

RFP for Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway (EPE)



**Indian Highways Management
Company Ltd.**
(CIN- U74140DL2012PLC246662)

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PROJECT DEFINITION

The National Highways Authority of India (“NHAI or the Authority”) is engaged in development, maintenance and management of National Highways and National Expressways entrusted to it by Ministry of Road Transport and Highways (MoRTH).

The traffic issues surrounding Delhi city include heavy cargo traffic, noise deterioration, problems on traffic safety, delay, and air pollution due to bad status of substitute route condition, etc. For these reasons, Government of India requested the Japanese Government to support the introduction of ITS (Intelligent Transport System) equipment by providing Loan for the eastern half section (total extension 135 km) of Ring Road in Delhi city suburbs.

The Government of India has received a loan from the Japan International Cooperation Agency (hereinafter referred to as "JICA") to finance the Eastern Peripheral Expressway ITS Installation Project (hereinafter referred to as “the Project”) which is to be expected to respond to increasing traffic volume and improve smooth traffic in Delhi Metropolitan Region by introducing Intelligent Transport Systems (hereinafter referred to as “ITS”) on Eastern Peripheral Expressway (hereinafter referred to as “EPE”), thereby contributing to mitigation of traffic congestion and promoting regional economic development.

The ITS Installation Project comprises of the following components:

- Advanced Traffic Management System with one (1) Control Centre and two (2) Sub Centres
- Toll Management System with 10 Toll gates (two (2) Main Toll Plazas and set of Toll Gates at 8 interchanges)

NOTICE INVITING TENDER

(Tender Ref No :) - IHMCL/EPExp/JICA/2017

Indian Highways Management Company Ltd (IHMCL) invites bids for engagement of service providers for “Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway”. The engagement shall initially be for a period of **one year and six months (18 Months), which may further be extended up to six months subject to satisfactory services and functional requirements of IHMCL.** The Service Provider shall be responsible to provide the services in accordance with the Detailed Scope of Work as described in the Annexure-1(ref.5).

The prospective bidders are hereby invited to submit Technical and Financial bids, latest by **01.11.2017** in the pro-forma prescribed herein. No change in the prescribed formats and in the mode of bid submission is permissible.

SCHEDULE OF IMPORTANT EVENTS / ACTIVITIES

S. No.	EVENT(S)	DATE
1.	Issue of RFP Document	13.10.2017
2.	Last date for submission of queries/clarifications	20.10.2017
3.	Pre - bid meeting	24.10.2017 at 11:00 am
4.	Last date/ time for submission of bids (i.e. <i>Bid due date</i>)	01.11.2017 at 3:00 pm
5.	Opening of Technical bids	01.11.2017
6.	Opening of Financial bids	To be intimated separately

ARTICLE-1

TENDER APPLICATION FEE AND BID SECURITY

- 1.1** The Bidder shall pay **Tender Application Fee** (non-refundable) amounting to **INR 5,000/- (Rupees Five Thousand Only)** in the form of **DD / Pay Order drawn in Favour of “Indian Highways Management Company Ltd”, payable at New Delhi.**
- 1.2** The Bidder shall furnish Earnest Money Deposit (EMD) **of INR 10 Lakhs (Rupees Ten lakhs only)** by way of Bank Guarantee (EMBG) in the prescribed format. IHMCL shall not be liable to pay any interest on the EMD.
- 1.3** The EMBG shall remain valid and in force for a period of 180 days (one hundred eighty days) after bid due date. For counting the period of validity of the EMBG, the last date of submission of bids shall be excluded. The claim period of EMBG shall be 60 days thereafter.
- 1.4** The EMBG from following banks only shall be accepted:-
- i. State Bank of India.
 - ii. Any Indian Nationalized Bank.
 - iii. IDBI or ICICI Bank.
 - iv. A Foreign Bank (issued by a branch outside India) with a counter guarantee from SBI or any Indian Nationalized Bank.
 - v. Any Scheduled Commercial Bank approved by RBI having a net worth of not less than INR 500 Crores as per the latest Audited Balance Sheet of the Bank. In the case of a Foreign Bank (issued by the branch of India) the net worth in respect of the Indian operations shall only be taken into account.
- 1.5** The acceptance of the EMBG shall also be subject to the following condition:-
- i. The capital adequacy of the Bank shall not be less than the norms prescribed by RBI.
 - ii. The bank guarantee issued by a Cooperative Bank shall not be accepted.
- 1.6** An EMBG shall be declared unacceptable, if
- i. It does not comply with the requirements stipulated herein above;
 - ii. It's validity is lesser than the prescribed period;
 - iii. The EMBG is not of requisite amount mentioned here in above;
 - iv. There is a material deviation in the format of EMBG submitted by the bidder from the prescribed format, which is likely to adversely affect the rights of IHMCL for encashment of EMBG in the event of default.
- 1.7** Any bid *not accompanied* by acceptable EMD and/or Tender Application Fee in the prescribed manner shall be summarily rejected.
- 1.8** The EMBG of unsuccessful bidders shall be returned normally within 30 days after closure of the tender process i.e. signing of the contract agreement with the successful bidder.

1.9 IHMCL reserves the right to annul or cancel the bidding process at any time, at its sole discretion, without giving any reason whatsoever.

1.10 In case any bidder has submitted a Bank Guarantee for EMD to IHMCL in respect of any previous bid and the same has not been returned by IHMCL, the bidder can submit a letter requesting IHMCL to accept the same Bank Guarantee as EMD for this Tender. The decision of IHMCL in this regard shall be final.

1.11 FORFEITURE OF EMD:

The Bidder, by submitting its Bid pursuant to this RFP, shall be deemed to have acknowledged and confirmed that in the event of IHMCL suffering any loss or damage on account of withdrawal of its Bid or for any other default by the Bidder during the period of Bid validity as specified in this RFP, IHMCL shall be entitled to forfeit and appropriate the EMD as Damages thereof. Without prejudice to the generality of the foregoing, following acts or omission on the part of the Bidder shall be result in the forfeiture of EMD by IHMCL-

- i. If a bidder submits a non-responsive bid:
Subject to, however, that in the event of forfeiture and/ or appropriation of EMD occurring due to operation of this sub para, the damage so claimed by IHMCL shall be restricted to 25% of the value of EMD.
- ii. If a Bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice; or
- iii. If a Bidder withdraws its Bid during the period of Bid validity as specified in this RFP and as further extended by IHMCL; or
- iv. If the bidder tries to influence the evaluation process; or
- v. If a Bidder having been notified as Successful Bidder by IHMCL through issuance of Letter of Award (LOA) during the bid validity period-
 - (i) Fails or refuses to sign & return the copy of LOA as acceptance of award within stipulated time.
 - (ii) Fails or refuses to furnish the Performance Security, in accordance with the conditions of RFP specified herein; or
 - (ii) Fails or refuses to execute/sign the Contract within the stipulated time frame.

ARTICLE-2

ELIGIBILITY AND PRE-QUALIFICATION CRITERIA

2.1 The Applicant or Bidder may be:

2.1.1 A LLP incorporated under LLP Act, 2008 or a Company incorporated and registered in India under the Companies Act, 2013/1956. *Documentary proof (copy of certificate of incorporation) shall be submitted as part of the Bid documents.*

OR

2.1.2 A Wholly owned subsidiary Company registered in India of a Foreign Company having requisite experience. For considering the experience of the Parent Company, the subsidiary Company registered in India should provide an undertaking from their Parent Company confirming thereby:

- i. Perpetual and unconditional access to assets, intellectual property, expertise, personnel and facilities of the Parent Company to the Indian Company;
- ii. Sharing of risks and profits of the Indian Company by the Parent Company; and
- iii. That the Parent Company has sufficient representation in the management of Indian Company to control the activities of the subsidiary.

In such case only, the experience and the details of the Parent Company will be considered, otherwise the details/ experience of Indian Company only, will be considered. Under this concept, there is no involvement of lead bidder; the Indian subsidiary company shall be participating as a sole bidder.

OR

2.1.3 A Joint Venture (JV)/ Consortium subject to fulfilling following conditions:

- i. Partners of the JV/Consortium shall only be either LLP incorporated under LLP Act,2008 or a Company incorporated and registered in India under the Companies Act, 2013/1956.
- ii. Maximum number of partners in the JV or Consortium shall be Three;
- iii. The Partners in a JV or Consortium shall be jointly and severally liable;
- iv. The Lead Partner in the JV or Consortium shall be single largest partner in terms of Capital contribution.
- v. The eligibility/ experience of JV or Consortium shall be considered cumulatively.
- vi. The eligibility/ experience of any partner of JV or Consortium shall be considered only if the partner is proposed to have at least twenty six percent (26%) in terms of capital contribution in the JV/ Consortium.
- vii. The parties in JV or Consortium cannot to be part of any other JV / Consortium or bid individually. Effectively one party shall be bidding only once, either as an stand alone company or as a part of Consortium / JV.

2.1.4 In case the applicant is a JV/ Consortium, following document shall also be submitted as part of the Technical Bid:

- i. The documentary proof in support of fulfilling the eligibility criteria by the sole Applicant or by the Consortium/ JV, as the case may be, along-with a copy of MoU/JV Agreement as well as other relevant documents as stipulated herein above. The JV / Consortium Agreement should clearly describe the responsibility/obligations of each partner.
- ii. Brief background of the each JV / consortium partner in format prescribed.
- iii. Documents substantiating eligibility of each JV / consortium partner.

2.2 Eligibility Criteria

A. Technical Eligibility: The Bidder should be an entity operating in the field of Tolling Systems for Highways and should have successfully supplied, installed, commissioned; and/ or carried out system integration & maintenance of tolling systems for one or more Projects comprising of at least: **50 ETC Lanes and 100 Cash toll lanes;**

Technical capability statements including details of tolling systems supplied and/or services owned/ controlled by the bidder and Letter of Completion for same, from the clients, need to be provided as part of the eligibility document.

B. Financial Eligibility:

- i. The Bidder should have average annual operational turnover of more than INR 10 (Ten) Crore during last three financial years i.e. FY2014-15 to 2016-17.
- ii. The bidder shall have Positive net worth for the Financial Year(FY) ended 31st March, 2017.
- iii. In case of a JV or consortium, the combined financial turnover of all Partners shall be considered in the proportion of share of the Partners in the JV or consortium.

Documentary proof in the form of a certificate from the statutory auditor/ chartered accountant as per the specified format shall be submitted as part of the technical bid. Only those bidders who fulfil the technical and financial eligibility and qualify the technical bid evaluation as per Clause 2.2 will be considered for financial bid opening.

ARTICLE-3

INSTRUCTIONS TO BIDDERS

3.1 General terms of Bidding

- 3.1.1** The Bid document shall be typed or written in indelible ink and signed by the authorized signatory of the Bidder who shall also initial each page, in blue ink. In case of printed and published documents, only the cover shall be initialled. All the alterations, omissions, additions or any other amendments made to the Bid shall be initialled by the person(s) signing the Bid.
- 3.1.2** No Bidder shall submit more than one Bid. A Bidder bidding whether as standalone entity or as a member of a JV/Consortium shall not be entitled to submit another bid either stand alone or as a member of any Consortium, as the case maybe.
- 3.1.3** Bid documents shall be properly hard bound in a manner such as to avoid misplacement / changing / tampering of the documents.
- 3.1.4** If any requisite document/ certificate are not in the prescribed format the same shall not be considered while evaluating the Bids and the same may lead to Bid being declared as non-responsive.
- 3.1.5** **The Technical Bid shall not include any commercial quote.**
- 3.1.6** Bids submitted by fax, telex, telegram or e-mail shall not be entertained and shall be rejected.
- 3.1.7** Bids received by IHMCL after the specified time on the Bid Due Date, shall not be eligible for consideration and shall be summarily rejected.
- 3.1.8** The Bidders are expected to carry out their own surveys, investigations and other detailed examination of the Project before submitting their Bids. Nothing contained in the RFP shall be binding on IHMCL nor confer any right on the Bidders, and IHMCL shall have no liability whatsoever in relation to any issue or matter arising out of any or all contents of this RFP.
- 3.1.9** Notwithstanding anything to the contrary contained in this RFP, the detailed terms specified in the Service Provider Agreement to be executed between the Successful Bidder and IHMCL shall have overriding effect; provided, however, that any conditions or obligations imposed on the Bidder hereunder shall continue to have effect in addition to its obligations under the Service Provider Agreement executed as aforesaid
- 3.1.10** In the event of any difference between figures and words, the amount indicated in words shall be taken into account.
- 3.1.11** In case the Bidder is a Consortium, the Members thereof should furnish a Power of Attorney in favour of the Lead Member in the prescribed format.
- 3.1.12** Any condition or qualification or any other stipulation contained in the Bid, shall render the Bid liable to rejection as a non-responsive Bid.
The Bid and all communications in relation to or concerning the Bidding Documents shall be in English language. All The documents, including this RFP and documents attached thereto, provided by IHMCL, are and shall, remain the property of IHMCL and are transmitted to the Bidders solely for the purpose of preparation and the submission of a Bid in accordance with the provisions contained herein.

- 3.1.13** Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The provisions of this Clause shall also apply *mutatis mutandis* to Bids and all other documents submitted by the Bidders, and IHMCL will not return to the Bidders any Bid, document or any information provided along therewith.
- 3.1.14** A Bidder shall not have a conflict of interest (the "Conflict of Interest") that affects the Bidding Process. At any stage of Bidding process, any Bidder found to be having a Conflict of Interest shall be disqualified.
- 3.1.15** In the event of disqualification due to clause 3.1.14 , IHMCL shall be entitled to forfeit and appropriate the EMD, as the case may be, up to a 25% of the Security value as **Damages**, without prejudice to any other right or remedy that may be available to IHMCL under the Bidding Documents and/or the Service provider Agreement or otherwise. Without limiting the generality of the above, a Bidder shall be deemed to have a Conflict of Interest affecting the Bidding Process, if:
- i. The Bidder, its shareholder or Associate (or any constituent thereof) and any other Bidder, its shareholder or any Associate thereof (or any constituent thereof) have common controlling shareholders or common ownership; provided that this disqualification shall not apply in cases where the direct or indirect shareholding of a Bidder, its shareholder or an Associate thereof (or any shareholder thereof having a shareholding of more than 5% (five per cent) of the paid up and subscribed share capital of such Bidder, shareholder or Associate, as the case may be) in the other Bidder, its shareholder or Associate, is less than 5% (five per cent) of the subscribed and paid up equity share capital thereof; provided further that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in section 2(72) of the Companies Act, 2013. For the purpose of this clause subscribed and paid up share capital as on the day of submission of the Bid shall be taken into account.
 - ii. A constituent of such Bidder is also a constituent of another Bidder; or
 - iii. Such Bidder, its shareholder or any Associate thereof receives or has received any direct or indirect subsidy, grant, concessional loan or subordinated debt from any other Bidder, its shareholder or Associate, or has provided any such subsidy, grant, concessional loan or subordinated debt to any other Bidder, its shareholder or any Associate thereof; or
 - iv. Such Bidder has the same legal representative for purposes of this Bid as any other Bidder; or
 - v. Such Bidder, or any Associate thereof, has a relationship with another Bidder, or any Associate thereof, directly or through common third party/ parties, that puts either or both of them in a position to have access to each other's information about, or to influence the Bid of either or each other; or
 - vi. Such Bidder or any Associate thereof has participated as a consultant to IHMCL in the preparation of any documents, design or technical specifications of the Project.

vii. In case a Bidder is a Consortium, then the term Bidder as used in this Clause 2.1.3 & 2.1.4, shall include each Partner of such Consortium.

3.1.16 For purposes of this RFP, Associate means, in relation to the Bidder/ Consortium Member, a person who controls, is controlled by, or is under the common control with such Bidder/ Consortium Member .As used in this definition, the expression “control” means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person by virtue of ownership interest, capital contribution , or operation of law.

3.1.17 A Bidder shall be disqualified and EMD or, as the case may be, shall be appropriated by IHMCL, if any legal, financial or technical adviser of IHMCL in relation to the Project, is engaged by the Bidder or its Members or any Associate thereof, in any manner, for matters related to, or incidental to such Project, anytime during and after the Bidding Process, up to the Agreement Period.

3.1.18 This RFP is not transferable.

3.2 Change in composition of the Consortium

3.2.1 Where the Bidder is a Consortium, change in composition of the Consortium may be permitted by the IHMCL during the Bid Stage, only where:

- (a)** The Lead Partner continues to be the Lead Partner of the Consortium;
- (b)** The Incoming Partner is at least equal to or more than , in terms of Technical Capacity and Financial Capacity, to the Consortium Member who is sought to be substituted (Outgoing Partner) and the modified Consortium shall continue to meet the pre - qualification and short-listing criteria for Applicants; and
- (c)** The Incoming Partner (s) expressly adopt(s) the Application already made on behalf of the Consortium as if it were a party to it originally duly supported by Deed of Adherence : and
- (d)** The Incoming Partner is not an Stand alone Applicant, Member/ Associate of any other Consortium bidding for this Project.

3.2.2 Approval for change in the composition of a Consortium shall be at the sole discretion of IHMCL. The Bidder must submit its application for change in composition of the Consortium at least 15 (fifteen) days prior to the Bid Due Date.

3.2.3 The modified/ reconstituted Consortium shall submit a revised Joint Bidding Agreement and a Power of Attorney, in the prescribed format, prior to the Bid Due Date.

3.3 Change in Ownership

- 3.3.1** Each of the Consortium / JV Partners shall, hold, not less than 26% (twenty six per cent) of the subscribed and paid-up equity of the JV/Consortium Service Provider, for a minimum of 2 years, from the date of Signing of Agreement.
- 3.3.2** By submitting the Bid, the Bidder shall also be deemed to have acknowledged and agreed that in the event of a change in control of a Consortium Partner whose Technical Capacity and/ or Financial Capacity was taken into consideration for the purposes of qualification under and in accordance with this RFP, the Bidder shall be deemed to have knowledge of the change as described here in above and shall be required to inform IHMCL forthwith along with all relevant particulars about the same and IHMCL may, in its sole discretion, disqualify the Bidder or withdraw the LOA from the Selected Bidder, as the case may be. In the event such change in control occurs after signing of the Service Provider Agreement it would notwithstanding anything to the contrary contained in the Service Provider Agreement, be deemed to be a breach of the Service Provider Agreement, and the same shall be liable to be terminated and IHMCL may forfeit and appropriate the Bid Security or Performance Security, as the case may be, as Damages without IHMCL being liable in any manner whatsoever to the Service Provider.

3.4 Cost of Bidding

The Bidders shall be responsible for all of the costs associated with the preparation and submission of their Bids. IHMCL will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

3.5 Verification of information

On submission of a Bid in pursuance of this RFP, a Bidder shall be deemed to have:

- (a)** Made a complete and careful examination of the Bidding Documents;
- (b)** Received all relevant information requested from IHMCL;
- (c)** Accepted the risk of inadequacy, error or mistake in the information provided in the Bidding Documents or furnished by or on behalf of IHMCL;
- (d)** Satisfied itself about all matters, things and information necessary and required for submitting an informed Bid, execution of the Project in accordance with the Bidding Documents and performance of all of its obligations thereunder;

- (e) Acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in the Bidding Documents or ignorance of any of the matters referred herein above shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc. from IHMCL, or a ground for termination of the Service Provider Agreement by the Service Provider;
- (f) Acknowledged that it does not have a Conflict of Interest; and
- (g) Agreed to be bound by the undertakings provided by it under and in terms hereof.

3.5.2 IHMCL shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to RFP, the Bidding Documents or the Bidding Process, including any error or mistake therein or in any information or data given by IHMCL.

3.6 Verification and Disqualification

3.6.1 IHMCL reserves the right to verify all statements, information and documents submitted by the Bidder in response to the RFP or the Bidding Documents and the Bidder shall, when so required by IHMCL, make available all such information, evidence and documents as may be necessary for such verification. Any such verification, or lack of such verification, by IHMCL shall not relieve the Bidder of its obligations or liabilities hereunder nor will it affect any rights of IHMCL thereunder.

3.6.2 IHMCL reserves the right to reject any Bid and appropriate the EMD if:

- (a) At any time, a material misrepresentation is made or uncovered, or
- (b) The Bidder does not provide, within the time specified by IHMCL, the supplemental information sought by IHMCL for evaluation of the Bid.

Such misrepresentation/ improper response shall lead to the disqualification of the Bidder.

If the Bidder is a Consortium, then the entire Consortium and each Partner may be disqualified/ rejected. If such disqualification / rejection occurs after the Bids have been opened and the Lowest Bidder gets disqualified / rejected, then the IHMCL reserves the right to take any such measure as may be deemed fit in the sole discretion of IHMCL, including annulment of the whole Bidding Process.

3.6.3 In Case it is found that the bidder has made material misrepresentation or submitted materially incorrect or false information, or any of the qualification conditions have not been met by the Bidder, at any time during the Bidding process or Agreement Period, the Bidder shall be disqualified and IHMCL shall be entitled to forfeit and appropriate the entire Bid Security or Performance Security as the case may be.

3.7 Clarifications

- 3.7.1** Bidders requiring any clarification on the RFP may notify IHMCL in writing or e-mail as per specified format. They should send in their queries on or before the date mentioned in the Schedule of Bidding Process. IHMCL shall respond to the queries, at the earliest. The responses will be published on IHMCL's website, without identifying the source of queries.
- 3.7.2** IHMCL may or may not respond to any question or provide any clarification, in its sole discretion.

3.8 Amendment of RFP

- 3.8.1** At any time prior to the Bid Due Date, IHMCL may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the RFP by the issuance of Addenda.
- 3.8.2** Any Addendum issued hereunder will be in writing and shall be published on IHMCL's website.
- 3.8.3** In order to afford the Bidders a reasonable time for taking an Addendum into account, or for any other reason, the IHMCL may, in its sole discretion, extend the Bid Due Date.

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ARTICLE-4

BID DOCUMENTS, PREPARATION AND SUBMISSION

- 4.1 Detailed RFP document can be viewed / downloaded from IHMCL website..www.ihmcl.com
- 4.2 Bidder(s) have to pay (a) the Tender Application Fee (non-refundable); and (b) Earnest Money Deposit, in the prescribed manner.
- 4.3 The amendments/clarifications to the RFP, if any, will be published on IHMCL's website.
- 4.4 **PREPARATION & SUBMISSION OF BIDS:**

The Bid shall remain valid for 180 days w.e.f. the Bid Due Date .

**4.4.1 The Bid Envelope shall be marked as “Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway
– Tender Ref: IHMCL/EPExp/JICA/2017**

4.4.2 The Bid Envelope- shall be addressed to:

ATTN OF: Manager (Projects)

ADDRESS: Indian Highways Management Company Ltd
2nd Floor, MTNL Building, Sector 19, Dwarka, New Delhi– 110075.

4.4.3. The envelope should also bear the bidder’s name & address. If the envelope is not sealed and marked as above, IHMCL will assume no responsibility for the misplacement or premature opening of the contents of the envelope and consequent losses, if any, suffered by the Bidder. Such Bids may also be declared non-responsive.

4.4.4 The Bid envelope shall contain the Bid documents in manner described below:

4.4.4.1 PART 1 (Technical Bid) – Envelope-1

The Documents specified below shall be serially marked, filed and placed in a sealed envelope. The envelope should bear the following identification: “*Technical Bid for Tender Ref:- IHMCL/EPExp/JICA/2017*”

List of Documents

- i. Bid Covering Letter
- ii. Demand Draft / Pay Order of Tender Application Fee of prescribed amount
- iii. Bid Security (EMD) of appropriate amount and in the prescribed manner;

- iv. Original Power of Attorney¹ in favour of authorized signatory in the prescribed format (Form in section 9.3);
- v. Company Incorporation certificate, MoA / AoA etc or LLP Incorporation Certificate , Partnership Deed etc. as the case may be.
- vi. Documentary proof of shareholding details
- vii. Documentary proof for access to parent company's assets, in case of subsidiaries of foreign companies.
- viii. JV / Consortium Agreements with shareholding details in case of JV / Consortium.
- ix. Power of Attorney in favour of Lead Bidder, in case of Consortium.
- x. Documentary proof of Technical eligibility as described in Clause 2.2 A
- xi. Documentary proof of Financial eligibility as described in Clause 2.2 B

4.4.4.2 PART 2 (Financial Bid) – Envelope-2

Financial Bid Envelope-2 shall be marked as “Financial Bid for Tender
Ref:- IHMCL/EPExp/JICA/2017”

Envelope-2 shall contain separate envelopes, containing financial bid forms.

4.5 MODIFICATION /SUBSTITUTION/ WITHDRAWAL OF BIDS:

- i. The Bidder may modify, substitute or withdraw its bid after submission prior to the Bid Due Date. No Bid shall be modified, substituted or withdrawn by the Bidder on or after the Bid Due Date.
- ii. Any alteration/modification in the Bid or additional information supplied, subsequent to the Bid Due Date, unless the same has been expressly sought for by IHMCL, shall be disregarded.
- iii. For withdrawal of bid, Bidder has to give written application to IHMCL.
- iv. Before withdrawal of a bid, it may specifically be noted that after withdrawal of a bid for any reason, Bidder cannot re-submit the bid again.
- v. The invitation and submissions of bids under this RFP shall not be binding on IHMCL in any manner. Further, IHMCL shall reserve the right to reject any or all of the bids received or cancel the tender process without assigning any reasons whatsoever, without incurring any liability on this account.

¹ Copy of Board Resolution and/ or Power of Attorney in the prescribed format / any other supporting document indicating that the person signing the bid has the required authority to sign on behalf of the bidder.

ARTICLE 5

BID EVALUATION

- 5.1** Prior to evaluation of bids, IHMCL shall determine whether each Bid is responsive to the requirements of this RFP. The Technical Bid of only those Bidders shall be opened who submit documents in True copies / Originals as prescribed under para 4.4.4.1 of this RFP. 'Technical Bid' of non-responsive bidders shall not be opened.
- 5.2** IHMCL reserves the right to reject any bid which is non-responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by IHMCL in respect of such bids.
- 5.3** In the first stage the Evaluation Committee shall examine the statement of qualification, furnished by the Bidder in support of their fulfilment of eligibility against the criteria prescribed in this RFP. A Bid shall be considered Responsive & Pre-Qualified only if:
- i. The '*prescribed documents*' in prescribed formats, are received by IHMCL on or before the Bid Due Date and time with proper seal and signature.
 - ii. Tender application fee is submitted as prescribed in the RFP document.
 - iii. EMD is submitted and is of appropriate amount and furnished as specified in this RFP document.
 - iv. The technical bid contains all the required documents and information in the prescribed manner.
 - v. The bidder satisfies the eligibility criteria specified in the RFP document.
 - vi. The bid does not contain any pre - condition, assumption or qualification; and
 - vii. It is not non-responsive in terms of this RFP.
- 5.4** In the second stage, subsequent to technical bid evaluation, financial bids of only shortlisted Bidders shall be opened. The financial bids shall be opened in the presence of all Bidders (who choose to be present) and the date of opening shall be intimated to pre-qualified Bidders.
- 5.5** The Financial Proposal Evaluation will be based on the "Total Cost", which would be the total pay-outs including all taxes etc. by IHMCL to Service Provider.

If there is a discrepancy between the unit price & the total price, the unit price shall prevail and IHMCL shall correct the total price. If there is a discrepancy between words & figures, the amount in words shall prevail. If the bidder does not accept the correction of errors, his bid shall be rejected and the EMD will be forfeited.

- 5.6** The Successful Bidder L1(Lowest 1)shall be awarded the work subject to IHMCL verifying the documents submitted by it. Letter of Award (LoA) shall be issued by IHMCL to the Successful Bidder.
- 5.7** IHMCL reserves the right to ask for further clarification and/or justification for the quoted prices from the lowest Bidder in case the quoted prices vary highly (more than 25%) from estimated prices of IHMCL or from average quoted prices of other Bidders.
- 5.8** In case, the lowest Bidder is not able to justify the Quoted prices to IHMCL's satisfaction, when asked for justification with reference to clause 5.9, IHMCL reserves the right to reject the Bid of Lowest bidder and adopt any other method to select another Bidder. In this case, the EMD of such rejected Bidder shall be forfeited.
- 5.9** Upon receipt of LOA, the Successful Bidder, shall comply with the conditions of LOA and give his written acceptance and Performance Security within the specified time frame, failing which, the LOA shall stand cancelled and also lead to annulment of the work award and forfeiture of the EMD. IHMCL shall be entitled to take any action as per law.
- 5.10** Upon furnishing of the acceptance by the Successful Bidder, he shall be asked to sign the Service Provider Agreement, within 15 days or as per the time frame mentioned in LOA, failing which, the offer will be treated as withdrawn and the Performance Security shall be forfeited.

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ARTICLE 6

PERFORMANCE SECURITY

- 6.1** Upon issue of a Letter of Award (LoA) by IHMCL, the Successful Bidder shall be required to furnish an unconditional and irrevocable Performance Security, for an amount equal to 10% of the Total Bid Price (Value of awarded work) in the form of a Bank Guarantee (PBG) in the prescribed format ***within a period of maximum 15 days from the date of LOA***. The PBG shall be valid for duration of the Contract. The claim date shall be six months beyond the validity period of the BG.
- 6.2** The PBG from following banks shall only be accepted:-
- i. State Bank of India.
 - ii. Any Indian Nationalized Bank.
 - iii. IDBI or ICICI Bank.
 - iv. A Foreign Bank (issued by a branch outside India) with a counter guarantee from SBI or any Indian Nationalized Bank.
 - v. Any Scheduled Commercial Bank approved by RBI having a net worth of not less than 500 Crores as per the latest Audited Balance Sheet of the Bank. In the case of a Foreign Bank (issued by the branch of India) the net worth in respect of the Indian operations shall only be taken into account.
- 6.3** The acceptance of the BG shall also be subject to the following conditions:-
- i. The capital adequacy of the Bank shall not be less than the norms prescribed by RBI.
 - ii. The bank guarantee issued by a Cooperative Bank shall not be accepted.
- 6.4** A Bank Guarantee for Performance Security may be declared unacceptable, if:
- i. It does not comply with the requirements stipulated herein above;
 - ii. It's validity is lesser than the prescribed period;
 - iii. The Bank Guarantee is not of requisite amount;
 - iv. There is a material deviation in the format of Bank Guarantee from the prescribed format, which is likely to adversely affect the rights of IHMCL to encase the Bank Guarantee in case of a default by the Service Provider.
- 6.5** The EMD of the Successful Bidder and other Bidders shall be returned without interest, after signing the contract with Successful Bidder.

ARTICLE 7

SCOPE OF WORK & PROJECT DURATION

- 7.1** The Service Provider is required to provide Hybrid ETC systems and subsystems thereof, on service model.
- 7.2** The Detailed scope of work along with Technical & Functional requirements is given in Annexure-1(ref.5).
- 7.3** This is to clarify that IHMCL does not seek/intend to procure, purchase, hire or take on lease any of the equipment, system, sub systems or any components thereof, through this RFP. All the Systems, software, equipment & components supplied by the Service Provider for fulfilment of its obligations this agreement shall remain property of the Service Provider.
- 7.4** The duration of the Services shall be for one year and six months (18 Months) initially and may be extended further up to six months whether in piece meal or at one go, on mutually agreed terms, subject to satisfactory performance, functional requirement and at sole discretion of IHMCL.

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ARTICLE 8

MISCELLANEOUS

- 8.1** Bidders are advised to study the RFP document along with its amendment/ addendum carefully.
- 8.2** Submission of the bid, will be deemed to have been done after careful study and examination of ground realities, as well as all the instructions, eligibility norms, terms & conditions, requirements and specifications available in the RFP document with full understanding of its implications.
- 8.3** The Bidder is expected to examine carefully all the instructions, conditions of Contract, forms for submitting Technical and Financial Bids and scope of work in the RFP document, before submitting their Bids, at his own risk & own cost.
- 8.4** Bids, which fail to comply with all the requirements of RFP document shall be declared non-responsive and shall not be considered for evaluation.
- 8.5** IHMCL will be at liberty to keep the credentials of the Bidders submitted by them at bidding stage, in public domain and the same may be uploaded by IHMCL on its web site. The Bidders shall have no objection if IHMCL uploads/ hosts the information pertaining to their credentials as well as of their key personnel.
- 8.6** The decision of the IHMCL in this regard shall be final and binding on the parties.
- 8.7** The bidding process shall be governed by, and construed in accordance with, the laws of India and courts at New Delhi shall have exclusive jurisdiction over all disputes arising under, pursuant to and/or in connection with the bidding process.
- 8.8** IHMCL, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to:
- i.** Suspend and/or cancel the bidding process and/or amend and/or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;
 - ii.** Consult with any Bidder in order to receive clarification or further information;
 - iii.** Retain any information and/ or evidence submitted to IHMCL by, on behalf of, and/ or in relation to any Bidder; and/or;
 - iv.** Independently verify, disqualify, reject and/ or accept any and all submissions or other information and/or evidence submitted by or on behalf of any Bidder.
- 8.9** IHMCL is not bound to reply/ respond to any representation/ letter or request for change in scope of work, eligibility criteria or any relaxation in respect of the tender conditions. No correspondence will be entertained on this matter.

- 8.10** It shall be deemed that by submitting the Bid, the Bidder agrees and releases IHMCL, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/or performance of any obligations hereunder, pursuant hereto and/or in connection with the bidding process and waives, to the fullest extent permitted by Applicable Law, any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.
- 8.11** A Prospective Bidder requiring any clarification regarding the RFP may notify IHMCL in writing using the format prescribed and send to IHMCL. Any modification in the RFP document shall be made by IHMCL separately through issue of an Addendum/ Amendment.
- 8.12** At any time prior to the bid due date, IHMCL, may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the conditions specified in the RFP document by an amendment.
- 8.13** Any amendment/ addendum thus issued shall be part of the RFP document and shall be communicated by hosting the same on IHMCL's web site only and should be taken into consideration by the prospective bidders while preparing their Bids.
- 8.14** In order to give prospective Bidders reasonable time to take any such amendment into account in preparing their bid, IHMCL may, at its discretion, extend the bid due date.

ARTICLE 9

FORMATS FOR BID DOCUMENTS

9.1 Bid Covering Letter

(To be prepared on letterhead of the Bidder)

To
Manager (Projects)
Indian Highways Management Company Ltd
2nd Floor, MTNL Building
Sector-19, Dwarka,
New Delhi - 110075

Subject: RFP Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway– Tender Ref No: IHMCL/EPExp/JICA/2017

Dear Sir,

1. We, the undersigned, have carefully examined the contents of the above referred RFP document including amendments/ addendum (if any) thereof and undertake to fully comply and abide by the terms and conditions specified therein and hereby submit our Bid for the aforesaid service. Our bid for the subject RFP is unconditional and unqualified.
2. We confirm that if selected We shall offer and provide services for Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway including system integration thereof, integration with other non-ETC lanes, if any and integration with NHAI HQ data centre for real time data transfer, to ensure ETC services on toll plazas.
3. We offer to execute the work in accordance with the Scope of work and the Conditions of Contract of this RFP both explicit and implied.
4. We undertake that, in competing for (and, if the award is made to us), for executing the above contract, we will strictly observe the laws against fraud and corruption in force in India namely "Prevention of Corruption Act 1988"
5. We understand that :
 - 5.1 This bid, if found incomplete in any respect and/ or if found with conditional compliance or not accompanied with the requisite EMD, shall be summarily rejected.
 - 5.2 If at any time, any averments made or information furnished as part of this bid is found incorrect, then the bid will be rejected and the contract if awarded on the basis of such information shall be cancelled. IHMCL is not bound to accept any/ all Bid(s) it will receive.
 - 5.3 Until a contract is executed, this bid together with RFP Document as well as notification of Letter of Award issued by IHMCL shall constitute a binding Contract between us.

6. We declare that :
- 6.1 We have not been *declared ineligible* by IHMCL, NHAI or Ministry of Road Transport & Highways, Government of India or any other agency for indulging in corrupt or fraudulent practices.
 - 6.2 We also confirm that we have not been *declared as non-performing or debarred* by IHMCL, NHAI or Ministry of Road Transport & Highways, Government of India.
 - 6.3 We *have not been blacklisted* by a Central/ State Government institution/ Public Sector Undertaking/ Autonomous body under the administrative control of Central or any State Government and there has been *no litigation* with any Government Department/ PSU/ Autonomous body on account of similar services.
 - 6.4 We have *not* directly or indirectly or through an agent *engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice*, as defined in the Contract Agreement, in respect of any tender or request for proposal issued by or any Contract entered into with IHMCL or any other Public Sector Enterprise or any Government, Central or State;
 - 6.5 We hereby certify that we have taken steps to ensure that in conformity with the provisions of the RFP document, no person acting for us or on our behalf has engaged or will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.
 - 6.6 We have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the subject work or which relates to a grave offense that outrages the moral sense of the community.
 - 6.7 Neither the Bidder nor any of its Directors are the subject of criminal or civil proceedings that could be expected to adversely affect its business or its ability to bid in the present tender.
 - 6.8 No investigation by a regulatory authority is pending either against us or against our Managing Director /CEO or Key Management Personnel or Designated Partner or any of our directors/ managers/ employees.
 - 6.9 The information provided in this technical bid (including the attachments) as well as the financial bid is true, accurate and complete to the best of our knowledge and belief. Nothing has been omitted which renders such information misleading; and all documents accompanying our bid are true copies of their respective originals.
 - 6.10 We shall be liable for disqualification or termination of contract at any stage, if any information/declaration is found to be incorrect or false.
7. In the event of our bid being declared as successful bid, we agree to enter into a contract agreement.

8. We offer the Bid Security in accordance with the RFP document as per the details furnished below:

BG/DD/Banker's Cheque/Pay Order No.	BG Validity	Date	Amount	Issuing Bank/ Branch

9. The documents in original accompanying the bid document have been submitted in a separate envelope as provided in the RFP and marked appropriately.
10. I am the Director / Authorized Signatory of the aforesaid company / firm and I am authorized to sign this bid on behalf of the firm / company.
11. I am submitting this bid after carefully reading all the terms and conditions contained in the RFP document and its addendum/ amendment, if any, and undertake to abide by the same.
12. It is also certified that the bid is being submitted in the prescribed formats without any addition / deviation / alteration and our bid is unconditional.

Yours sincerely,

Name

Designation/ Title of the Authorized Signatory.....

9.2 Brief Information about the Bidder(s)

(To be prepared on letterhead of the Bidder)

- 1. (a) Name of Bidder :
- (b) Year of establishment:
- (c) Registered Address:
- (d) Constitution of the bidder entity e.g. Government enterprise, private limited company, limited company, LLP etc.
- (e) In case of a Government enterprise, please indicate as to whether legally and financially autonomous and operate under commercial law.

Yes/ No/ Not applicable

(f) Name(s) of Directors / Partners

.....
.....

2. Address for correspondence with Telephone/ Fax numbers/ e-mail address:

- (a) Complete postal address:
- (b) Fixed telephone number
- (c) Mobile telephone number
- (d) E-mail address

3. Name & Address of the principal banker³:

- (a) Bank A/c Number
- (b) Branch Address
- (c) IFSC /MICR Code:

4. Name of the Statutory Auditor/ Company Secretary/ Chartered Accountant certifying the documents along with his/ her Membership number, if applicable:

Name

Designation/ Title of the Authorized Signatory.....

³These details are required for refund of Bid Security.

9.3 POWER OF ATTORNEY

Know all men by these presents, we, (Name of Company/ Firm and address of the registered office) do hereby constitute, nominate, appoint and authorize Mr / Ms.....son/daughter/wife of..... 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 “**Authorized Signatory or Attorney**”) 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 Bid for selection as the Service Provider for “ *Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway*”, proposed by Indian Highways Management Company Ltd, including but not limited to signing and submission of all applications, bid(s) and other documents and writings, and providing information/ responses to IHMCL, representing us in all matters before IHMCL, signing and execution of all contracts and undertakings consequent to acceptance of our bid and generally dealing with IHMCL in all matters in connection with or relating to or arising out of our Bid for the said Tender and/or upon award thereof to us.

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 Signatory or Attorney 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/ Attorney 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, 2017

For
(Signature, name, designation and address) Witnesses:

1.

2.

Notarise

Accept

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

Notes:

*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 appropriate denomination and should be registered or duly notarised by a notary public.

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

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, Bidders from countries that have signed the Hague Legislation Convention 1961 need not get their Power of Attorney legalised by the Indian Embassy if it carries a conforming Apostles certificate.

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9.4 Format for Earnest Money Bank Guarantee (EMBG)

(Refer Clauses 1.2 & 1.3)

B.G. No.

Dated:

To,
Manager (Projects),
Indian Highways Management Company Ltd (IHMCL)
2nd Floor, MTNL Building,
Sector-19, Dwarka,
New Delhi – 110075

1. WHEREAS M/s..... (a company registered under the Companies Act, 2013) and having its registered office at (and acting on behalf of its Consortium of _____ & _____) (hereinafter referred to as the "Bidder" which expression shall unless it be repugnant to the subject or context thereof include its/their executors, administrators, successors and assigns) desires to submit bids for "RFP Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway" against IHMCL's RFP No. _____
2. AND WHEREAS the said RFP requires the bidder(s) to furnish an Earnest Money Bank Guarantee (EMBG) along with their bids for the sum specified therein as security for compliance with his obligations in accordance with the said RFP.
3. AND WHEREAS at the request of the Bidder, we (..... Name of the Bank) having our registered office at..... and one of its branches at (hereinafter referred to as the "Bank"), have agreed to issue such a Bank Guarantee.
4. NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Bidder for the sum of **INR 40,00,000 (Rupees Forty Lakhs)** only, and we undertake to pay you, upon your first written demand and without cavil or argument, and without reference to the Bidder, any sum or sums within the limits of **INR 40,00,000 (Rupees Forty Lakhs)** only as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.
5. Any such written demand made by the Authority stating that the Bidder is in default of the due and faithful fulfilment and compliance with the terms and conditions contained in the RFP Documents (hereinafter referred to as "Bidding Documents") shall be final, conclusive and binding on the Bank.
6. We, the Bank, do hereby unconditionally undertake to pay the amounts due and payable under this Guarantee without any demur, reservation, recourse, contest or protest and without any reference to the Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of failure of the Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including failure of the said Bidder to keep its Bid open during the Bid validity period as set-forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Bank under this Guarantee.

7. This Guarantee shall be irrevocable and remain in full force for a period of **180 (one hundred and eighty) days** after the Bid Due Date. The claim period shall be **60 (sixty) days** thereafter or for such extended period as may be mutually agreed between the Authority and the Bidder, and agreed to by the Bank, and shall continue to be enforceable till all amounts under this Guarantee have been paid.

8. We, the Bank, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, *inter alia*, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Bidding Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other Authority.

9. The Guarantee shall not be affected by any change in the constitution or winding up of the Bidder or the Bank or any absorption, merger or amalgamation of the Bidder or the Bank with any other person.

10. In order to give full effect to this Guarantee, the Authority shall be entitled to treat the Bank as the principal debtor. The Authority shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee from time to time to vary any of the terms and conditions contained in the said Bidding Documents or to extend time for submission of the Bids or the Bid validity period or the period for conveying acceptance of Letter of Award by the Bidder or the period for fulfilment and compliance with all or any of the terms and conditions contained in the said Bidding Documents by the said Bidder or to postpone for any time and from time to time any of the powers exercisable by it against the said Bidder and either to enforce or forbear from enforcing any of the terms and conditions contained in the said Bidding Documents or the securities available to the Authority, and the Bank shall not be released from its liability under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the said Bidder or any other forbearance, act or omission on the part of the Authority or any indulgence by the Authority to the said Bidder or by any change in the constitution of the Authority or its absorption, merger or amalgamation with any other person or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of releasing the Bank from its such liability.

11. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given or made if addressed to the Bank and sent by courier or by registered mail to the Bank at the address set forth herein.

12. We undertake to make the payment on receipt of your notice of claim on us addressed to name of Bank along with branch address and delivered at our above branch which shall be deemed to have been duly authorized to receive the said notice of claim. This guarantee shall also be operable at our _____ branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. It shall not be necessary for the Authority to proceed against the said Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which the Authority may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealized.

14. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.

15. The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorized and has full power to execute this Guarantee for and on behalf of the Bank.

16. For the avoidance of doubt, the Bank's liability under this Guarantee shall be restricted to **INR 40,00,000 (Rupees Forty Lakhs)**. The Bank shall be liable to pay the said amount or any part thereof only if the Authority serves a written claim on the Bank in accordance with paragraph 12 hereof, on or before (indicate date falling 180+60 days after the Bid Due Date).

(Signature of the Authorized Signatory)

(Official Seal)

Name:

Date :

Designation:

Employee Code Number:

Telephone Number:

Name of issuing bank branch _____
Address _____
Telephone number _____
E-mail: _____

Name of bank branch at New Delhi _____
Address _____
Telephone number _____
E-mail: _____

Name of controlling bank branch _____
Address _____
Telephone number _____
E-mail: _____

9.5 Format of Certificate in respect of Bidder’s Technical and Financial Eligibility
 (To be submitted separately for each constituent in case of a Joint Venture/ Consortium)

Technical Eligibility

Format for Experience

Assignment Name	
Number of ETC lanes and Cash lanes	
Location of toll plaza	
Start Date	
Completion Date	
Details of tolling system supplied and /or services owned/controlled	

Letter of Completion for the above, from the clients, need to be provided as part of eligibility document

Dated: /...../2017

Certificate of Annual Turnover

It is certified that we have examined the books of accounts of M/s. _____ (name and address of the bidder) ___ and the requested financial details of the company, during last three financial years

are as under:

1. Annual Turnover

Amount in **INR (Lakhs)**

Financial Year ⁴	Amount in figures	Amount in words
FY 2014-15		
FY 2015-16		
FY 2016-17		
Average		

2. Annual Net Worth

Amount in **INR (Lakhs)**

Financial Year	Amount in figures	Amount in words
FY 2016-17*		

(Signature of Statutory Auditor/ Chartered Accountant)

Name:

Seal:

⁴ A period from 1st April of preceding year to 31st March of the succeeding year

9.6 Format for Financial Bid Submission

Subject: Financial Bid for RFP Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway. Tender Ref No IHMCL/EPExp/JICA/2017

Dear Sir,

I/We, the undersigned having examined the above referred RFP including addendum thereof and, hereby offer to submit our bid to undertake the subject assignment with scope of work mentioned in the said RFP Document with quarterly payments as under:

BREAK-UP OF RATE for.....

S.No.	Item Description	Unit	Qty.	Duration	Rate
(A)	(B)	(C)	(D)	(E)	(F)=(C) x (D) x (E)
1	Providing Services of Hybrid ETC and Toll Management System.	(Per Quarter/Toll lane)	40Toll Lanes	6 Quarters	

[Page intentionally left blank]

1. We understand that the above breakup of rates takes care of all items of work / services to be delivered as per good industry practice to ensure full compliance of the detailed scope of work mentioned in Contract Agreement.
2. We understand that IHMCL reserves the right to award work at any toll plaza for all the components above, or any combination thereof as per its toll plaza specific requirement. I/We understand that IHMCL reserves the right to award the work in stages.
3. We understand that the estimated number of toll lanes mentioned above is indicative only and for the purpose of bid evaluation, Per Lane and / or Per Unit values have been taken. Actual number of toll lanes may vary as per requirement of IHMCL.
4. We understand that the payments shall be made as per actual number of toll lanes serviced in accordance to the provision of the Scope of Work prescribed in the RFP Document.
5. We hereby confirm that the quoted rates include all the charges payable in full compliance to the Scope of Work and other terms specified in the RFP document. No additional charges have been envisaged. We also understand that apart from quarterly payments against the services provided to IHMCL in compliance to the prescribed scope of work, IHMCL is not liable to make any other payments whatsoever.
6. We do hereby confirm that our bid price includes all statutory taxes/ levies.
7. We also declare that any tax, surcharge on tax and / or any other levies, if altered in future and payable under the law, the same shall be borne by us.
8. This bid is **valid** for a period of **180 calendar days** from the bid due date.
9. We understand that the applicable TDS will be deducted against payments as per Applicable Law.
10. In case of any difference in figures and words, the amount mentioned in words will prevail.

Yours sincerely,

Name

Designation/ Title of the Authorized Signatory.....

9.7 FORMAT OF PERFORMANCE BANK GUARANTEE

To,
Manager (Projects),
Indian Highways Management Company Ltd
2nd Floor, MTNL Building,
Sector-19, Dwarka,
New Delhi – 110075
India

WHEREAS _____[Name and address of Agency] (hereinafter called “the Service Provider”) has decided to apply to IHMCL for providing services, in pursuance of IHMCL letter of work award No. _____ dated dd/mm/yyyy for “RFP for Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway” (*hereinafter called the “Contract”*).

1. AND WHEREAS it has been stipulated by IHMCL in the said letter that the Service Provider shall furnish a Bank Guarantee for the sum specified therein as security for compliance with his obligations in accordance with the terms & conditions of the Contract Agreement.
2. AND WHEREAS we have agreed to give the Service Provider such a Bank Guarantee:
3. NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Service Provider up to a total of `/- (Rupees)
only, 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 `/- as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.
4. We hereby waive the necessity of your demanding the said debt from the Service Provider before presenting us with the demand.
5. We further agree that no change or addition to or other modification of the terms of the service provider or of the works to be performed there under or of any of the Contract documents which may be made between you and the Service Provider shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.
6. We undertake to pay to the IHMCL any money so demanded notwithstanding any dispute or disputes raised by the Service Provider(s) in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Service Provider(s) shall have no claim against us for making such payment.
7. The liability of the Bank under this Guarantee shall not be affected by any change in the constitution of the Service Provider or of the Bank.

8. This guarantee shall also be operable at our _____ branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

9. This bank guarantee shall be valid from

10. Notwithstanding anything contained herein:

- (i) Our liability under this Bank Guarantee shall not exceed `/-
- (ii) The Bank Guarantee shall be valid up to.....
- (iii) We are liable to pay the Guarantee amount or any part thereof under this Guarantee only and only if you serve upon us a written claim or demand on or before

Name:

Date :

Designation:

Employee Code Number:

Telephone Number:

Name of issuing bank branch _____
Address _____
Telephone number _____
E-mail: _____

Name of bank branch at New Delhi _____
Address _____
Telephone number _____
E-mail: _____

Name of controlling bank branch _____
Address _____
Telephone number _____
E-mail: _____

ANNEXURE -1
CONTRACT AGREEMENT

No.

This Contract Agreement (hereinafter called the “Contract”) is made on this ____ day of the month of _____, 2017.

BETWEEN

Indian Highways Management Company Ltd (IHMCL), a company incorporated under the provisions of the Companies Act, 1956 and having its head office at 2nd Floor, MTNL Building, Sector 19, Dwarka, New Delhi-110075 (hereinafter referred to as the “IHMCL”, which expression shall, unless repugnant to or inconsistent with the context, mean and include its successors and assigns) of the first part.

AND

M/s _____, a company incorporated under the provisions of the Companies Act, 1956 or a firm established in India and having its registered office at _____ (hereinafter referred to as the “Service Provider” which expression shall unless repugnant to or inconsistent with the context, mean and include its successors and assigns) of the OTHER PART. Each of the parties mentioned above are hereinafter collectively referred to as “Parties” and individually as a “Party”.

WHEREAS

(a) the Service Provider, in the ordinary course of its business, is engaged in providing similar services to their clients, and have represented to IHMCL through their bid, against RFP No. _____ dated _____ for (hereinafter called the “Tender”) that they have the required professional skills, personnel, technical & financial resources to provide the required services;

(b) on the basis of the said Tender, after evaluation of Bids, IHMCL has selected & accepted the Bid of the Service Provider and issued Letter of Award (LoA) No. dated _____.2017 for providing the required services, to the selected bidder requiring *inter alia*, to convey its acceptance to the LOA within 15 days of the date of issue thereof.

(c) the Service Provider has conveyed its acceptance of the LOA to IHMCL including the obligation to enter into this Agreement pursuant to the LOA, with his letter Ref no.....dated.....

(d) The Service Provider, in accordance with the terms of the LOA and Clause 2.17 of the RFP, has also submitted the Performance Security in the form of Bank Guarantee equivalent to Rs. _____ in Words (_____) valid for a period of 180 days after the expiry of Agreement Period as per prescribed format.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:
The mutual rights and obligations of the Service Provider and IHMCL shall be as set forth in this Contract, in particular:

The Service Provider shall carry out the Services in accordance with the provisions of the Contract; and IHMCL shall make payments to the Service Provider in accordance with the provisions of the Contract.

The following schedules/ appendices shall be deemed to form and be read and construed as part of this Contract viz.

Appendix A	Copy of RFP & subsequent amendments & clarifications if any
Appendix B	Copy of Financial Bid of the Service Provider
Appendix C	Letter of Award issued by IHMCL.
Appendix D	Letter of Acceptance submitted by the Service Provider
Appendix E	Copy of the Performance Security submitted by the Service Provider
Appendix F	Copy of the Technical Bid and/or any subsequent correspondence of the Service Provider/ IHMCL

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IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed by their respective authorized representatives on the day and year first before written.

FOR AND ON BEHALF OF

(Indian Highways Management Company Ltd)
(Authorized Representative)

Name : _____

Designation _____ Indian
Highways Management Company Ltd
2nd Floor, MTNL Building, Sector – 19,
Dwarka, New Delhi – 110075

FOR AND ON BEHALF OF

(M/s _____)

(Authorized Representative)

Name : _____

Designation : _____

M/s _____

Address : _____

In the presence of following witnesses:

Name : _____

Designation _____

Indian Highways Management Company Ltd
2nd Floor, MTNL Building, Sector – 19,
Dwarka, New Delhi – 110075

Name : _____

Designation : _____

M/s _____

Address : _____

Name : _____

Designation _____

Indian Highways Management Company Ltd
2nd Floor, MTNL Building, Sector – 19,
Dwarka, New Delhi – 110075

Name : _____

Designation : _____

M/s _____

Address : _____

1. DEFINITIONS AND INTERPRETATION

1.1 Definition

The words and expressions beginning with capital letters and defined in this Agreement shall, unless the context otherwise requires, have the meaning ascribed thereto herein and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules annexed hereto. Words used in capitals and not defined herein but defined in the RFP shall have the meaning as ascribed thereto in the RFP.

1.2. Interpretation

1.2.1. In this Agreement, unless the context otherwise requires,

- a) References to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;
- b) References to laws of India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;
- c) References to a “**person**” and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;
- d) The table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;
- e) The words “**include**” and “**including**” are to be construed, without limitation and shall be deemed to be followed by “**without limitation**” or “**but not limited to**” whether or not they are followed by such phrases;
- f) Any reference to any period of time shall mean a reference to that according to Indian Standard Time;
- g) Any reference to day shall mean a reference to a calendar day;

- h)** References to a “**business day**” shall be construed as a reference to a day (other than a Sunday and holidays) on which banks in their respective States are generally open for business;
- i)** Any reference to month shall mean a reference to a calendar month as per the Gregorian calendar;
- j)** References to any date, period or time shall mean and include such date, period or time as may be extended pursuant to this Agreement;
- k)** Any reference to any period commencing “**from**” a specified day or date and “**till**” or “**until**” a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;
- l)** The words importing singular shall include plural and vice versa;
- m)** “**Lakh**” means a hundred thousand (100,000) and “**crore**” means ten million (10,000,000);
- n)** References to the “winding-up”, “dissolution”, “insolvency”, or “reorganisation” of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;
- o)** Save and except as otherwise provided in this Agreement, any reference at any time to any agreement, deed, instrument, license or document of any description shall be construed as reference to that agreement, deed, instrument, license or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this Sub-clause shall not operate so as to increase liabilities or obligations of the IHMCL hereunder or pursuant hereto in any manner whatsoever;
- p)** Any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party, as the case may be, in this behalf and not otherwise;
- q)** The Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;

- r) References to Recitals, Articles, Clauses, Sub-clauses or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses and Schedules of or to this Agreement and references to a Paragraph shall, subject to any contrary indication, be construed as a reference to a Paragraph of this Agreement or of the Schedule in which such reference appears; and
- s) The damages payable as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the “Damages”);
- t) Time shall be of the essence in the performance of the Parties’ respective obligations. If any time period specified herein is extended, such extended time shall also be of the essence.

1.2.2. Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act 1897 shall not apply.

1.3. Arithmetic conventions

All calculations shall be done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4. Priority of Agreements, Clauses and Schedules

1.4.1 In case of inconsistency between the provisions of this Agreement and the RFP, the terms of this Agreement shall prevail to the extent of such inconsistency.

1.4.2 In case of ambiguities or discrepancies within this Agreement, the following shall apply:

- (a) Between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;
- (b) Between any two Schedules/Articles, the Schedule / Article relevant to the issue shall prevail;
- (c) Between the written description on the drawings/design documents, if any, and the Specifications and Standards, the latter shall prevail; and
- (d) Between any value written in numerals and that in words, the latter shall prevail.

2. TERM OF THE AGREEMENT

- 2.1** The term of this Agreement shall be for a period of 1 (One) year six months commencing from the date of signing of this Agreement (the “**Agreement Period**”) including the time required for installation & commissioning of all the services being provided under this Agreement.
- 2.2** The Agreement Period may be further extended up to six months, at mutually agreed terms, subject to satisfactory performance, continued requirement and sole discretion of IHMCL.

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3. TIME SCHEDULE

- 3.1** The Service Provider shall commence the Services, in respect of deploying the manpower for auxiliary works & starting delivery of equipments on sites, within fifteen (15) days of date of LOA.
- 3.2** IHMCL shall notify the Service Provider to commence work on the Specified Toll Plaza Sites after the Site is ready for installation of Hybrid ETC System. .
- 3.3** The Service Provider shall complete the Installation, Integration and Commissioning of Hybrid ETC System on such Specified Sites within 30 days of the Notification.
- 3.4** The Service Provider shall ensure that the Services are undertaken and completed in accordance with the time schedules in this Agreement as per clause 3.1, 3.2 and 3.3. In case of any deviation from the schedule, IHMCL reserves the right to terminate the Agreement and/or recover Liquidated Damage therefrom.
- 3.5** The Service Provider, if faced with problems in undertaking the Project, which have dependencies on the Project Owners, which are beyond their control, the Service Provider shall immediately inform IHMCL in writing, about the causes of the delay and tentative duration of such delay etc. IHMCL, on receipt of such notice, shall analyze the facts at the earliest and may, at its sole discretion, provide additional time, as deemed reasonable.
- 3.6** The Service Provider, if faced with problems in timely commencement of the Services, other than those mentioned in Clause 3.5 above, it shall immediately inform IHMCL in writing about the causes of the problem /delay and tentative duration of such delay etc. IHMCL, on receipt of such communication, shall analyze the facts at the earliest and take necessary action as deemed reasonable in its sole discretion.
- 3.7 Damages For Delay / SLA:**

In case of delay in providing required Services at any toll plaza site as per the time schedule prescribed in clause 3.1, 3.2 and 3.3, liquidated damages @0.05% of the Agreement Price for each day of delay, subject to a maximum of 5% of the Agreement Price, shall be levied on the Service Provider. In case such deductions reach 5% of the Agreement Price, IHMCL may consider termination of this Agreement or IHMCL may choose to deallocate the said site from the scope of the service provider and allocate to any other service provider, at its sole discretion.

In case of delay due to reasons beyond the control of the Service Provider, upon such request from the Service Provider, IHMCL may, in its sole discretion, consider suitable extension of time without imposing any liquidated damages upon the Service Provider.

4. PRICES AND PAYMENTS

- 4.1 Interest Fee Advance Payment of 2% of the Contract Value shall be provided against the Bank Guarantee of Equal Amount.
- 4.2 Payments shall be made on Quarterly basis, against the services provided, as per rates quoted by Service Provider. The total Contract value shall be divided into six quarters and payments shall be done accordingly.
- 4.3 **IHMCL/NHAI reserves the right to appoint a Toll Collection Agency for the toll plazas in current scope of work and the payment to Service Provider as per this Contract may be shifted to the appointed Toll Collection Agency in future.**
- 4.4 The quoted rates for all items shall remain fixed for entire Contract Period.
- 4.5 The quoted prices are inclusive of all Taxes & duties except GST which shall be paid separately, at actuals, after submission of proof of payment.
- 4.6 All payment shall be made in Indian Rupees only.
- 4.7 IHMCL reserves the right to order for increased or decreased quantity, by up to 25%, of number of Toll Plazas, without any change in unit price quoted by Service Provider.
- 4.8 Payment will be subject to deductions against downtime as prescribed under Service Level Requirements.
- 4.9 No amount toward cost or expenses incurred, of whatsoever nature, shall be payable separately for the days to be devoted for carrying out the services prior or after the field work such as holding discussion, as considered necessary by IHMCL or otherwise, for any purpose with IHMCL's Head office or elsewhere, prior, during and after the conduct of an assignment at site.
- 4.10 The Service Provider shall be liable for payment of all taxes and levies prevalent and/or imposed or increased, during the period of contract agreement and indemnify IHMCL against any such claims.
- 4.11 Applicable statutory deductions such as TDS, Cess etc shall be deducted from all the Payments.
- 4.12 The Format for BG will be shared after award of Contract. The BG for advance should be Valid for the duration of Contract, and claim period shall be 6 Months beyond the Validity Date.
- 4.13 The Advance shall be recovered in equal instalments, from Quarterly Payments over a Period of One Year six months. In case the quarterly payment due to the service provider is less than the quarterly advance recovery instalment, the balance shall be recovered from the subsequent payments.

5. SCOPE OF WORK

5.1 **Background:**

In order to remove the bottlenecks associated with manual toll collection and ensure seamless movement of traffic and collection of toll as per the notified rates, the Government had decided to introduce Electronic Toll Collection (ETC) across National Highways in India. For implementing ETC across the country, Indian Highways Management Company Limited (IHMCL) was constituted. The objective of IHMCL is to implement an electronic, interoperable toll collection system, and to manage the strategic, administrative, legal and commercial aspects of the project. IHMCL has been mandated to award work for Providing Services of Hybrid ETC and Toll Management Systems at Eastern Peripheral Expressway.

To cater to the above requirement, IHMCL intends to engage a Service Provider, who shall be required to not only provide services of Hybrid ETC and Toll Management System, but also integrate these systems with the existing Toll Management System (if any) of other non-ETC lanes as well as provide real time data on lane functionality as per requirement of IHMCL.

5.2 **Objective:**

The Service Provider shall be required to undertake, inter-alia, responsibilities for installation, integration, testing, commissioning, configuration and system integration of all required hardware / software / equipment/ sub-system (hereinafter called Hybrid ETC toll systems) in a time bound manner and provide round the clock maintenance for the same during entire period of operations such that the required services are available at the toll plazas as per service level requirements.

This tender is calling for bids purely for services and IHMCL / NHAI will not be procuring any of the equipment / systems required for provision of such services as mentioned herein.

5.3 **DETAILED SCOPE OF WORK**

5.3.1 **Providing Services for Hybrid ETC and Toll Management System:**

The work shall include supply, installation, testing, commissioning, operation & maintenance of complete end-to-end Hybrid ETC and Toll Management System including all peripherals and or sub-systems on designated Toll Plazas including system integration thereof and integration with existing non-ETC lanes, if any. The service provider shall be responsible for system integration so that the Hybrid ETC and Toll Management System including the sub-system(s) and above supporting system(s) work coherently and are able to exchange data/ information electronically, among themselves as well as with the Central Clearing House. The type of tolling planned on the toll plazas in the current scope of work shall be a closed system of toll collection.

Brief list of the items to be covered: As per TOR Annexure-2

The details of toll plazas in the scope of work is provided in the table below

S. no	Package	Location	Type	Type of Tolling planned	# of Plaza	No. of Lanes	Hybrid ETC lane per plaza	Total Hybrid ETC Lanes
1	Pkg-I	Ch.5 + 500	Main Carriage	Closed system of toll collection	1	18	4	4
2	Pkg-I	Ch.15+360	Interchange	Closed system of toll collection	4	12	1	4
3	Pkg-II	Ch.44+537	Interchange	Closed system of toll collection	6	17	1	6
4	Pkg-III	Ch.52 + 174	Interchange	Closed system of toll collection	6	18	1	6
5	Pkg-IV	Ch.72 + 724	Interchange	Closed system of toll collection	8	20	1	8
6	Pkg-IV	Ch.83 + 005	Interchange	Closed system of toll collection	2	6	1	2
7	Pkg-V	Ch.108 + 875	Interchange	Closed system of toll collection	4	12	1	4
8	Pkg-VI	Ch.132+085	Main Carriage	Closed system of toll collection	1	18	4	4
9	Pkg-VI	Ch.134 + 946	Interchange	Closed system of toll collection	2	8	1	2
Total					34	129		40

5.3.2 Other Miscellaneous Works (Civil /Electrical)

The scope will also include civil, electrical, networking works required to complete installation / commissioning of Hybrid ETC and Toll Management System and associated peripherals on the plaza.

5.4 Service Level Requirements

The Service Level Agreements and all associated penalties shall be applicable on Service Provider till the payment is processed by IHMCL and in future if the NHAI/IHMCL decides to appoint Toll Collection Agency/Agencies for the toll plazas in the current scope of work, the service levels and associated penalties may be negotiated between the Toll Collection Agency/Agencies and the Service Provider.

5.4.1 Spares:

The agency shall also maintain sufficient spares at each site to address and rectify any malfunctioning / defects leading to possibility of down time.

5.4.2 System Downtime Calculations

- A. The uptime availability of all Hybrid ETC lanes shall be 99.9% per lane per month. The permissible downtime is 24 hrs x 30 days x 1/1000 = **40 minutes per lane per month.**
- B. The downtime for a toll lane shall be calculated at a cumulative level when any of the below mentioned component is non-operational for that specific lane:
 - a. RFID Tag reader
 - b. Automatic Lane Barrier
 - c. Receipt Printer at the toll booth
 - d. Fee Collection Monitor
 - e. Fee Collector Keyboard
 - f. Lane Incident Camera
 - g. Automatic Vehicle Classifier
 - h. Hybrid Lane Controller
 - i. Any plaza level equipment/software failure that results in lane downtime shall also be taken into account
- C. The formula for calculation of Hybrid ETC System availability shall be as follows:

$$\text{System Uptime} = [1 - \{A/(B-C)\}] * 100$$

Where A = Time for which system is down per month basis scenarios identified in section 5.4.2B

B = Total time in a month

C = Scheduled downtime basis section 5.4.3

The Service Provider shall be responsible to ensure 24x7 uninterrupted availability of the complete Electronic Toll Collection Systems along with other all other systems, sub systems, peripherals, components that are provided under this contract.

D. In case of non-adherence to service levels as defined in point A, penalties shall be levied on each lane as per the below table:

S. No.	Downtime (per month)	Penalty (% of quarterly service charges)
A	Per Lane (beyond permissible limit)	
1	Up to 2 hour	1%
2	2 hours – 5 hours	3%
3	5 hours – 10 hours	4%
4	Greater than 10 hours	5%

E. The Service Provider along with the Toll Operating Agency shall ensure that all transaction files are uploaded as per defined service levels provided in the table below:

S. No.	Description	Service level *	Penalty
1	Sending clean transaction files in a specified format to NPCI/CCH	<ul style="list-style-type: none"> • Within 10 minutes of ETC transaction • Up to 2 days of ETC transaction 	<ul style="list-style-type: none"> • Transaction post 10 minutes shall be processed only if the tag account has sufficient balance. In case of negative balance, the transaction shall be rejected • Liability of such transactions (after 10 minutes and before 2 days) shall lie with the Toll Operator • Transaction shall be rejected by NPCI/CCH after 2 days
2	Sending violation transactions post audit at plaza level along with clear supporting images to NPCI/CCH The images should be clear enough to identify the vehicle class	<ul style="list-style-type: none"> • Within 10 minutes of ETC transaction • Up to 2 days of ETC transaction 	<ul style="list-style-type: none"> • Transaction post 10 minutes shall be processed only if the tag account has sufficient balance. In case of negative balance, the transaction shall be rejected • Liability of such transactions (after 10 minutes and before 2 days) shall lie with the Toll Operator • Transaction shall be rejected by NPCI/CCH after 2 days

3	Populating blacklist file in the Hybrid ETC system of all the lanes	<ul style="list-style-type: none"> • Within 10 minutes of receipt from CCH 	<ul style="list-style-type: none"> • Post 10 minutes, any clean/violation transaction file received by NPCI/CCH for the same tag account with inadequate balance shall be rejected
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Note- * Subject to change by NPCI/IHMCL

5.4.3 Routine Maintenance

Scheduled downtime / Routine maintenance is defined as a period of time when system will remain unavailable for conducting necessary preventive maintenance, urgent repairs etc. The maximum scheduled downtime for any site shall be **2 hours per lane per month**. The objective of electronic equipment maintenance shall be to ensure reliability, to enhance its economic life and to improve its efficiency. Routine maintenance consists of a fixed set of checks, measurements, cleaning and calibration. These activities shall be based on Equipment Service Provider's specifications and general maintenance practices that include but not limited to:

- Checking the condition of components, e.g. check connections for signs of deterioration.
- Check voltage levels: Power supply levels are crucial to the effective operation of electronic equipment. Borderline levels could lead to intermittent faults and damage to components.
- Voltage level changes are caused by the deterioration of capacitors, transformers and semiconductor components.
- Certain measurements can also be performed to check the status of elements of the system, i.e. impedance and isolation tests.
- Mechanical components need routine cleaning and lubrication to ensure their effective operation.

5.4.4 Data Retention, Back-up and Restore Operations:

Data Retention:

Data for each plaza shall be retained for entire Agreement period in the Toll Plaza Server. The backup devices and media as per current industry practice shall also be provided.

The Service provider shall ensure adequate security measure for safe guarding of Toll Transaction data, by providing, off site Disaster recovery or Data Storage mechanism. The service provider shall also be responsible to extract and provide data /information based on requirement of law Enforcement Agencies of Govt. of India/ State based on specific approvals on case-to-case basis.

However it will be limited to the data captured in Toll Management Systems as per standard operations and the data being retained as per retention schedule.

Data Back up & Restore:

Service provider shall also demonstrate the backup & restore procedure successfully. The Service Provider shall prepare and implement a proper Data Backup & Restore policy with IHMCL's approval, to ensure data safety and avoid data loss, in case of any untoward incidents.

Such policy shall ensure Back up & restore of Toll Transaction data at least once in a week.

5.4.5 Ownership of Equipment & other conditions:

All the equipment shall be owned by the Service Provider throughout the duration of contract. The Service Provider will be paid on Quarterly basis a lump sum amount for the complete end-to-end services made available to IHMCL, subject to deductions, if any, towards deficiencies in services as per service level agreements mentioned herein.

It may please be noted that procurement of any Toll Systems/ Equipment/ Hardware/Software/ etc. has not been envisaged through this tender. The Service Provider shall be required to provide the services as per the scope of work prescribed herein.

5.4.6 Statutory and Others:

IHMCL shall reserve the right to get the security / compliance audit of the Toll Management Systems done at any time through any agency appointed for the purpose and the service provide shall extend all support & cooperation for smooth conduct of said Audit.

The Service Provider shall abide by all statutory guidelines and comply with rules/ regulations framed by IHMCL and/or M/o Road Transport & Highways from time to time; It shall be responsibility of the service provider to incorporate such changes within the stipulated time frame into the Toll Management System.

The Service Provider shall comply with the guidelines and/ or Specifications and Standards including the revisions thereof issued from time to time by M/o Road Transport & Highways Govt. of India / IRC. In absence of which, the system and equipment provided by the service provider shall meet relevant American or European/ British standards & specifications.

5.4.7 Miscellaneous:

Providing services of Hybrid ETC and Toll Management System at plaza will imply that if any civil work or electrical work is required to be undertaken for installation, testing and commissioning of Hybrid ETC toll system at Plaza the same shall be the responsibility of the Service Provider.

5.4.8 Technical Specifications & Standards

The minimum technical specifications & the standards to be adhered have been prescribed hereunder. The Service Provider shall ensure to provide the equipment meeting the prescribed requirements.

5.4.9 Acceptance Test and Approvals

After installation of Hybrid ETC and Toll Management System at the toll plazas in the current scope of work, a Site Acceptance Test shall be carried out at these plazas to test the system functionality and performance. This shall be carried out as per the Circular IHMCL/ETC/Operations/2017/Phase-III/361/CO-II/01 dated September 28, 2017 issued by the NHAI. A template of the Site Acceptance Test has been provided in Annexure.

Commissioning: Once Site Acceptance Testing has been concluded and the Service Provider has attended to and remedied all reported defects, the system shall be ready to be commissioned and taken into operation.

Third Party Check: For Acceptance Testing, IHMCL reserves the right to appoint a third party to carry out Acceptance Testing on behalf of IHMCL. The service provider shall have no objection on the same & will cooperate with such appointed third party/ consultant.

Failure by the Service Provider to complete the Works and to have remedied all reported defects by the Prescribed Date for commissioning shall result in the application of the penalties for delays prescribed under liquidated damages in the Contract Agreement.

5.4.10 System Development Progress Reporting

The Service Provider shall note that they are obliged to provide hardware and software progress reports, if any, as the works proceeds. These reports shall be in the English language for project management purposes.

Spare Parts

The Service Provider is required to maintain sufficient spare parts to support the system for the entire duration of contract. In addition, the Service Provider shall be required to identify all the equipment or components in the system that is at risk from obsolescence or the ceasing of production by the manufacturer and make proposals to IHMCL accordingly for its replacement without any extra cost to IHMCL.

5.4.11 Standards

Following specifications and standards shall be followed by the Service Provider, wherever applicable:

- Bureau of India Standards (BIS)
- American Associates of Highway and Transportation Officials (AASHTO)
- American Society of Testing Materials (ASTM)
- British Standards (BS)

a) General Standards

Where applicable, equipment shall comply with the latest revision of the relevant standards from the following recognized Standards bodies:

EN:	European Standard
CENELEC:	European Electromechanical Standard
ETSI:	European Telecommunication Standard
ISO:	International Standards Organization
ASTM:	American Society for Testing & Materials

Note: The EN standards are listed in the CEN: Catalog of European Standards and their National Implementation.

All equipment shall comply and be installed in accordance with IEC 364, with minimum of CENELEC standards EN 50128 software integrity level 2.

b) Standards for Electromagnetic Interference (EMI)

The standards for electromagnetic interference should comply with the appropriate Indian standard.

The applicable CENELEC standards are:

CENELEC EN 50081-1: 1992: Electromagnetic compatibility – Generic emission standards, Part 1: Residential, Commercial and Light industry.

CENELEC EN 50082-1: 1992: Electromagnetic compatibility – Generic immunity standards, Part 1: Residential, Commercial and Light industry.

c) Lightning Protection for Electronic Installation

The standards for lightning protection should comply with the appropriate Indian standard. The applicable CENELEC standards are:

CENELEC HD 384.5.54 S1:1988: Electrical installations of buildings, Part5: Selection and erection of electrical equipment, Chapter 54: Earthing arrangement and protective conductor. (IEC 364-5-54: 1980).

d) Weather Proofing

CENELEC HD 365 S3: 1985: Classification of degrees of protection provided by enclosure. (IEC 529: 1976 + A2: 1983)

CENELEC EN 60529: 1991: Degrees of protection provided by enclosure (IP code) (IEC 529: 1989). All enclosures exposed to the elements shall be protected to IP65 in terms of this standard.

e) General Standards for Electrical Equipment

For general aspects such as installation of electrical equipment, safety standards, radio interference, etc. the standards should comply with the appropriate Indian standards.

The following CENELEC standards are specified below:

CENELEC HD 323.2.38 S1: 1988: Basic safety publication – Environmental testing, Part 2. Test methods – Test Z/AD: Composite temperature/humidity cyclic test (IEC 68-2-38: 1974) CENELEC HD 436 S1: 1983: Dimensions of optical fibers. (IEC 693: 1980)

CENELEC HD 418.1 S1: 1982: Low voltage switchgear and control gear Part: Circuit breakers (IEC 157 – 1: 1973)

CENELEC HD 196 S1: 1987: Plug, socket-outlets and couplers for industrial purpose. (IEC 309) CENELEC HD 420 S2: 1988: Control switches (low voltage switching devices for control and auxiliary circuits, including contactor relays). (IEC 337)

f) Operating Temperature

The equipment to be supplied should be able to operate under the following environmental conditions:

Minimum temperature: -5 degree C

Maximum temperature: +55 degree C

At relative humidity: up to 95%

Vibration frequency range: 10Hz to 55HZ

Should the equipment be unable to function in these conditions, protection or device to regulate the equipment-operating environment shall be provided. The temperature range that is specified is the ambient temperature, which is defined as the temperature of the surrounding atmosphere as determined by an instrument shielded from direct or reflected rays of the sun. This definition is in terms of the American Society for Testing & Materials (ASTM) codes.

5.4.12 Other Works

a) Service Provider's Design Responsibility

The Service Provider shall be required to produce engineering design drawings of all Toll Management Systems components / system, electrical installation and computer & data transmission network systems. Once the designs have been vetted/ cleared only then the Service Provider may commence installation works on site. It shall be the Service Provider's responsibility to ensure that all required approvals/ clearance are obtained in time to meet the contractual milestones and completion date by the Service for vetting by IHMCL or its appointed Consultant, should there be any deficiencies in the design, IHMCL shall convey these to the Service Provider and the Service Provider shall modify and resubmit the design for vetting. The maximum duration of this process shall be 7 working days and the Service Provider shall make adequate provisions for sufficient iterations of the process to acquire the required clearance.

b) Electricity Requirements

The Service Provider shall be required to submit the design of the electricity load requirement for the Toll Management Systems / Equipment, which shall include the cabling, distribution boards, and clean earthing system, in regard to its suitability for the Toll Management Systems components. Toll Management Systems equipment earthing shall be separated from the toll plaza utility power earthing. Provision of electrical Power supply shall not be under the scope of the service provider however earthing for TMS shall be the responsibility of the Service Provider.

c) UPS Loads

The Service Provider shall be responsible for the design and sizing of the UPS power distribution equipment. It shall be the responsibility of the Service Provider to design a suitable and rugged scheme. Provision of UPS Power shall be under the scope of the Service Provider.

d) Feeder to UPS

The Control Room and field equipment will be supplied from a Utility / Emergency Power circuit breaker, located at the plaza and the field. The Service Provider shall be required to assess before commissioning the rating and capacity of this breaker based on the calculated loads and the line current for the equipment and its UPS.

e) Cabling to UPS Loads

The Service Provider shall supply, install, terminate and connect all cabling from the power DB to all the field and control room equipment. The cable shall be suitably sized 2-core and earth PVC insulated and steel wire armoured copper cables. Wire armouring may be omitted, if the cables are drawn through a conduit.

f) Cable tray

The Service Provider shall provide adequate perforated cable trays and / or cable support wherever required, for all cabling required in Toll Lanes / Booths & Plaza Building.

g) Cable Numbering

All cables installed shall be numbered with ferules, in accordance with the universal cable numbering system, in such a way that any person shall be able to understand & identify cabling for specific equipment.

All cables shall be ISI marked, fire retardant type and shall be terminated with proper lugs & joints as per best industry practices.

6. OBLIGATIONS OF THE SERVICE PROVIDER

The Service Provider agrees and undertakes to fulfil the following obligations towards IHMCL, at its own cost and expense:

- 6.1** The Service Provider shall undertake the Scope of Work as mentioned in ARTICLE 4 hereto.
- 6.2** The Service Provider shall strictly comply with the time lines as mentioned in this agreement.
- 6.3** The Service Provider shall strictly comply with the Technical Specifications as mentioned in this agreement.
- 6.4** The Service Provider shall strictly comply with the Service Level Requirements as mentioned in this Agreement.
- 6.5** The Service Provider shall coordinate the installation with all necessary parties and obtain the necessary approvals before commencing works.
- 6.6** The Service Provider may sub-contract certain installation works to a third party, provided that written approval is obtained from IHMCL prior to such sub-contracting. For the avoidance of doubt the Service Provider shall remain solely responsible for all works under this Agreement.
- 6.7** Technical specifications and architecture principles shall be generic and should be capable of being used to future extensions.
- 6.8** The Service Provider shall demonstrate that his design takes into account remote management and remote monitoring capabilities.
- 6.9** The Service Provider shall coordinate all its systems installation with the overall architect design.
- 6.10** It shall be the obligation of the Service provider to integrate the Hybrid ETC and Toll Management System with the prescribed data centre of IHMCL or any other data centre as and when required by IHMCL.
- 6.11 Damages for delay**
 - 6.11.1** In case of delay in providing required Services at any toll plaza site, liquidated damages @0.05% of the Agreement Price for each day of delay, subject to a maximum of 5% of the Agreement Price, shall be levied from the Service Provider. In case such deductions reach 5% of the Agreement Price, IHMCL may consider termination of this Agreement or IHMCL may choose to deallocate the said site from the scope of the service provider and allocate to any other service provider, at its sole discretion.
 - 6.11.2** In case of delay due to reasons beyond the control of the Service Provider, upon such request from the Service Provider, IHMCL may, in its sole discretion, consider suitable extension of time without imposing any liquidated damages upon the Service Provider.

7. OBLIGATIONS OF IHMCL

The IHMCL undertakes to fulfil the following obligations at its own cost and expense:

- 7.1** Supervise the overall management and implementation of this Agreement;
- 7.2** Provide requisite specifications from time to time to the Service Provider for carrying out its obligations under this Agreement;
- 7.3** Act as an interface between the Service Provider and the Project Owners and coordinate/reconcile any concerns of the Service Provider with the Project Owners or vice versa for smooth implementation of the ETC Services.
- 7.4** Extend cooperation for facilitating the Service Provider in the implementation of the Project in accordance with the provisions of this Agreement.

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8. REPRESENTATION AND WARRANTIES

8.1 REPRESENTATION AND WARRANTIES OF THE SERVICE PROVIDER

The Service Provider declares, represents and warrants as follows:

- 8.1.1** It is duly organized and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;
- 8.1.2** It has taken all necessary corporate actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;
- 8.1.3** It has obtained all necessary internal/external approvals, registrations and certifications required from relevant authorities and other entities for fulfilling its obligations as set out in this Agreement;
- 8.1.4** It has not violated any of the conditions subject to which such approvals, registrations and certifications have been granted or any other applicable regulations and / or guidelines or directives or statutes;
- 8.1.5** It shall ensure that such approvals, registrations and certifications will remain in force, including, by taking prompt steps for timely renewal of the same;
- 8.1.6** It undertakes to continue to comply with all Applicable Laws with respect to its roles / obligations under this Agreement;
- 8.1.7** There are no actions, suits, proceedings, or investigations pending or, to the Service Provider's knowledge, at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;
- 8.1.8** It shall at no time sub-contract any of its obligations under this Agreement without the prior permission from IHMCL. Provided that in case the Service Provider proposes to sub-contract any of its obligations under this Agreement, it shall seek written permission along with the details of the activities that it proposes to sub-contract to third parties;

8.1.9 No representation or warranty by the Service Provider contained herein or in any other document furnished by it to the IHMCL in relation to Applicable Laws contains or will contain any untrue or misleading statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading;

8.1.10 No sums, in cash or kind, have been paid or will be paid, by or on behalf of the Service Provider, to any person by way of fees, commission or otherwise for securing the award of this Agreement or entering into this Agreement or for influencing or attempting to influence any officer or employee of the IHMCL in connection therewith;

8.2 REPRESENTATION AND WARRANTIES OF IHMCL

The IHMCL represents and warrants to the Service Provider that:

8.2.1 It has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and perform its obligations, under this Agreement;

8.2.2 It has taken all necessary actions under the Applicable Laws to authorise the execution, delivery and performance of this Agreement;

8.2.3 This Agreement constitutes a legal, valid and binding obligation enforceable against it in accordance with the terms hereof;

8.2.4 It has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any Government Instrumentality which may result in any Material Adverse Effect on the IHMCL's ability to perform its obligations under this Agreement;

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9. COMPENSATION FOR BREACH

9.1 Compensation for default by the SERVICE PROVIDER

9.1.1 In the event of the Service Provider being in breach of this Agreement, unless such default or delay is on account of Force Majeure or through no fault of the Service Provider, the Service Provider shall pay to the IHMCL and/or the Toll Collection Agencies by way of compensation, all direct costs suffered or incurred by IHMCL or the Toll Collection Agencies, as the case may be, as a consequence of such breach, within 30 days of receipt of the demand supported by necessary particulars thereof.

9.1.2 Without limiting the generality of Clause 7.2.1, the Service Provider shall pay to the IHMCL and/or the Toll Collection Agencies by way of compensation, all direct costs suffered or incurred by IHMCL or the Toll Collection Agencies, as the case may, incurred as a result of any and all losses, claims, damages and liabilities (including, without limitation, legal fees and other expenses incurred in connection with any suit, action or proceeding or any claim asserted, as such fees and expenses are incurred), joint or several, that arise out of, or based upon:

(i) Any untrue statement or misrepresentation of a material fact provided by the Service Provider or an omission to state a material fact required to be communicated;

(ii) Any non-performance or breach of the roles, responsibilities, representations, warranties, undertakings and declarations contained herein by the Service Provider or its directors, employees, personnel or representatives.

(iii) Negligence, fraud or misconduct of the Service Provider or any of its employees, agents, affiliates or advisors.

9.2 Compensation for breach by IHMCL

9.2.1 In the event of IHMCL being in breach of this Agreement, unless such default or delay is on account of Force Majeure or through no fault of IHMCL, the IHMCL shall pay to the Service Provider, by way of compensation, all direct costs suffered or incurred by Service Provider, as the case may be, as a consequence of such breach, within 30 days of receipt of the demand supported by necessary particulars thereof.

9.2.2 Without limiting the generality of Clause 7.3.1, the IHMCL shall pay to the Service Provider by way of compensation, all direct costs suffered or incurred by the Service Provider, as the case may, incurred as a result of any and all losses, claims, damages and liabilities (including, without limitation, legal fees and other expenses incurred in connection with any suit, action or proceeding or any claim asserted, as such fees and expenses are incurred), joint or several, that arise out of, or based upon:

- (i)** Any untrue statement or misrepresentation of a material fact provided by IHMCL or an omission to state a material fact required to be communicated;
- (ii)** Any non-performance or breach of the roles, responsibilities, representations, warranties, undertakings and declarations contained herein by IHMCL or its employees, personnel or representatives.
- (iii)** Negligence, fraud or misconduct of IHMCL or any of its employees, agents, affiliates or advisors.

Further, it is expressly agreed by the Parties that IHMCL and the Service Provider shall not be liable for any damages to either of the parties, accruing from the deficiency in services of the other Party or failure of another Party to perform its obligations under this Agreement. The liability of IHMCL under this Agreement is restricted only to defaults which are solely attributable to IHMCL.

9.3 Cap on Liability of Parties

Notwithstanding anything stated herein above and under any circumstances, the liability of each Party under this Clause for each toll plaza shall not exceed Rs. 1,00,00,000.00 (Rupees One Crores) only.

10. INDEMNIFICATION

- 10.1** The Service Provider shall indemnify, defend, save and hold harmless, IHMCL and its officers, servants, agents (hereinafter referred to as the "IHMCL Indemnified Persons") against any direct loss, damage, claims, cost and expense of whatever kind and nature (including without limitation, legal fees, claims and expenses incurred in connection with any suit, action or proceeding or any claim asserted, as such fees and expenses are incurred), joint or several, that arise out of or are based upon any order passed by any statutory authority including courts, tribunals or other judicial/quasi-judicial authorities, on account of breach of the Service Provider's obligations under this Agreement or any other related agreement or otherwise, any fraud or negligence attributable to the Service Provider or its Agents or sub-Service Providers, under contract or tort or on any other ground whatsoever, all eventualities of theft, dacoit, robbery, etc., except to the extent that any such suits, proceedings, actions, demands and claims has arisen due to any breach or default of this Agreement on the part of the IHMCL Indemnified Persons.
- 10.2** The Service Provider shall indemnify IHMCL and MoRTH of all legal obligations of its professionals deployed. IHMCL and MoRTH also stand absolved of any liability on account of death or injury sustained by the Service Provider's staff during the performance of their work and also for any damages or compensation due to any dispute between the Service Provider and its staff.
- 10.3** In addition to the aforesaid, the Service Provider shall fully indemnify, hold harmless and defend the IHMCL Indemnified Persons from and against any and all direct loss, damage, cost and expense of whatever kind and nature (including, without limitation, legal fees and other expenses incurred in connection with any suit, action or proceeding or any claim asserted, as such fees and expenses are incurred), joint or several, that arise out of, or are based upon any demands, claims, suits or proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Service Provider or by its agents in performing the Service Provider's obligations or in any way incorporated in or related to this Agreement. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the Service Provider shall make every reasonable effort, by giving a bond (of the type and value as required) or otherwise, to secure the revocation or suspension of the injunction or restraint order and continue to perform its obligations hereunder. If the Service Provider is unable to secure such revocation within a reasonable time, it shall, at its own expense, shall rectify such defaults and shall also be liable for damages to IHMCL for the corresponding loss during the interim period on this account.
- 10.4** The remedies provided under this Article are not exclusive and shall not limit any rights or remedies that may otherwise be available to IHMCL Indemnified Party at law or in equity.
- 10.5** The provisions of this Article 10 shall survive Termination.

11. TERMINATION

11.1 Termination for Service Provider Default

11.1.1 Notwithstanding anything stated in this Agreement, in the event that any of the defaults specified below shall have occurred, the IHMCL shall provide a notice to the Service Provider (hereinafter referred to as “**Cure Period Notice**”). If the Service Provider fails to cure the default within the Cure Period set forth below, as also stated in the Cure Period Notice, the Service Provider shall be deemed to be in default of this Agreement (the “**Service Provider Default**”), unless the default has occurred solely as due to Force Majeure or for reasons not attributable to the Service Provider. The Cure Period under this Clause shall be calculated from the date of receipt of the notice by the Service Provider or when the default comes into the knowledge of the Service Provider, whichever is earlier. The defaults referred to herein shall include, but shall not be limited to the following:

- a)** The Service Provider fails to carry out any of its obligations under the Agreement.
- b)** The Service Provider without reasonable excuse fails to commence the work in accordance with the terms of this Agreement.
- c)** The Service Provider fails to furnish the required securities or extension thereof in terms of this Agreement.
- d)** The Service Provider stops any work without the prior written approval of IHMCL;
- e)** The Service Provider at any time during the term of the Agreement becomes insolvent or makes a voluntary assignment of its assets for the benefit of creditors or is adjudged bankrupt.
- f)** In case the Service Provider has, in the judgment of IHMCL, has engaged in corrupt or fraudulent practice in competing for or in executing this Agreement.
- g)** The Service Provider sub-contracts any specialized work without the prior permission from IHMCL.
- h)** Any representation or warranty of the Service Provider herein contained which is, as of the date hereof, found to be materially false.

- i) The Service Provider has failed to fulfil any obligation, for which Termination has been specified in this Agreement.
- j) The Service Provider, in the judgment of IHMCL, has engaged in corrupt or fraudulent practice in competing for or in implementation of the Project.
- k) The Service Provider fails to replenish the Performance Security as per the terms of RFP.
- l) Any other fundamental breaches as specified in the RFP or this Agreement.

11.2 Notwithstanding the above, IHMCL may terminate the Agreement for convenience by giving 30 days prior notice without assigning any reason whatsoever.

11.3 This Agreement shall be deemed to have been automatically terminated on the expiry of the Agreement Period unless IHMCL has exercised its option to extend the Agreement in accordance with the provisions of this Agreement.

11.4 The Parties to this Agreement shall have the right to terminate the Agreement on account of Force Majeure.

11.5 Consequences of Termination

11.5.1 Upon Termination, the Service Provider shall comply with and conform to the following requirements:

- (a) transfer relevant documents/permissions/data to IHMCL or any other entity as directed by IHMCL;
- (b) transfer and/ or deliver permits obtained under the Applicable Law pertaining to the Project;

11.5.2 Upon Termination (except on account of expiry of Term of this Agreement or Force Majeure), the IHMCL shall be entitled to appropriate the entire Performance Security.

11.6 Survival of rights

Notwithstanding anything to the contrary contained in this Agreement, any Termination pursuant to the provisions of this Agreement shall be without prejudice to the accrued rights of either Party including its right to claim and recover money damages, security deposits, and other rights and remedies which it may have in law or contract.

12. FORCE MAJEURE

12.1 No Party shall be considered in default of performance of its obligations under the terms of this Agreement, if such performance is prevented or delayed for any causes beyond the reasonable control of the Party affected by such event (hereinafter referred to as “ **Affected Party**”), including, but not limited to, fire, flood, explosion, acts of God, public disorder, riots, embargoes, or strikes, acts of military authority, epidemics, strikes, lockouts or other labour disputes, insurrections, civil commotion, war, enemy actions which substantially bars the performance of obligations of the Affected Party (hereinafter referred to as “**Force Majeure Event**”)

12.2 Reporting of Force Majeure

If a Force Majeure Event arises in the aforesaid manner, the Affected Party shall maximum within 24 hours notify the other Party in writing of such condition and the cause thereof. However, in case the Service Provider claims to have suffered a Force Majeure Event, the Service Provider shall continue to perform its obligations under this Agreement as far as is reasonably practical, and shall seek all reasonable alternative means for performance, unless otherwise directed by the IHMCL.

12.3 Mitigate the Force Majeure Event

Upon occurrence of Force Majeure Event, the Affected Party shall immediately take steps as are reasonably necessary to remove the causes resulting in Force Majeure if within its control and to mitigate the effect thereof. Any costs incurred and attributable to such event or curing of the Force Majeure Event shall be solely borne by the Affected Party.

13. DISPUTE RESOLUTION

13.1 Dispute resolution

Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties including the Toll Collection Agencies, and so notified in writing by either Party to the other Party (the “**Dispute**”) shall, in the first instance, be attempted to be resolved amicably by mutual discussion and conciliation in the interest of the Toll Plaza Automation Program under the supervision of IHMCL.

13.2 Arbitration

13.2.1 Any Dispute which is not resolved amicably by conciliation shall be finally decided by reference to arbitration. Such arbitration shall be referred to the Chairman of the Indian Highways Management Co. Ltd. (IHMCL) or his nominee being a sole arbitrator, and shall be subject to the provisions of the Arbitration & Conciliation Act, 1996, as amended from time to time. The venue of such arbitration shall be Delhi, and the language of arbitration proceedings shall be English.

13.2.2 The arbitrator shall make a reasoned award (the “**Award**”). Any Award made in any arbitration held pursuant to this Article 15 shall be final and binding on the Parties as from the date it is made, and the Parties agree and undertake to carry out such Award without delay.

13.2.3 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder.

14. MISCELLANEOUS

14.1 Confidentiality

14.1.1 The Parties hereby unconditionally agree and undertake that they shall not disclose the terms and conditions of this Agreement or disclose the information submitted under this Agreement to any third party unless such disclosure is required by law or regulation, to internal/external auditors or advisers in respect of performing functions under this Agreement or for the purpose of performing their obligations under this Agreement.

14.1.2 All details, documents, data, applications, software, systems, papers, statements and business / customer information pertaining to this Agreement communicated in writing shall be treated as absolutely confidential and the Parties irrevocably agree and undertake to ensure that they shall keep the same as secret and confidential and that they shall not disclose the same, in whole or in part to any person without the prior written permission of the other Party nor shall use or allow to be used any information, other than as may be necessary for the due performance of their obligations hereunder. The confidentiality obligations shall not apply to (i) information in the public domain, or (ii) information that is received by a Party from a third person without breach of a confidentiality obligation by such third person, or (iii) disclosure of any information by a Party under any applicable law, rule, regulation or to a judicial, regulatory, quasi judicial, administrative or governmental body or authority; (iv) is not in writing.

14.1.3 The Parties agree to:

- (a) Take all necessary action to protect the confidential information against misuse, loss, destruction, deletion and/or alteration
- (b) Not to misuse or permit misuse directly or indirectly, commercially exploit the confidential information for economic or other benefit
- (c) Not to make or retain any copies or record of any confidential information submitted by either of the Party other than as may be required for the performance of the obligations under this Agreement.
- (d) Notify the other Party promptly of any unauthorized or improper use or disclosure of the confidential information
- (e) Promptly return all the confidential documents / material that is in the custody of the other Party upon Termination of this Agreement

14.1.4 The provisions of this clause shall survive the Termination of this Agreement for a period of one year.

14.2 Intellectual Property Rights

All Intellectual Property of the respective Parties shall continue to vest with the respective Party and one Party may make use of the Intellectual Property only with the express consent of the other Party.

14.3 Governing Law and Jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts at Delhi shall have exclusive jurisdiction over matters arising out of or relating to this Agreement.

14.4 Assignment

The Toll Collection Agencies shall be entitled to assign or transfer all of its rights, benefit, under this Agreement only in accordance with their respective Contract Agreement with IHMCL. Upon assignment of this Agreement to the Nominated Company, the Toll Collection Agencies shall immediately intimate to IHMCL and the Service Provider of such assignment. In case of a Specified Toll Plaza being operated by IHMCL, the IHMCL shall be entitled to assign or transfer all of its rights, benefit, under this Agreement to any of its contractor/sub-contractor.

This Agreement shall not be assigned by the Service Provider to any person save and except with the prior consent in writing of the IHMCL, which consent the IHMCL shall be entitled to decline without assigning any reason whatsoever.

Notwithstanding anything to the contrary contained in this Agreement, the IHMCL may, after giving 30 days' notice to the Parties, assign and/ or transfer any of its rights and benefits and/or obligations under this Agreement to an assignee who is, in the reasonable opinion of the IHMCL, capable of fulfilling all of the IHMCL's then outstanding obligations under this Agreement.

14.5 Severability

If for any reason whatsoever any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to the Dispute Resolution Procedure set forth under this Agreement or otherwise.

14.6 Counterparts

This Agreement may be executed in two counterparts, each of which when executed and delivered shall constitute an original of this Agreement.

14.7 Waiver

No failure or delay on the part of any Party in the exercise of any power, right or privilege hereunder shall operate as a waiver thereof, nor shall any failure or delay in exercise of such power, right or privilege preclude the other from further exercise thereof. The rights and remedies provided in this Agreement are cumulative and not exclusive of any rights or remedies provided by law.

14.8 Relationship between the Parties:

Nothing contained herein shall be construed as establishing a relationship of master and servant or of principal and agent as between IHMCL and the Service Provider. The Service Provider, subject to this Contract, has complete charge of Personnel performing the Services and shall be fully responsible for the Services performed by them or on their behalf hereunder. IHMCL has no liability w.r.t. the representatives/ employees of the Service Provider.

14.9 Language:

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

14.10 Effectiveness of Contract

This Contract shall come into effect on the date the Contract is signed by both the Parties. The date, the Contract comes into effect is defined as the Effective Date.

14.11 Contract Period:

The total contract period shall be for One year and six months (18 months) from the Effective Date, renewable up to six months after completion, at the option of IHMCL. However, for renewal of contract period, the service provider shall submit a request to IHMCL three months prior to expiry of the contract period.

14.12 Suspension:

IHMCL may, by written notice to the Service Provider, suspend in whole or part, the contract in the event the Service Provider fails to perform any of its obligation under this Contract, including carrying out of the Services.

14.13 Notices

Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent to such Party at the address specified below. The mode of service of any notice shall be either courier or registered post or e-mail or fax or by hand.

The addresses for service of Notice shall be:

IHMCL: <Designation>

Attention:

<Address>

Facsimile: _____

E-mail: _____

Service Provider:

Attention: _____

<Address>

Facsimile: _____

E-mail: _____

14.14 Counterparts

This Agreement may be executed in two counterparts, each of which when executed and delivered shall constitute an original of this Agreement.

14.15 No partnership

This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party and neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

14.16 Insurance

The Service Provider shall for the duration of this Agreement, take out and maintain at its own cost, such insurance cover, which is adequate to cover any and all losses/damages for equipment, systems and personnel provided under scope of this agreement.

15. DEFINITIONS

“**TMS**” means Toll Management System

“**TOR**” means Terms Of Reference

“**RFP**” means Request For Proposal

“**Hybrid ETC System**” shall mean new Electronic Toll Collection (ETC) system with all modes of payment for User Fee collection including ETC.

“**Arbitration Act**” means the Arbitration and Conciliation Act, 1996 and shall include modifications to or any re-enactment thereof as in force from time to time;

“**Effective Date**” shall mean date of this Agreement;

“**ETC**” or “**Electronic Toll Collection**” means electronic payment of User Fee using vehicle-to-roadside communication technologies.

“**ETC Lane(s)**” means the lanes facilitating ETC at the Specified Toll Plazas.

“**ETC System**” means the equipments and associated hardware/software installed at Specified Toll Plazas.

“**ETC Transaction**” shall mean electronic transactions made by a User for payment of User Fee.

“**Material Adverse Effect**” means a material adverse effect of any act or event on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement and which act or event causes a material financial burden or loss to either Party;

“**Nominated Company**” has the meaning ascribed to it under the respective Contract Agreement.

“**Specified Toll Plazas**” shall mean the toll plazas of the Service Provider.

“**Stakeholders**” shall mean and include the Toll Collection Agencies, Security Agencies and IHMCL.

“**Security Agency/ Agencies**” are the entities selected and deployed at a specified Toll Plaza for providing Security to Toll Plaza and equipment installed at the Toll Plaza as well as for CCTV surveillance.

“**Toll Collection Agency/Agencies**” are the entities selected by Authority for the purpose of collection of User Fee at the specified Toll Plaza for a defined duration.

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DAY, MONTH AND YEAR FIRST ABOVE WRITTEN

SIGNED, SEALED AND DELIVERED

For and on behalf of **Indian Highways Management Company Ltd** by:

(Signature)

(Name)

(Designation)

In the presence of

1.

2.

Annexure-2**Terms of Reference*****Hybrid ETC System requirement***

Sr. No.	Item/Description	Unit	Quantity
I - Lane Level Equipment - Hybrid ETC Lanes			
1	RFID ETC transceiver near Pay-axis - mounted on pole/canopy	No	1 per lane
2	Electronics Enclosure	No	1 per lane
3	Lane Controller with Industrial PC	No	1 per lane
4	AVC including sensors, loop and detector	Set	1 per lane
5	Automatic Barrier Gate	No	1 per lane
6	Traffic light with mounting pole	Set	1 per lane
7	Loops with detector	Set	2 per lane
8	License Plate Image Capture Camera with mounting poles	Set	1 per lane
9	TFT Monitor	No	1 per lane
10	Customized industrial grade keyboard	No	1 per lane
11	Thermal Receipt Printer	No	1 per lane
12	Barcode Reader with stand	No	1 per lane
13	Booth CCTV camera with voice recording	No	1 per lane
14	Cabling/Networking/Installation/Commissioning (Lump sum)	LS	1 per lane
15	Software – Lane Level	No	1 per lane
II - Plaza Level Equipment			
1	Plaza Server	No	1 per plaza
2	Workstations	No	1 per plaza
3	Network Printer	No	1 per plaza
4	Internet router for connection to the CCH	No	1 per plaza
5	Software – Plaza level	No	1 per plaza
6	Broadband Internet connection with minimum 2 Mbps link	Facility	1 per plaza
7	UPS system as required for complete Hybrid ETC Toll Plaza system	No	1 per plaza
8	21" LED Display for CCTV Monitoring	No	1 per plaza
9	Network Video Recorder (NVR) for CCTV recording	No	1 per plaza

The minimum specifications for hardware to be used in Hybrid ETC system at the plaza are specified in this section. The Service Provider shall ensure that the equipment provided meets the basic criteria as prescribed in this section.

1.1. *Queuing Area*

1.1.1. **Magnetic Loops**

A. Functions:

The magnetic loops shall be used for three purposes:

- Presence Loop – This is a single loop installed in the transaction area. This shall be triggered on the basis of vehicle detection leading to a certain set of activities as required.
- Exit Loop – This is a single loop installed at the end of transaction used to trigger the exit barrier once the transaction has been completed.

B. Specifications:

The loop detector units/cards shall conform to the following minimum requirements.

- The unit shall be easily removable and shall be fitted with at least two (2) loops per card.
- The unit shall have a minimum of 4 separate adjustable sensitivity and frequency levels.
- The unit shall have indicators for vehicle presence, loop on/off and failure.

1.2. *Transaction Area*

1.2.1. **ETC RFID Integrated Reader/ETC Transceiver (ET)**

Service Provider are free to choose any brand of RFID reader as long as it satisfies the functional requirements prescribed by the NHAI/IHMCL as below:

A. Functions

Each hybrid ETC lane shall have one ETC transceiver. The ETC Transceiver shall be mounted on the canopy 4 to 5 meters from the pay-axis. The reader shall be mounted at least 5.5 meters above the finished road level. The toll operator shall provide cantilever pole (if required), brackets, fixtures and other accessories necessary for the installation of the readers.

The operator shall design the installation method of ETC Transceiver and decide the height of the reader within the applicable laws and regulations. But in no case, the clearance from the ground level shall be less than 5.5 meter. The communication range between ETC transceiver and RFID tag shall not be less than 4.0 meter along the centre line of the lane.

B. Specifications

Description	Specification
RF/Radio:	
Frequency	UHF 865 to 867 MHz
Communications	Ethernet/Serial communication (EIA standard RS 232 C/ RS 485)
RF Power maximum	1 W – transmitted & 4 W – EIRP (Equivalent Isotropically Radiated Power)
Reading distance	With the Transceiver mounted typically at a height of 6m above the road surface, the coverage of the antenna shall not exceed a diameter of 3.6m
Antenna	Circularly Polarized
Protocol	EPC Gen 2, ISO 18000-6C and shall comply with the general conformance requirements of the standard
Visual diagnostics	The Transceiver shall have LED indicators for sense; transmit Fault and Power which shall be visible clearly to the operator on ground while the system is operational.
Environmental:	
Enclosure	Light weight enclosure for the RFID Transceiver and circularly polarized antenna
Environmental	IP 65 or better for outdoor units
Relative Humidity	95% Condensing
Operating Temperature	-20°C to 55°C
Storage Temperature	-40°C to 85°C
Operational Characteristics:	
Air Interface & Adaptive Noise Features	The Transceiver technology employed should have the capability to optimize read rates for the vehicle identification application and adapt to instantaneous noise and interference level
Application capability	1. Should have read reliability exceeding 99.5% in the distance range specified 2. Diagnostic and Reporting Tools
Upgradeability	The firmware should be upgradable to support future protocols
Transaction Capability	Reading of Tag & EPC memory for at least 2 Tags per second for a moving vehicle with a speed limit of 40 kilometres/ hour.
Driver Software	The transceiver driver software shall be provided along with the transceiver that will interface to the ETC client through socket interface and handle the communication with ETC client. The packet structure shall be as notified in the ETC client-transceiver interface. The driver software shall implement filtering using a range of EPC-codes /Tag-TID code provided by set of bit pattern masks.

1.2.2. Traffic Light with mounting pole

A. Functions:

The Traffic Light (TL) shall be located in the toll lanes in a position where it is readily visible to users of the toll road, usually on the side of the lane beyond the toll booth. The traffic light shall consist of two traffic light heads mounted on a suitable pole. An amber signal with arrow is used to indicate that the user should take suggested path, whilst the green signal is used to indicate that the user should proceed.

At any situation, both AMBER and GREEN part shall not glow simultaneously. Under failure conditions, only Amber arrow shall be displayed until rectification.

B. Specifications

The following minimum specifications shall be met:

Description	Specification
Size	200 mm
Display (Stop)	Amber LED
Display (Start)	Green LED
Visibility Range	20 m (under normal visibility conditions)
Enclosure	SS
Protection	IP 65 rated

1.2.3. Electronic Enclosure

- A. All electronic interface and related peripheral/controllers shall be enclosed in an IP65 compliant cabinet.
- B. The enclosure shall have a locking mechanism with a unique key providing access to the equipment inside.
- C. Door monitoring: The cabinet door shall be monitored utilizing proximity switch. Door open / close events shall be recorded as incidents identified by time and lane. The incidents shall be displayed on the plaza software subsystem.
- D. Cabling Layout: All external cables shall be protected against the effects of lightning and shall comply with all requirements for the control of interference from EMI. All data cables shall be screened and shall be properly separated and shielded from all power cables.
- E. Ventilation and Internal Temperature: All equipment endorsed by the cabinet shall be kept at a temperature consistent with manufacturers recommendations.
- F. Finishing: The cabinet surfaces shall be protected from the environment in which it is to be used and adequate surface treatments shall be applied. Each cabinet shall be painted and numbered in a manner consistent with the toll lanes and consistent with all equipment related functions (e.g. reporting to the plaza software subsystem).
- G. Cable dressing: All cables (power & signal) shall be properly routed and dressed with suitable railings inside the enclosure and ties.
- H. Cable numbering: The signal & power cable terminations shall be identified by proper numbering. In addition to the termination at the controller end, this numbering shall also be maintained at locations where the cables are exposed (like manholes, junctions) and at the peripheral end. Further, all the individual component boards shall be properly identified by labeling.
- I. Cable terminations: The signal & power cable (from the peripherals) terminations shall be kept separated inside the cabinet. The cable routing inside the enclosures shall be done in a proper manner, so that, the cable faults can be traced and faulty cables can be replaced easily and quickly.

1.2.4. Hybrid Lane Controller

A. Functions

The Hybrid Lane Controller is used to control and monitor all the sub systems and peripheral equipment and communication of the lane for toll collection process and vehicle passage. The HLC is located in the booth or the tunnel. It is an electronic enclosure that houses the lane computer, AVC computer, peripheral coordination circuitry, redundant power supply, lane network switch and power protection blocks. It acquires the lane data and transmits to the Plaza Management System (PMS) in real time.

The HLC shall be connected to the plaza, via fibre optic cable, and shall be required to transmit all transactions, incidents as well as other control information to the PMS in real time. All lanes shall be connected to the PMS server for this test. The LSDU shall be able to monitor activities of each lane in real time. The HLC shall be capable of interfacing with at least the following peripheral equipment –

- i. Fee Collector Display
- ii. Automatic Exit Barrier
- iii. AVC System including loop
- iv. ETC Equipment
- v. Incident Capture Camera
- vi. License Plate Image Capture Camera

The HLC shall be able to track and store in an accurate and fully auditable manner all lane and AVC transactions in a manner as to ensure the system and data integrity is not compromised in any way. A comprehensive test methodology shall be provided for this activity.

The HLC shall be capable of communicating with the local ETC server. Communication shall consist of data necessary to build a complete database in the local ETC server, from which the required financial and operating reports and statistics can be generated. The local ETC server shall also receive and log any reportable incidents occurring in the lane, which shall be transmitted real-time to the Incidents Computer (IC) for action by the toll supervision staff. In terms of incidents, real-time shall mean the time from the occurrence of the incident to the storage of the incident and the subsequent display of the incident on the IC; shall not be greater than **2 seconds**.

Each Hybrid Lane Controller electrical component should be built on a single rack with its own electrical protections and automatic fuses. Each lane cabinet/enclosure shall have individual independent power sources, one from the UPS and another directly from the plaza power source. All the cabinet power inputs in the plaza are connected to an electrical switch to shut down the power of all plaza lanes for emergency purposes. Separate power supply (SMPS) shall be provided for AVC system and lane computer. The AVC computer shall have additional power back up (UPS) inside the electronic enclosure to provide power backup in case of complete shutdown of the plaza power supply. The UPS shall provide the backup of at least 4 hours to the independent AVC computer and AVC lane components.

B. System Configuration:

The system located at the toll booth shall consist of at least the following:

- i. Lane computer
- ii. Independent AVC computer
- iii. Separate power supplies for lane and AVC computer
- iv. Power distribution panel with surge and lightning protection circuit
- v. Terminal blocks
- vi. Relays
- vii. Thermostat
- viii. IP55 Electronic enclosure with high security locking mechanism

C. Lane Computer:

Lane Computer shall be mounted inside the electronic enclosure. It shall acquire all the data from the lane peripherals and transmit them to the PMS in real time. The specification of lane computer shall be upgraded as per the latest specifications/technologies available. A basic specification is provided in the table below.

Description	Specification
Type	Industrial Grade Cabinet Computer
Motherboard	Industrial Grade
HDD	Based on estimated storage requirement for 6 months data
RAM	2 GB or latest as per requirement
Processor	Intel i3 or equivalent/higher
Processor Speed	2 Ghz or latest as per market
NIC	1 Gbps X 2 Numbers On-board
PCI Slot	2 Nos. spare
USB Port (for authorized)	4
Frame grabber card (if used for capturing images)	1 with 2 channels capable of capturing frames at the same time on both channel

D. Independent AVC Computer:

Same as Lane Computer

E. 8-Port PoE Industrial grade rugged Switch with 2 Fibre Port:

This device shall have the capability to provide adequate continuous power to each of the CCTV cameras and associated equipment (e.g. video analytics module, PTZ mechanism) to meet the required performance, quality and reliability requirements.

- a. Switch shall have minimum 8 nos. 10/100Base-T (with minimum 6 PoE ports with power budget of 60W) ports and additional 2 numbers of SFP uplink ports loaded with MMF Modules.
- b. Shall have be IP30 rated and shall work on up to 60°C temp in a sealed enclosure and should be DIN Rail mountable.
- c. Switch shall be IEC 60068-2-6, IEC 60068-2-27, IEC 60068-2-47, IEC 60068-2-64, IEC 61000-4-5 and NEMA TS-2 compliant.

F. 24 Port Switch with 4 Fibre Port:

- a. Switch shall have minimum 24 nos. 10/100/1000 Base-T ports and additional 4 nos. SFP uplink ports loaded with MMF modules with dedicated stacking ports
- b. Switch shall have wire rate performance and 48 Gbps of dedicated stacking bandwidth.

1.2.5. Automatic Vehicle Classification (AVC) System

A. Functions:

The AVC system shall be able to distinguish between pre-defined classes of vehicle. This information shall be transmitted to the lane computer, and simultaneously to the LSDU (Lane Status Display Unit) database system, on completion of AVC classification. The lane computer will match this information with the classification entered by the Fee Collector (FC). If there is a discrepancy between the two classifications, the incident capture camera shall be triggered to capture a digital image of the vehicle.

The classification sensors is a combination of the following:

- i. Height sensors, axle counters and profilers
- ii. Inductive loops

The choice of classification sensor rests with the toll operator. The toll operator can propose a better proven combination of above mentioned classification sensors. The treadles shall not be installed in the road directly without the frame for the same.

B. Specifications

The AVC shall have the following accuracy for the standard vehicles:

- i. For vehicle counting : 99 %
- ii. For vehicle classification : 98 %

The minimum specifications for Height Sensors shall be as follows:

Description	Specification
Sensor type	Through beam
Sensor Range	Between 5m
Light source wavelength	Infrared LED
Full clad housing	Outdoor mild steel
Power supply requirement	Vendor Specific
Access for maintenance, modularity of construction	All cables termination are well identified and have signal received indicator Modular design with low cost maintenance.
Environmental Conditions	Operating Temperature of 10°C - 55°C
Sensor Type of Protection	IP65
Reliability and maintainability	MTBF 30,000 hrs MTTR 1 Hour.

The minimum functional specifications for AVC shall be as follows:

In case of network failure, the AVC system shall function independently and store all data locally on a storage device. The data shall be sent to the independent database system via a separate data communication link which is different from the Hybrid Lane Controller.

The system shall be able to detect a vehicle moving in wrong direction.

The AVC computer

- i. Shall be a real-time processing unit
- ii. Shall be the trigger source for Incident Capture Lane Camera system
- iii. Shall have a local storage device capable of storing data for a period of at least 30 days.
- iv. Shall have a standby power supply capable of operations for a period of at least 24 hours.

1.2.6. Fee Collector Terminal

The Fee Collector terminal (FCT) shall consist of following equipment:

- A. Fee Collector touchscreen Display (FCD)
- B. Fee Collector Keyboard (FCK)
- C. Barcode Reader (BCR)
- D. Receipt Printer (RPR)

The Fee Collector Terminal (FCT) shall be the interface between the system and the Fee Collector. With the FCT, the collector shall be able to input the data in the system and the fee collector display and receipt printer shall provide the output data from the lane controller to the collector.

A. Fee Collector Display :

The Fee Collector Display (FCD) shall be located on the Fee Collector’s desktop and shall be screwed or bolted through the counter top. Suitable mounting brackets manufactured from stainless steel shall be provided to fix the screen to the desktop. All nuts and bolts are used to secure the FCT to the booth counter top shall be stainless steel. It shall be the system’s interface to the fee collector, to display the status of transactions and status of the lane peripherals.

The minimum technical specifications are as follows:

Descriptions	Remarks
Display Type	TFT with Diagonal Size of 18.5” Minimum
Cables	Power Cable 1 x VGA Cable (15- pin HD D – Sub)
Cable routes	Power cable is terminated to the Hybrid Lane Controller power distribution block via booth ducting VGA Cable is terminated to the SVGA Port at the LC via booth ducting
Colour	Manufacturer’s Original Colour
Voltage	AC 230 V (50 / 60 Hz)
Power Consumption	80 W
Operating Temperature	0°C to 50°C
Relative Humidity	20 % to 80 %
Design Criteria	- Min. Resolution: 1024 X 768 / 60 Hz - Aspect Ratio : 4:3 - Number of Colours : 16.2 M, (6bit+FRC) - Video bandwidth: 70 MHz - Viewable size: 18.5” Minimum - MTBF: 30,000 hrs - MTTR: 0.25 hrs

B. Fee Collector Keyboard:

The keyboard on the Fee Collector Terminal for registration of toll operations shall be a programmable Industrial Grade keyboard. The keyboard shall be used to enter data such as:

- i. Staff ID number
- ii. Classification of vehicle
- iii. Type of transaction
- iv. Accept/Cancel transaction
- v. Selecting method of payment
- vi. Operating OHLS
- vii. Bleed-off button
- viii. Violation Cancel/Accept Button
- ix. Simulation Button (Only to be used during Maintenance Mode)
- x. Alpha Numeric Keys in QWERTY format

The minimum specifications shall be as follows:

- i. Shall have good programming capability
- ii. Programming under DOS and Windows, multiple page, multiple level, whole range key content, time delay, position sense answer back code, etc.
- iii. True spill-resistant design
- iv. Optional blank key, double key for alternative key group layout
- v. Optional Magnetic Stripe Reader
- vi. 70 programming keys + 6 position control key
- vii. Key top size: 18 mm x 22 mm for single key
- viii. Interface : PS/2 or USB
- ix. Dimension : 340 mm (W) x 150 mm (D) x 58 mm (H); Weight: upto 1.2 kg
- x. Color : OEM Specific

C. Barcode reader:

Desktop mounted fixed barcode reader shall be installed in the toll booth on the fee collector desktop. The road user upon reaching the pay-axis of the lane will produce the return/ daily pass ticket. The fee collector will place the ticket on the barcode reader which will read the 2D barcode printed on the ticket. The lane controller shall get the transit details from the barcode which validates the ticket and authenticates the vehicle class (as entered by the fee collector) for processing of the transaction.

The minimum BCR features and specification shall be as follows:

- i. BCR shall be a high performance 2D omnidirectional laser scanner
- ii. Shall have programmable sleep mode which can be reactivated by simple push of a button
- iii. BCR shall perform Full automatic scanning operation
- iv. Depth of Field: 300 mm (EAN 0.33 mm / 13 mil, PCS = 90%)
- v. Scan Patten: 7 directions of scan field, 24 scan lines
- vi. Scan Rate: 2400 scans/sec for omnidirectional scanning
- vii. Dimension: 152 mm (H) x 152 mm (W) x 91 mm (D); Weight: not more than 500 g
- viii. Interface: USB or Serial

D. Receipt Printer:

The thermal receipt printer (RPR) shall be used to print receipts in the lanes. The printer shall be provided with the automatic advance function of the paper after printing so that the space for the first line of printing is aligned under the print head thus reducing the time taken to produce a receipt.

For design purpose it shall be assumed that receipts will be approximately 70mm in length. The authority and project/plaza information will occupy space on the top. The area under this shall be used for particular printed data. The toll operator shall take the approval from the NHAI for the format of the receipt.

The minimum technical specifications for the RPR shall be as follows:

Descriptions	Specification
Dimension	Maximum up to 145mm (W) x 195mm (D) x 148 (H)
Weight	Shall be less than 2 kg
Installation and Fixing Details	Installed and fixed on the Fee Collector desk
Cables	- Power cable - Serial RS232C/ Parallel /USB
Cable routes	Power cable is terminated to the HLC Termination Block via booth ducting. Data cable is connected to the HLC
Colour	Cool White/Dark Grey

Power Supply Requirement	24 VDC \pm 7%
Access for maintenance, modularity of construction	The cover can be opened for maintenance. It also has paper sensors. Off-the-shelf product
Operating Temperature	58C to 508C
Relative Humidity	5 % to 90 %
Design Criteria	Print Speed: 47 LPS Print font: 9x17/12x24 Print column capacity: 56/42 columns
	Character size (mm): 0.99(W) x 2.4 (H) / 1.41 (W) x 3.4 (H) Paper dimension (mm): 79.5 \pm 0.5 (W) x 83 (diameter) Paper thickness: 0.06-0.07 mm Auto cutter life: 1.5 million cuts Real-time printer status: Auto status back (ASB) messages MCBF: 52 million lines MTBF: 360,000 hours, Overall MTTR: 0.25 hrs

1.2.7. License Plate Image Capture Camera

The camera shall be installed inside the housing at the suitable height above the surface of the lane to be decided by the toll operator on a pole to allow the automatic number plate capturing of the vehicle in the lane.

A. General Requirement:

The system should automatically detect a vehicle in the camera view using video detection and activate license plate recognition. The system shall automatically detect the license plate in the captured video feed in real-time.

The system shall perform OCR (optical character recognition) of the license plate characters (English alpha-numeric characters in standard fonts). It is expected that the software should provide at least 80% detection accuracy in day time and 70% during night time with proper IR illuminator and with standard license plates. The system shall be self-learning and shall improve the reading accuracy with time.

The system shall store JPEG image of vehicle and license plate and enter the license plate number into DBMS database along with date time stamp and site location details.

System should be able to detect and recognize the English alphanumeric license plate in standard fonts and format for all four wheelers including cars, HCV, and LCV.

The system shall be robust to variation in license plates in terms of font, size, contrast and colour and should work with good accuracy.

B. Vehicle Status Alerts:

The system should have option to input certain license plates according to the hot listed categories like “Wanted”, “Suspicious”, “Stolen”, etc. by authorized personnel such as administrator or supervisor.

The system should be able to generate automatic alarms to alert the control room personnel for further action, in the event of detection of any vehicle falling in the hot listed categories.

C. Vehicle Status Alarm Module:

On successful recognition of the vehicle number plate, system should be able generate automatic alarm to alert the control room for vehicles which have been marked as “Wanted”, “Suspicious”, “Stolen”, “Expired”. (System should have provision/expansion option to add more categories for future need).

D. Vehicle Log Module:

The system shall enable easy and quick retrieval of snapshots, video and other data for post incident analysis and investigations. The system should be able to generate suitable MIS reports that will provide meaningful data to concerned authorities and facilitate optimum utilization of resources. These reports shall include:

- Report of vehicle flow at each of the installed locations for Last Day, Last Week and Last Month.
- Report of vehicles in the detected categories at each of the installed locations for Last Day, Last Week and Last Month.
- Report of vehicle status change in different vehicle categories

The system shall have Search option to tune the reports based on license plate number, date and time, site location as per the need of the authorities. The system shall have option to save custom reports for subsequent use. The system shall have option to export report being viewed to common format for use outside of the system.

The system should provide advanced and smart searching facility of license plates from the database. There should be an option of searching number plates almost matching with the specific number entered (up to 1 and 2-character distance).

E. Central Management Module:

The Central Management Module shall run on the video server in every PMS. It should be possible to view records and edit hotlists from the CCTV Workstation. The extracted data shall be provided to other sub system through seamless integration. The system shall be integrated with Weight in Motion system which will detect overweight vehicles and will pass on the trigger to the licence plate image capture system to capture vehicle image with license plate.

The License Plate Image Capture system shall also achieve:

- i. Continuous monitoring of the operational status and event-triggered alarms from servers, cameras and other devices. This shall provide a real-time overview of alarm status or technical problems while allowing for immediate visual verification and troubleshooting.
- ii. Recording schedules can be continuous, event based, schedule based, trigger based etc.
- iii. Virtual Matrix – To allow viewing of live video in different layouts on operator screen.
- iv. Seamless working of fully integrated software platform.
- v. Archive search using dates, time, event etc.

F. Specifications:

Description	Specification
Image Sensor	1/2.8" Progressive Scan CMOS
Signal System	PAL / NTSC
Min. Illumination	0.05Lux @(F1.2,AGC ON) ,0 Lux with IR
Shutter time	1/25(1/30) s to 1/100,000s
Lens	E13: 6mm@ F2.0 Angle of view:45.3°(4mm optional) E15: 12mm@ F2.0 Angle of view:22°

Lens Mount	M12
Day & Night Function	Day Night visibility with color images / videos
Video Compression	H.264 / MPEG4 / MJPEG
Bit Rate	32 Kbps ~ 16 Mbps
Dual Stream	Yes
Maximum Image Resolution	1920 x 1080
Frame Rate	50Hz:25fps (1920x1080), 60Hz:30fps (1920 x 1080)
Image Settings	Saturation, brightness, contrast adjustable through client software or web browser
Alarm Trigger	Motion detection, Dynamic Analysis, Tampering alarm
Security	User Authentication, Watermark, IP address filtering, anonymous access
System Compatibility	ONVIF, PSIA, CGI
Operating Conditions	-10°C ~ 60°C (14°F ~ 140°F), Humidity 90% or less (non-condensing)
Power Supply	DC, PoE (802.3af)
Weather Proof	IP66
IP Range	E13: Approx. 20-30 metres; E15: Approx. 50 metres
OCR	Yes
Note	This Camera needs external high power IR panel to illuminate license plate with a stronger IR light.

1.2.8. Booth CCTV Cameras

A. Functions:

The booth CCTV camera shall be a fixed dome type IP (Internet Protocol) colour camera installed inside the booth to capture the activities of the fee collector while performing his operations. The camera shall also capture the view of the paying vehicle.

These cameras shall have inbuilt voice recording and SD memory card of minimum 32GB for local storage of videos and voice recordings. These cameras shall be connected to the plaza video server installed at the PMS server room at each plaza building.

The camera shall be capable of triggering alarms in case of camera tampering detection and audio detection. The triggering alerts can be controlled by the control room operator.

B. Specifications:

The technical specifications of the booth cameras shall be as follows:

Description	Specifications
Image Sensor	1/2.8” Progressive CMOS
Maximum Resolution	1920x1080 (2MP)
Lens Type	Fixed Focal
Focal Length	f = 2.8
Aperture	F1.8
Field of View	110° (Horizontal) 64° (Vertical) 135° (Diagonal)
Shutter Time	1/5 sec. to 1/30,000 sec.
Day/Night	Removable IR-cut filter for day & night function

Minimum Illumination	0.08 Lux @ F1.8 (Color) 0.001 Lux @ F1.8 (B/W)
IR Illuminators	Built-in IR illuminators, effective up to 25 meters or better IR LED*8
On-board Storage	SD/SDHC/SDXC card slot
Compression	H.264 & MJPEG
Maximum Frame Rate	30 fps @ 1920x1080 In both compression modes
Maximum Streams	4 simultaneous streams
S/N Ratio	Above 55dB
Dynamic Range	97dB or better
Video Streaming	Adjustable resolution, quality and bitrate
Image Settings	Adjustable image size, quality and bit rate, time stamp, text overlay, flip & mirror, configurable brightness, contrast, saturation, sharpness, white balance, exposure control, gain, backlight compensation, privacy masks, scheduled profile settings, seamless recording, smart stream, 3D Noise Reduction, Video Rotation
Audio Capability	Audio input /output (full duplex)
Compression	G.711, G.726
Interface	External microphone input Audio output
Protocols	IPv4, IPv6, TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP, IGMP, SMTP, FTP, DHCP, NTP, DNS, DDNS, PPPoE, CoS, QoS, SNMP, 802.1X, UDP, ICMP
Interface	10 Base-T/100 BaseTX Ethernet (RJ-45)
ONVIF	Supported
Alarm Triggers	Video motion detection, manual trigger, digital input, periodical trigger, system boot, recording notification, camera tampering detection, audio detection
Alarm Events	Event notification using digital output, HTTP, SMTP, FTP and NAS server, SD Card File upload via HTTP, SMTP, FTP, NAS server and SD card
Connectors	RJ-45 cable connector for Network/PoE connection Audio output DC 12V power input Digital input*1 Digital output*1
LED Indicator	System power and status indicator
Power Input	Max. 9 W (PoE)
Safety Certifications	CE, LVD, FCC Class B, VCCI, C-Tick
Operating Temperature	Starting Temperature: -10°C to 50°C (14°F~ 122°F)

1.2.9. Automatic Lane Exit Barrier (ALB)

A. Functions:

The function of the Automatic lane exit barrier is to control the passage of vehicles through the lane. Each lane shall be fitted with an ALB, the exact location of the ALB shall be provided by the toll operator in the lane layout drawing at the time of tender.

The operation of barrier is linked to the lane controller. It allows the vehicle to pass through after a successful transaction has happened at the lane.

The system consists of a fixed housing and a movable arm with a high impact breakaway device or provision. The housing shall contain the motor and control units along with the integrated metal detectors for vehicle detection purpose. The housing shall be installed on the right side of the traffic direction, after the booth on a concrete base.

The boom arms shall be fitted with a swing-away flange to prevent damages to the barrier/vehicle in case of an unpermitted or forced drive-through. Boom contact shall be available which gives continuous alert to the PMS when the boom is missing or swung away.

B. Specifications:

The automatic lane barrier shall meet the following technical specifications:

- The lane exit barrier shall be suitable for high-speed ETC transactions. One full open-close cycle shall not take more than 1.2 seconds. The barriers used shall be capable of full lane open from a close state in less than 0.6 seconds.
- The housing and any mounting frame shall be fabricated from corrosion-resistant materials. They shall be IP 55 rated. The barrier shall be driven electrically. The motor shall not be damaged when the barrier is blocked in any position. Exit barriers shall have presence detectors independent to the AVC system to prevent barrier arms coming down on vehicles while passing. This shall be in the form of infrared units and dedicated embedded loops. Apart from the barrier arm, the mechanism may not have any moving protrusions that pose a risk to persons standing in close proximity to the barrier.
- The barrier arm shall be fabricated from a light, corrosion resistant material readily and inexpensively available in India. The barrier arm shall further have a protective mechanism whereby controlled fracture of the barrier arm occurs without damage to the housing or motor in the event of frontal collision. Preference will be given to non-destructive break-away mechanisms. Further, there shall be a protection mechanism to detect the presence of vehicles to avoid accidental hitting on the vehicles, whenever the boom is triggered for closing.
- Suitable power supply scheme shall be implemented by the Contractor to feed the Exit barrier to protect the source from being damaged due to electrical surges / spikes injected by the dynamic (inductive) load. Further, the drive shall be so designed as to the damping factor is just sufficient for the drive to operate the booms without any jerks during open / close to avoid freak hitting by the exiting vehicles.
- Barrier arms shall have retro-reflective red stripes in accordance with the local traffic sign standards.
- The Automatic Barrier Gate shall be IP 55 rated.

- The Automatic Barrier Gate shall receive power directly from dedicated online UPS. Suitable protection shall be provided by the Contractor at the load end to protect the Boom Barrier. The Contractor shall fulfil any specific earthing requirement.
- The following minimum specifications shall be met:
 - Boom Length: 3.5 m
 - Boom Material: Aluminium

1.2.10. Network Video Recorder (NVR)

H.265 Linux-based embedded standalone NVR shall be provided. Shall support 16-Channel /24-Channel / 32-Channel network cameras. The NVR shall be ONVIF compliant and scalable configuration with features to help users to set up and manage advanced IP surveillance systems with ease. The NVR shall also support remote and mobile access, via web based application, and app for both iOS and Android devices.

The NVR shall have minimum following technical features:

- a) H.265 Compression Technology
- b) Plug & Play One Button Auto Setup
- c) Intuitive, Intelligent and Interactive UI
- d) Live viewing, recording and Playback features
- e) Embedded Linux OS or OEM Specific
- f) Support RAID 0/1/5 Storage
- g) Up to 12MP Camera Live view & Playback
- h) Dual Lan Network Ports with Failover Function
- i) ONVIF Open Platform

1.3. Administrative Area

1.3.1. UPS System

A. Specifications:

Online UPS with 4 hours of backup and sizing based on power requirement calculation, shall be provided. The UPS design shall take the following into account:

- i. The system shall be capable of maintaining an uninterrupted power supply to the UPS loads for a sustained period of at least 4 hours under full load conditions from a fully charged battery.
- ii. It shall also be capable of continuously supplying power to the system under an intermittent interruption cycle.
- iii. The UPS shall be capable of operating at input voltages of 210/380Volts $\pm 10\%$ and 50 Hz ± 2.5 Hz.

1.3.2. Network Laser Printer (Black and White)

A. Specifications:

At least 1 Network Printer shall be required in the Plaza office/Control Room with following minimum specifications:

- 25 PPM
- Duplex;
- Fast Ethernet; and should support Paper size(s): Letter/ Legal/ Executive/ Statement/ 8.50" x 13"/ Envelope No. 10/ Monarch Envelope/ Custom Size.

1.3.3. Cabling

A. Specifications:

All cables and wires shall be of good quality, conforming to normally accepted industry standards, and shall be of the proper type and have sufficient ratings for the particular application.

All exposed ends of unconnected cables and wires shall be coated with water tight sealing compound or sealing tape to avoid damage to conductors. All communication cables used shall have a clearly marked label securely fixed near each end in accordance with the cable network diagram.

All cables and wires shall be adequately protected from the edges of equipment housing or other surrounding objects. All the cables and wires shall be neatly arranged and securely placed in such a way that all terminals are relieved of the weight of the cables. Terminals shall be coded and identified as per the wiring diagrams. Live metal shall be recessed or protected to avoid accidental contact.

1.3.4. Workstation

A. Functions:

The workstation will be used by the System Administrator and / or Toll Supervisor to access the system for Admin/Audit purpose. At least 1 work stations / laptops should be provided in the Plaza office/Control Room with following minimum specification:

B. Specifications:

The PMS workstation shall comply with the minimum specifications prescribed in the below table.

Description	Specifications
Processor	Intel Core i5, Processor 2.4 GHz; 8 MB Cache, 1600 MHz, 4 Cores, Hyper threading, Intel HD Graphics
Memory(RAM)	4 GB or better
Storage	300 GB or better
Network	Integrated NIC
Ports	RJ-45, 1 USB 3.0, 3 USB 2.0
Monitor	18.5"LED
Input interface	Keyboard and Mouse
Antivirus	Yes

1.3.5. **Server**

A. Functions:

The Plaza Server should be provided with Server Rack 24U, with fan and adequate power points and cable management adjustable for caster / wall mount.

B. Specifications:

Description	Specifications
Form factor/height	2U Rack
Processor	4 - core Intel Xeon E5-2600 v2 series processors – 2 Nos. or better
Cache	15 MB per processor or Better
Memory	32 GB RAM, DDR 4, Shall be expendable to 64 GB
Internal Storage	Minimum 8 TB SAS/SATA or Better
Media bays	ODD and tape drive bay
RAID support	Integrated 6 Gbps or new optional 12 Gbps* hardware RAID-0, -1, -10 with optional RAID-5, -50, -6, -60
Power supply (std/max)	2 - Redundant Hot swappable
Hot-swap components	Power supplies, fan modules and hard disk drives
Network Interface Controller (NIC) Trusted Platform Module (TPM)	4 × 1 GbE (std.), 2 × 10 GbE Embedded Adapter (slot less opt.)/TPM
PCIe 3.0 Expansion slots (x16/x8)	4 - 6 PCIe ports or 4 PCI-X (CTO) or 2 double-width PCIe (for GPU)
USB ports	2 front/4 back/2 internal
Internal storage	Minimum 8 TB SAS/SATA or Better
Energy-efficiency compliance†	80 PLUS® Platinum and ENERGY STAR® Compliance
Monitor	18.5" LED
Input interface	Keyboard and Mouse
Operating System	Windows Server 2012 Std. or Open source OS such as Linux, Unix flavours, as per requirement of Toll Management System

1.3.6. Display for CCTV Monitoring

The Display shall be a 21” inch professional grade display with wide viewing angle, full HD resolution and shall be suitable for 24x7 indoor application. The monitor shall have high contrast ratio, lightweight design, full high definition 1920x1080 resolution, and anti-glare panel. It shall have inbuilt VGA, DVI, S-Video and HDMI ports for multiple video inputs.

Description	Specifications
Panel Size	21 inch
Light source	LED Backlight
Resolution	1920 X 1080 pixels
Dynamic Contrast Ratio	1400:1
Viewing angle	Horizontal: 178 Degree, Vertical: 178 Degree
Display feature	Full HD; Panel
Response time	Minimum 8ms
Lifetime	Minimum 50,000 Hrs.
Colours	Minimum 16 Million
Brightness	350cd/m ²
Panel thickness	Not more than 65mm

1.3.11 Toll Management Software - Lane and Plaza level

- i. The Toll Management System (TMS) shall be responsible for capturing & processing toll transactions into information, that will be used to verify toll collections, provide toll collector control, cash-up and shall include a host of management tools and reports for the effective administration of the toll operation.
- ii. The TMS shall also assist in auditing the toll collection operation. It shall be a modular system with the capability for various modules and functions to perform independently at different levels of the toll collection operations.
- iii. The TMS shall have various customizable reports.
- iv. The TMS shall have financial management and traffic analysis tools to assist the toll operator in planning operations.
- v. The Service Provider shall ensure that security updates and latest service packs, “patches” are loaded on the Lane / AVC Controllers as well as Toll Plaza Servers. Industry standard operating systems shall be utilized and all user licenses shall be provided.
- vi. The database shall be an industry standard relational database management system and shall be supplied with all the latest service packs and patches, including required user licenses.
- vii. Toll Management System should be able to support all kind of Fare structures & Payment methods including, but not limited to, Daily Pass, Return Pass, Monthly Pass, Discounted tariffs, Exemptions, Open / Closed fare schemes etc and shall meet the Tolling System requirements of the respective Concession Agreement, including subsequent regulation / notification thereon by NHAI/MoRTH.
- viii. Fully integrated with all other peripherals and systems.
- ix. Shall be able to send data to Central data center designated by IHMCL, in real time.

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