draft DPR shall be submitted as per the schedule given in Clause 14 of TOR.

11. Interaction with EMPLOYER

1) During entire period of services, the Consultant shall interact continuously with EMPLOYER and provide any clarification as regards methods being followed and carryout modification as suggested by EMPLOYER. A programme of various activities shall be provided to EMPLOYER and prior intimation shall be given to EMPLOYER regarding start of key activities such as boring, survey etc. so that inspections of EMPLOYER officials could be arranged in time.

2) The EMPLOYER officers and other Government officers may visit the site at any time, individually or collectively to acquaint/ supervise the field investigation and survey works. EMPLOYER may also appoint a Proof Consultant to supervise the work of the DPR consultant including inter-alia field investigation, survey work, Design work and preconstruction activities.

3) The consultant shall be required to send 3 copies of concise monthly Progress Report by the 5th day of the following month to the designated officer at his Head Quarter so that progress could be monitored by the EMPLOYER. These reports will indicate the dates of induction and de-induction of various key personnel and the activities performed by them. Frequent meetings with the consultant at site office or in Delhi are foreseen during the currency of project preparation.

4) All equipment, software and books etc. required for satisfactory services for this project shall be obtained by the Consultant at their own cost and shall be their property.

12. Payment Schedule

The Consultant will be paid consultancy fee as a percentage of the contract values as per the schedule given in the Draft Contract Agreement.

13. Data and Software

1. The CDs containing all basic as well as the processed data from all field studies and investigations, report, appendices, annexure, documents and drawings shall be submitted to EMPLOYER at the time of the submission of the Final Report. The data can be classified as follows:

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

   ii. Topographic Surveys and Drawings: All topographic data would be supplied in (x, y, z) format along with complete reference so that the data could be imported into any standard highway design software. The drawing files would be submitted in dxf or dwg format.

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

   iv. Economic and Financial Analysis;

2. Software: The Consultant shall also hand-over to EMPLOYER floppies/CD's containing any general software including the financial model which has been specifically developed for the project.

3. The floppy diskettes/CD's should be properly indexed and a catalogue giving contents of all floppies/CD's and print-outs of the contents (data from field studies topographic data and drawings) should be handed over to EMPLOYER at the time of submission of the Final Report.

14. TIME AND PAYMENT SCHEDULE

14.1 The total duration for preparation of the Project Report and Schedules to the Concession Agreement shall be 24 (twenty four) weeks, excluding the time taken by the Employer in providing the requisite documents or in conveying its comments on the Draft DPR. The Consultant shall deploy its Key Personnel as per the Deployment of Personnel proposed. Intermittent services will be required beyond the 24th (twenty fourth) week and until the end of 50 (fifty) weeks or 2 (two) months after the signing of the Concession Agreement, whichever is earlier.

14.2 Time schedule for important Deliverables of the Consultancy and the payment schedule linked to the specified Deliverables is given below:

Sl. No.	Description of Deliverables	Week No.*	No. of Copies	Payment
1	Submission of Inception Report and QAP	2	3	10%
2	On submission of Draft Feasibility Study Report including Option Study Report	10	3	15%
3	On Submission of Final Feasibility Study Report	12	6	10%
4	On submission of Technical Schedules for Hybrid Annuity/EPC projects	13	6	10%
5	On submission of Draft DPR	18	6	15%
6	On approval of DPR	20	-	10%
7	On completion of following Project Clearances:		3	
a)	Completion of 3a, 3A and 3D	24		10%
b)	Forest clearance, environmental Clearance	50		5%
c)	Utility Shifting	50		5%
8	Completion of Services including assistance during Bid Process	50		10%
	Total			100%

*Excludes the time taken by the Employer in providing its comments on Draft Reports.

14.3 The TOR for the Consultant envisages assistance in the process of public hearings, etc. in respect of the Environment Impact Assessment (EIA) of the Project Highway specified in para 3.8. In the event that the process cannot be completed within the period specified herein for completion of Final DPR, the EIA Report may be completed and submitted to the Employer within an extended period of 6 (six) weeks after submission of the Detailed Project Report. A sum equal to 5% (five per cent) of the total payment due shall be withheld and paid to the Consultant upon submission of the EIA Report and environment management plan.

14.4 Mobilization Advance up to 10% (ten per cent) of the total Agreement Value shall be paid on request against Bank Guarantee of a Scheduled Bank. This shall attract 10% (ten per cent) simple interest per annum and shall be adjusted against the first four bills in four equal instalments and the accrued interest shall be recovered from the fifth bill.

14.5 10% of the Agreement Value has been earmarked as Final Payment to be made to the Consultant upon execution of the Concession Agreement. In the event the Concession Agreement does not get executed within one year of the Effective Date, the Final Payment shall not become due to the Consultant, save and except the costs incurred for meeting its reimbursable expenses during the period after expiry of 24 weeks from the Effective Date, including travel costs and personnel costs, at the agreed rates.

5. TECHNICAL PROPOSAL - STANDARD FORMS

Form 5A. Technical Proposal submission form

Form 5B. Description of Approach, Methodology and work plan for performing the assignment

Form 5C. Team composition and task assignments

Form 5D. Format of Curriculum Vitae of proposed professional staff

Form 5A: Technical Proposal Submission Form

Date:

To:

Managing Director,

Indian Port Association,

1st Floor, South Tower, NBCC Place,

B.P.Marg, Lodi Road,

New Delhi – 110 003

Ph: 011 – 24369061; Fax No: 011-24365866

Subject: Consultancy Services for Preparation of Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port

Dear Sir:

We, the undersigned, offer to provide the consulting services for **Preparation of Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port** in accordance with your Request for Proposal dated [*Insert Date*] and our Proposal. We are hereby submitting our Proposal, which includes this Technical Proposal, and a Financial Proposal sealed under a separate envelope.

We are submitting our Proposal in JV/Consortium with: [*Insert a list with full name and address of each Joint Venture/Consortium partner*]

We hereby declare that all the information and statements made in this Proposal are true and accept that any misinterpretation contained in it may lead to our disqualification.

The Annual Turnover from Consultancy Services of the lead firm/consortium partner for FY 2014-15 is Rs_____ (Rs._____) only (respectively). Certificate(s) from Statutory Auditor/Chartered Accountant is attached along with this letter.

If negotiations are held during the period of validity of the Proposal, i.e., before [date], we undertake to negotiate on the basis of the proposed staff. Our Proposal is binding upon us and subject to the modifications resulting from Contract negotiations.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature [In full and initials]:
Name and Title of Signatory:
Name of Firm:
Address:

Form 5B: Description of Approach, Methodology and Work Plan for Performing the Assignment

Technical approach, methodology and work plan are key components of the Technical Proposal. The consultant is suggested to present its Technical Proposal (5 (five) A4 pages, inclusive of charts and diagrams) divided into the following three chapters:

a) Technical Approach and Methodology,

b) Work Plan, and

c) Organization and Staffing,

a) **Technical Approach and Methodology.** In this chapter the consultant should explain the understanding of the objectives of the assignment, approach to the services, methodology for carrying out the activities to obtain the expected output and the degree of detail of such output. The consultant should highlight the problems to be addressed along with their importance and explain the technical approach the consultant would adopt to address them. The consultant should also explain the proposed methodologies to adopt and highlight the compatibility of those methodologies with the proposed approach.

b) **Work Plan.** In this chapter the consultant should propose the main activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the IPA) and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the TOR and ability to translate them into a feasible working plan. A list of the final documents, including reports, drawings, and tables to be delivered as final output, should be included here. The work plan should be consistent with the Form of Work Schedule.

c) **Organization and Staffing.** In this chapter the consultant should propose the structure and composition of the proposed team. The consultant should list the main disciplines of the assignment, the key expert responsible, and proposed technical and support staff.

Form 5C: Team Composition

Professional Staff					
Name of Staff	**Firm**	**Area of Expertise**	**Position Assigned - Professional Experience in years**	**Educational Qualification/ no. of eligible projects**	**Maximum Weightage allocated**
		Senior Highway Engineer	Team Leader – 15 years	Post Graduate in Civil Engineering – 4 eligible assignments including at least 1 project involving concrete road and with at least 1 as Team Leader in feasibility/detailed design project	15
		Bridge Design Engineer	Bridge Engineer – 10 years	Post Graduate in Structural Engineering - Should have worked as Structural / Bridge Engineer for at least 3 assignments	12
		Traffic – cum – Safety Expert	Traffic – cum – Safety Expert – 8 years	Post graduate in traffic / transportation engineering - Should have worked as Traffic / Transport Engineer / Planner for at least 2 eligible assignments	10
		Pavement & Material Engineer	Pavement Engineer – 10 years	Graduate in Civil Engineering – should have worked as Pavement specialist for at least 2 eligible assignments involving design of concrete roads	10

		Quantity Surveying	Quantity Surveyor – 7 years	Diploma in Civil Engineering - should have worked as Quantity Surveyor for at least 2 eligible assignments	8
		Financial analysis	Financial Expert – 7 years	PG in Commerce or CA or MBA(Finance) should have worked as Financial Expert in 2 eligible projects	8
		Environment	Environmental expert – 7 years	Masters in environmental sciences or equivalent – should have worked as Environmental Expert for minimum 2 eligible projects	4
		Social	Social Expert – 7 years	Masters in Social Science/Sociology or equivalent – should have worked as Social Expert for minimum 2 eligible projects	3

Support Staff				
Name of Staff	**Firm**	**Area of Expertise**	**Position Assigned**	**Task Assigned**
		Geotechnical Engineering	Geotechnical Engineer	
		Hydrology	Drainage Engineer	
		Survey	Surveyor	

Form 5D: Curriculum Vitae (CV) for Proposed Professional Staff

1. **Proposed Position** [*only one candidate shall be nominated for each position*]: _____

2. **Name of Firm** [*Insert name of firm proposing the staff*]: _____

   _____

3. **Name of Staff** [*Insert full name*]: _____

4. **Date of Birth**: _____ **Nationality**: _____

5. **Education** [*Indicate college/university and other specialized education of staff member, giving names of institutions, qualifications obtained, and date*: _____

   _____

6. **Membership of Professional Organisations:** _____

   _____

7. **Training & Publications** [*Indicate significant training since degrees under 5 - Education were obtained*]: _____

   _____

8. **Countries of Work Experience**: [*List countries where staff has worked in the last ten years*]:____

   _____

9. **Languages** [*For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing*]: _____

   _____

10. **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.*]:

    From [*Year*]: _____ To [*Year*]: _____

    Employer: _____

    Positions held: _____

11. Detailed Tasks Assigned [*List all tasks to be performed under this assignment*]	**12. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned** [*Among the assignments in which the Staff has been involved, indicate the following information for those assignments that best illustrate staff capability to handle the tasks listed under point 11.*] Name of assignment or project: _____ Year: _____

	Location: _____ IPA: _____ Main project features: _____ Positions held: _____ Activities performed: _____

13. Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

_____ Date: _____

(Signature of staff member) Day/Month/Year

Full name of the staff:----------

Signature of Authorized representative of the staff---------- *Date*----------

(Day/Month/Year)

Full name of authorized representative: _____

6. FINANCIAL PROPOSAL - STANDARD FORMS

Form 6A Financial Proposal Submission Form

Form 6B Summary of Costs

Form 6C Breakdown of Costs

Form 6D Breakdown of Remuneration

Form 6E Breakdown of Out of Pocket Expenses

Form 6A: Financial Proposal Submission Form

Date:

To:

Managing Director,

Indian Port Association,
1st Floor, South Tower, NBCC Place,
B.P.Marg, Lodi Road,
New Delhi – 110 003
Ph: 011 – 24369061; Fax No: 011-24365866

Subject: Consultancy Services for Preparation of Detailed Project Report for Development of Dedicated Container Corridor to NHAI road at Chennai Port

Dear Sir,

We, the undersigned, offer to provide the consulting services for [*Insert title of assignment*] in accordance with your Request for Proposal dated [*Insert Date*]. Our attached Financial Proposal is for the sum of [*Insert amount(s) in words and figures*[1]].

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e. [date].

We undertake that, in completing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988".

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature [In full and initials]:
Name and Title of Signatory:
Name of Firm:
Address:

Form 6B: Summary of Costs

SNo	ITEM	Cost (in Indian Rupees)	
		Amount in words	**Amount in figure**
A	Costs of financial proposal		
B	Service Tax		
C	Other Taxes and duties		
	Total cost of financial proposal		

Form 6C: Breakdown of Costs

Cost component	Amount (s) in words (Indian Rupees)	Amount (s) in figure (Indian Rupees)
Remuneration		
Out of pocket Expenses		
Cost of financial proposal		

Form 6D: Breakdown of Remuneration

Name	Position	Staff – month Rate	Input (Staff-months)	Amount (in Rs)
Key Staff				
Support Staff				
Total				

Form 6E: Breakdown of Out of Pocket Expenses

No.	Description	Unit and Unit Cost	Quantity	Amount (in Indian Rupees)
1	Per diem allowances			
2	Miscellaneous travel expenses			
3	Communication costs			
4	Drafting, reproduction of reports			
5	Local transportation costs			
6	Misc. (survey, data collection, etc.)			
Total				

ANNEXURE – I: EVALUATION CRITERIA

1. Proof of Eligibility (Sl. 3 of Data Sheet)

1.1 <u>Eligibility criteria for sole applicant firm.</u>

The sole applicant firm shall satisfy the following 3 (Three) Nos. of criteria.

i) The consultancy firm should have successfully rendered the services for conducting a feasibility report and / or Detailed Project Reports for the strengthening and/or Detailed Engineering Designs for at least five 4-lane Highway projects (NH/SH) for a length of not less than 10 km each in the last 5 years involving design of concrete roads with cumulative length in all the five projects not less than 15km satisfactorily in the last 5 years.

Sl. No.	Package Name	Start and End Date	Tentative Length (km)	Minimum Length required	Length of Concrete Road (km)	Minimum Aggregate Length of Concrete road
(1)	(2)	(3)	(4)	(5)	(6)	(7)
				10 km		15km
				10 km		
				10 km		
				10 km		
				10 km		
				TOTAL		

ii) The consultancy firm should have successfully rendered the services for conducting a feasibility report and / or Detailed Project Reports and/or Detailed Engineering Designs for any two of the major structures such as Grade separators / Elevated Corridors / Bridges / ROBs / RUBs of length not less than 60m each in the last 5 years

Sl. No.	Package Name	Start and End Date	No. of Structure of length not less than 60m	Type of each Structure (Flyover/Bridge/Viaduct/ROB/RUB)
(1)	(2)	(3)	(4)	(6)

(iii) Annual Average Turn Over for the last 5 years {In cases where, Audited/Certified copy of Balance Sheet for the FY 2015-16 is available, last five years shall be counted from 2011-12 to 2015-16. However, where audited/certified copy of the Balance Sheet for the FY 2015-16 is not available (as certified by the Statutory auditor) then in such cases last five years shall be considered from 2010-11 to 2014-15} of the firm from Consultancy services should be equal to more than Rs 5 crore.

1.2 Eligibility criteria for Lead Partner/Other Partner in case of JV.

In case of JV, the Lead Partner should fulfill at least 75% of all eligibility requirements and the other partner shall fulfill at least 50% of all eligibility requirements as given at 1.1 above. Thus a Firm applying as Lead Partner/Other Partner in case of JV/Associate should satisfy the following:

i) The consultancy firm should have successfully rendered the services for conducting a feasibility report and / or Detailed Project Reports for the strengthening and/or Detailed Engineering Designs for at least five 4-lane Highway projects (NH/SH) for a length of not less than 10 km each in the last 5 years involving design of concrete roads with cumulative length in all the five projects not less than 15km satisfactorily in the last 5 years.

Sl. No.	Package Name	Start and End Date	Tentative Length (km)	Minimum Length required	Length of Concrete (km)	Minimum Aggregate Length of Concrete Road
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Lead in JV						
				7 km		10km
				7 km		
				7 km		
				7 km		
				7 km		
				Total		
Other Partner in JV						
				3 km		5km
				3 km		
				3 km		
				3 km		
				3 km		
				Total		

ii) The lead consultancy firm should have successfully rendered the services for conducting a feasibility report and / or Detailed Project Reports and/or Detailed Engineering Designs for any two of the major structures such as Grade separators / Elevated Corridors / Bridges / ROBs / RUBs of length not less than 60m each in the last 5 years

Sl. No.	Package Name	Start and End Date	No. of Structure of length not less than 60m	Length each Structure	Type of each Structure
(1)	(2)	(3)	(4)	(5)	(6)

iii) Annual Average Turn Over for the last 5 years {In cases where, Audited/Certified copy of Balance Sheet for the FY 2015-16 is available, last five years shall be counted from 2011-12 to 2015-16. However, where audited/certified copy of the Balance Sheet for the FY 2015-16 is not available (as certified by the Statutory auditor) then in such cases last five years shall be considered from 2010-11 to 2014-15} of the firm from Consultancy services should be equal to more than Rs 5 crore for the firm applying as Lead Partner/Other Partner in case of JV from Consultancy services should be as given below:

No.	Mode of Submission by a Firm	Annual Average Turn Over for the last 5 years
1	Lead Partner in a JV	Rs. 3.75 crore
2	Other Lead partner in a JV	Rs. 2.50 crore

Note:

a) Weightage to be given when experience by a Firm as Sole Firm/Lead Partner in a JV/Other Partner in a JV/As Associate

Sl. No.	Status of the firm in carrying out DPR/ Feasibility Study	Weightage for experience
1	Sole firm	100%
2	Lead partner in a JV	75%
3	Other partner in a JV	50%
4	As Associate	25%

b) The experience of a firm in preparation of DPR for a private Concessionaire/contractor shall not be considered.

2. Second Stage Evaluation -Technical Evaluation (Sl. No. 3.2 of Data Sheet)

2.1. Firm's Relevant Experience

Sl. No.	Description	Eligible Project	Marking	Max Marks
1	Specific Experience of DPR Consultancy/ Feasibility Study related to the Assignment in the last 5 years (from 2011-12 onwards)	Aggregate Length of DPR/ Feasibility Study of 4/6 lane Projects with each project of minimum length 50km	- Aggregate Length of 50 km with each project of minimum length 10km – (Point-5) - Aggregate Length between 50km and 100 km with each project of minimum length 10km (Point-7) - Aggregate Length more than 100 km	8

Sl. No.	Description	Eligible Project	Marking	Max Marks
			with each project of minimum length 10km (Point-8)	
2		Aggregate Length of Concrete Road covered in DPR/ Feasibility Study of 4/6 lane Project	- Aggregate Length of 15km – (Point-3) - Aggregate Length greater than 15 km (Point-4)	4
3		DPR of Grade separators / Elevated Corridors / Bridges / ROBs / RUBs having a length of more than 60m	2 Structures (Point – 1) 3 Structures (Point – 2) 4 Structures (Point – 3) More than 4 Structures (Point – 4)	4
4	Turn Over of Firm	Annual Average Turn Over for the last 5 years (For Sole Bidder/Lead Partner in Association/Combined value of JV Partners in JV)	-Less than INR 5 cr (Points- 0) - From INR 5 cr to less than INR 10 cr (Points- 3) - More than INR 10 cr (Points- 4)	4
	Total			**20**

Note:

a) Weightage to be given when experience by a Firm as Sole Firm/Lead Partner in a JV/Other Partner in a JV/As Associate

Sl. No.	Status of the firm in carrying out DPR/ Feasibility Study	Weightage for experience
1	Sole firm	100%
2	Lead partner in a JV	75%
3	Other partner in a JV	50%
4	As Associate	25%

b) The experience of a firm in preparation of DPR for a private Concessionaire/contractor shall not be considered.

c) In case Feasibility Study is part of DPR services, the experience shall be counted in DPR only

d) In case Bridge is included as part of DPR of Highway the experience will be counted both in Sl.No. 1 and in 2 of the table.

2. 2. Adequacy of the proposed work plan and methodology in responding to the TOR

Sl. No.	Description	Max points
1	Site Appreciation	2
2	Comments on TOR	1
3	Team Composition and Task assignment	1
4	Methodology	1
	Total Points	**5**
	Rating given below shall be applicable on all above : Below Average (50 %) Average (75%) Good (90%) Excellent (100%)	

2.3 Material testing, Survey and investigation equipment and software proposed to be used

Sl. No.	Description	Max points
a)	Availability of in-house material testing facility	1
	Available	*1*
	Not available/outsourced	*0.5*
b)	Field investigation facilities	2
	Available	*2*
	Not available/outsourced	*1*
c)	Office Equipment and software	2
	Available	*2*
	Not available/outsourced	*1*
	Total Points	**5**

2.4. Qualification and Competence of the Key Staff for adequacy of the Assignment

2.4.2 TEAM **LEADER (Max Marks – 15)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage(%)
I	**General Qualification**		**25**
	Post graduation in Highway Engg./ Transportation Engineering	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<15 years	0	
	15-20 years	20	
	>20 years	25	
b)	No. of Highway Projects - Experience in Design of Highway Projects (4/6 laning of NH/SH/Expressways)		25
	<4 nos.	0	
	4 – 6nos. *With atleast 1 concrete road* *Without any concrete road*	 *18* *0*	

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage(%)
	7 – 10nos. *With atleast 1 concrete road* *Without any concrete road*	 *22* *0*	
	> 10nos. *With atleast 1 concrete road* *Without any concrete road*	 *25* *0*	
c)	No. of Highway Projects as Team Leader - Experience as Team Leader in Design of Highway Projects (4/6 laning of NH/SH/Expressways)		20
	<1 no.	0	
	1 – 2nos.	15	
	3 – 4nos.	18	
	>4nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

2.4.3 BRIDGE **ENGINEER (Max Marks – 12)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
I	**General Qualification**		**25**
	Post graduation in Structural Engineering	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<10 years	0	
	10-15 years	20	
	>15 years	25	
b)	No. of Bridge Design Projects - Experience in Design of Bridges in Highway Projects (4/6 laning of NH/SH/Expressways)		25
	<4 nos.	0	
	4 – 6nos.	18	
	7 – 10nos.	22	
	>10nos.	25	
c)	No. of Highway Projects as Structural / Bridge Engineer - Experience as Structural / Bridge Engineer in Design of Highway Projects (4/6 laning of NH/SH/Expressways)		20
	<3 no.	0	
	3 – 4nos.	15	
	5 – 6nos.	18	
	>6nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

2.4.4 TRAFFIC-**CUM-SAFETY EXPERT (Max Marks – 10)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
I	**General Qualification**		**25**
	Post graduation in Traffic/Transportation Engineering	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<8 years	0	
	8-10 years	20	
	>10 years	25	
b)	No. of Road Design Projects - Experience in Traffic Survey and Analysis of Highway Projects (4/6 laning of NH/SH/Expressways/Urban Roads)		25
	<3 nos.	0	
	3 – 5nos.	18	
	6 – 8nos.	22	
	>8nos.	25	
c)	No. of Highway Projects as Traffic / Transportation Engineer/Planner - Experience as Traffic / Transportation Engineer/Planner in Design of Highway Projects (4/6 laning of NH/SH/Expressways)		20
	<2 nos.	0	
	2 – 4nos.	15	
	5 – 6nos.	18	
	>6nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

2.4.5 PAVEMENT **ENGINEER (Max Marks – 10)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
I	**General Qualification**		**25**
	Degree in Civil Engineering or equivalent	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<10 years	0	
	10-15 years	20	
	>15 years	25	
b)	No. of Highway Projects - Experience in Design of Highway Projects (4/6 laning of NH/SH/Expressways)		25
	<3 nos.	0	

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
	3 – 5nos.	20	
	6 – 8nos.	22	
	>8nos.	25	
c)	No. of Highway Projects as Pavement Engineer - Experience as Pavement Design Engineer of Highway Projects (4/6 laning of NH/SH/Expressways) involving design of concrete roads		20
	<2 nos.	0	
	2 – 3nos.	15	
	4 – 6nos.	18	
	>6nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

2.4.6 QUANTITY **SURVEYOR (Max Marks – 8)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
I	**General Qualification**		**25**
	Diploma in Civil Engineering or equivalent	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<7 years	0	
	7-10 years	20	
	>15 years	25	
b)	No. of Highway Projects - Experience in Quantity Surveying of Highway Projects (4/6 laning of NH/SH/Expressways)		25
	<3 nos.	0	
	3 – 5nos.	20	
	6 – 8nos.	22	
	>8nos.	25	
c)	No. of Highway Projects as Quantity Surveyor - Experience as Quantity Surveyor of Highway Projects (4/6 laning of NH/SH/Expressways)		20
	<2 nos.	0	
	2 – 3nos.	15	
	4 – 6nos.	18	
	>6nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

2.4.7 FINANCIAL **EXPERT (Max Marks – 8)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
I	**General Qualification**		**25**
	Post Graduation in Commerce / Chartered Accountant or MBA(Finance)	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<7 years	0	
	7-10 years	20	
	>15 years	25	
b)	No. of Projects involving Financial Analysis - Experience in Financial Analysis of Projects executed under PPP mode		25
	<3 nos.	0	
	3 – 5nos.	20	
	6 – 8nos.	22	
	>8nos.	25	
c)	No. of Highway Projects as Financial Expert - Experience as Financial Expert of Highway Projects (2/4/6 laning of NH/SH/Expressways)		20
	<2 nos.	0	
	2 – 3nos.	15	
	4 – 6nos.	18	
	>6nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

2.4.8 ENVIRONMENTAL **EXPERT (Max Marks – 4)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
I	**General Qualification**		**25**
	Post graduation in Environmental Science / Environmental Engineering / Chemical Engineering	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<7 years	0	
	7-10 years	20	
	>10 years	25	
b)	No. of Projects involving Environmental Impact Assessment study - Experience in preparation of EIA report		25
	<3 nos.	0	
	3 – 5nos.	20	
	6 – 8nos.	22	
	>8nos.	25	

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
c)	No. of Highway Projects as Environmental Engineer/Expert - Experience as Environmental Engineer/Expert of Highway Projects (4/6 laning of NH/SH/Expressways)		20
	<2 nos.	0	
	2 – 3nos.	15	
	4 – 6nos.	18	
	>6nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

2.4.9 SOCIAL **EXPERT (Max Marks – 3)**

Sl. No.	Description	Breakup of Weightage (%)	Max Weightage (%)
I	**General Qualification**		**25**
	Post graduation in Social Science / Sociology	25	
II	**Relevant Experience & Adequacy for the Project**		**70**
a)	Total Professional Experience		25
	<7 years	0	
	7-10 years	20	
	>10 years	25	
b)	No. of Projects involving Social Impact Assessment study - Experience in preparation of SIA report		25
	<3 nos.	0	
	3 – 5nos.	20	
	6 – 8nos.	22	
	>8nos.	25	
c)	No. of Highway Projects as Social Expert - Experience as Social Expert of Highway Projects (4/6 laning of NH/SH/Expressways)		20
	<2 nos.	0	
	2 – 3nos.	15	
	4 – 6nos.	18	
	>6nos.	20	
III	**Employment with Firm**		**5**
	Less than 1 Year	0	
	1-2 years	3	
	more than 2 years	5	
	TOTAL		**100**

Assumptions to be made regarding Similar Capacity for various positions :

1. Team Leader

i) On behalf of Consultant / Contractor: Team Leader/Senior Highway Engineer.

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

2. Bridge Engineer

i) On behalf of Consultant: Senior Bridge Engineer/Bridge Engineer/Bridge Design Engineer

ii) In Government Organizations: Executive Engineer (or equivalent) and above

3. Traffic and Safety Expert

i) On behalf of Consultant: Traffic Engineer/Transportation Engineer/Road Safety Expert

ii) In Government Organizations: Executive Engineer (or equivalent) and above

iii) On behalf of Contractor : Traffic Engineer/Transportation Engineer/ Road Safety Expert

4. Pavement Engineer

i) On behalf of Consultant: Pavement Engineer/Pavement Design Engineer/Pavement & Material Engineer.

ii) In Government Organizations: Executive Engineer (or equivalent) and above

5. Quantity Surveyor/Documentation Expert

i) On behalf of Consultant /Contractor: Quantity Surveyor

(ii) In Government Organizations : Assistant Engineer (or equivalent)

6. Financial Expert

i) On behalf of Consultant: Financial Expert/BOT Expert.

ii) In Government Organizations: Executive Engineer (or equivalent) and above

7. Environmental Specialist

i) On behalf of Consultant /Contractor: Environmental Engineer/Environmental/Government Organization Specialist/Environmental Expert

ii) In Government Organisation: Officers who has dealt environment/forest matter.

ANNEXURE – II

Format of Bank Guarantee for Bid Security

To

Managing Director,
Indian Port Association,
1st Floor, South Tower, NBCC Place,
B.P.Marg, Lodi Road,
New Delhi – 110 003
Ph: 011 – 24369061; Fax No: 011-24365866

WHEREAS_____[Name and address of the consultant] (hereinafter called "the consultant") in pursuance of the consultancy project _____to provide the services on terms and conditions set forth in this Request for Proposal (RFP) dated _____ [Name of project and brief description of works] (hereinafter called the "bid").

AND WHEREAS it has been stipulated by you in the RFP inviting bid(s) that the Applicant shall furnish to you a bank guarantee issued by a Nationalised / Scheduled bank for the sum specified therein as security for compliance with his obligations in accordance with the bid submitted.

AND WHEREAS we have agreed to issue on behalf of the Applicants such a bank guarantee;

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

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

We further agree that no change or addition to or other modification of the terms of the RFP or the bid or of the services to be performed there under or of any of the bid documents which may be made between you and the Applicant shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification or by the extension of time for performance granted to the Applicant or postponement/non exercise/ delayed exercise of any of its rights by IPA or any indulgence shown by IPA to the Applicant and the Guarantor shall not be relieved from its obligations under this Guarantee on account of any such variation, extension, postponement, non-exercise, delayed exercise of any of its rights by IPA or any indulgence shown by IPA provided nothing contained herein shall enlarge the Guarantor's obligation hereunder.

The liability of the bank under this guarantee shall not be affected by any change in the constitution of the Applicant or of the bank.

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

Signature and seal of the Guarantor_____in presence of

Name and designation_____1. _____

(Name, Signature & Occupation)

Name of the bank_____

Address_____2. _____

(Name, Signature & Occupation)

Date_____

ANNEXURE – III

Power of Attorney for Authorised representative

Know all men by these presents, we, (name of Firm and address of the registered office) do hereby constitute, nominate, appoint and authorise Mr. / Ms. son/daughter/wife and presently residing at , who is presently employed with us and holding the position of as our true and lawful attorney (hereinafter referred to as the "Authorised Representative") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant {Project Name}, proposed to be developed by the IPA (the "IPA") including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the IPA, representing us in all matters before the IPA, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the IPA in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the IPA.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF ,20**

For

(Signature, name, designation and address)

Witnesses:

I.

2.

Notarised

Accepted

(Signature, name, designation and address of the Attorney)

The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure,. The Power of Attorney should be executed on a non-judicial stamp paper of Ras.50 (fifty) and duly notarised by a notary public.

Wherever required, the Applicant should submit for verification the extract of the charter documents and other documents such as a resolution/power of attorney in favour the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Applicant.

For a Power of Attorney executed and issued overseas, the document will also have to be legalised by the Indian Embassy and notarised in the jurisdiction where the Power of Attorney is being issued. However, Applicants from countries that have signed the Hague Legislation Convention 1961 need not get their Power of Attorney legalised by the Indian Embassy if it carried a conforming Apostille certificate.